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

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

NOTICE OF PROPOSED RULEMAKING

Adopted: September 28, 2012 **Released: October 2, 2012**

Comment Date: December 21, 2012
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By the Commission: Chairman Genachowski and Commissioners McDowell, Clyburn, and Rosenworcel issuing separate statements; Commissioner Pai approving in part, concurring in part and issuing a statement.

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I. INTRODUCTION

1. In key areas, the United States leads the world in wireless infrastructure and innovation. We are the first country to have 4G Long-Term Evolution (LTE) technology networks at scale; we are the first country to enable unlicensed use of white space spectrum in the television bands; and our mobile applications economy is the envy of the world. But usage of our wireless networks is skyrocketing, dramatically increasing demands on both licensed and unlicensed spectrum—the invisible infrastructure on which all wireless networks depend. Our country faces a major challenge to ensure that the speed, capacity, and accessibility of our wireless networks keeps pace with these demands in the years ahead, so the networks can support the critical economic, public safety, health care, and other activities that increasingly rely on them. Meeting this challenge is essential to continuing U.S. leadership in technological innovation, growing our economy, and maintaining our global competitiveness.

2. Building off of the National Broadband Plan,[1] the FCC has worked to free up spectrum for wireless broadband use through traditional approaches such as auctions, including clearing and reallocating government spectrum. At the same time the Commission has removed regulatory and other barriers to the use of spectrum, facilitated the deployment of wireless networks, and enabled more efficient use of spectrum in numerous innovative ways.[2] The FCC has also pursued other initiatives designed to facilitate the expansion of our nation's wireless networks, the improvement of wireless broadband service, and the inclusion of all Americans in the growing wireless broadband environment. These efforts include the Broadband Acceleration Initiative to expand the reach of robust, affordable broadband by easing and expediting access to utility poles, rights of way, and other infrastructure; the modernization and refocusing of the Universal Service Fund and the intercarrier compensation systems to make affordable broadband available to all Americans and accelerate the transition from circuit-switched

[1] *See* Federal Communications Commission, Connecting America: The National Broadband Plan at 88-91 (2010). In the Joint Statement on Broadband, the Commission similarly recognized the need for strategic policies for spectrum, in order to meet current and future needs and promote innovation, investment and competition. Joint Statement on Broadband, GN Docket No. 10-66, 25 FCC Rcd 3420, 3421 (2010).

[2] For example, the Commission has launched a rulemaking to convert 40 megahertz of spectrum from satellite to terrestrial use; changed technical rules to accelerate the rollout of LTE in the 800 MHz band; taken meaningful steps to make the WCS band more useable by revising technical rules that have impeded use; and revamped our wireless backhaul rules to lower costs and reflect advances in technology.

to IP networks; and the establishment of the Mobility Fund to finance the expansion of current-generation or better wireless broadband service into currently unserved areas.[3]

3. The 2010 National Broadband Plan introduced the idea of incentive auctions as a tool to help meet the Nation's spectrum needs.[4] Incentive auctions are a voluntary, market-based means of repurposing spectrum by encouraging licensees to voluntarily relinquish spectrum usage rights in exchange for a share of the proceeds from an auction of new licenses to use the repurposed spectrum.[5] The incentive auction idea is the latest in a series of world-leading spectrum policies pioneered in the U.S., including unlicensed spectrum uses such as WiFi, Bluetooth, near field communication, and other innovations and the original FCC spectrum auctions in the 1990s. On February 22, 2012, Congress authorized the Commission to conduct incentive auctions, and directed that we use this innovative tool for an incentive auction of broadcast television spectrum.[6]

4. The purpose of this Notice is to develop a rulemaking record that will enable us to meet the challenges presented by the Spectrum Act's unique grant of authority to the Commission. The broadcast television spectrum incentive auction will be the first such auction ever attempted worldwide. It will be a groundbreaking event for the broadcast television, mobile wireless, and technology sectors of our economy. It presents a significant financial opportunity for broadcasters who remain on the air and continue providing the public with diverse, local, free over-the-air television service. At the same time, the spectrum reclaimed through the incentive auction will promote economic growth and enhance America's global competitiveness, increase the speed, capacity and ubiquity of mobile broadband service, such as 4G LTE and Wi-Fi like networks, and accelerate the smartphone- and tablet-led mobile revolution, benefitting consumers and businesses throughout the country. This proceeding is an important component of the Commission's unprecedented commitment and efforts to make additional licensed and unlicensed spectrum available for broadband.

5. The incentive auction of broadcast television spectrum will have three major pieces: (1) a "reverse auction" in which broadcast television licensees submit bids to voluntarily relinquish spectrum usage rights in exchange for payments; (2) a reorganization or "repacking" of the broadcast television bands in order to free up a portion of the ultra high frequency (UHF) band for other uses; and (3) a "forward auction" of initial licenses for flexible use of the newly available spectrum.[7] Each of the three pieces presents distinct policy, auction design, implementation and other issues, and the statute in a number of cases imposes specific requirements for each piece. At the same time, all three pieces are interdependent: the amount of spectrum available in the forward auction will depend on reverse auction bids and repacking, winning reverse auction bidders will be paid from the forward auction proceeds, and our repacking methodology will help to determine which reverse auction bids we accept and what channels we assign the broadcast stations that remain on the air. For the incentive auction to succeed, all three pieces must work together.

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[3] *See* The FCC's Broadband Acceleration Initiative, available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-304571A2.pdf

[4] *See* Federal Communications Commission, Connecting America: The National Broadband Plan at 88-91 (2010). In the Joint Statement on Broadband, the Commission similarly recognized the need for strategic policies for spectrum, in order to meet current and future needs and promote innovation, investment and competition. Joint Statement on Broadband, 25 FCC Rcd at 3421.

[5] *See* National Broadband Plan at 81-82.

[6] *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §§ 6402, 6403, 125 Stat. 156 (2012) (Spectrum Act).

[7] *See id.* § 6403(a), (b) and (c). *See also id.* § 6001(16) and (30) (defining "forward auction" and "reverse auction," respectively).

6. We seek comment on a variety of different auction design issues, each with its own set of trade-offs. The issues presented by the reverse auction can be divided into the three broad categories of bid collection, determination of which bids are accepted, and determination of payment amounts to winners. For example, as discussed in detail below, we must determine whether to collect sealed bids or use a multiple round bid collection format such as a descending clock auction.[8]

7. The determination of winners in the reverse auction depends heavily on the second major piece of the incentive auction of broadcast television spectrum. Repacking involves reorganizing the broadcast television bands so that the television stations that remain on the air after the incentive auction occupy a smaller portion of the UHF band, subject to interference and other constraints imposed by the Spectrum Act and treaties with Canada and Mexico.[9] Repacking will enable us to configure a portion of the UHF band into contiguous blocks of spectrum suitable for flexible use. The repacking methodology we establish will be an essential element in determining which reverse auction bids we accept and the channel assignments of those stations that will continue broadcasting after the incentive auction is completed.

8. The forward auction will resemble prior competitive bidding systems that the Commission has utilized, but with important differences. Its interdependence with the reverse auction and the repacking mean that we will not know in advance the amount of spectrum we can make available in the forward auction, the specific frequencies that will be available and, perhaps, the geographic locations of such frequencies. Instead of a single band plan with identified frequencies, a set number of spectrum blocks and a uniform set of geographic area licenses, the auction design must provide a framework that is flexible enough to accommodate varying amounts of newly available spectrum in different locations. We invite comment on such a framework as well as on other forward auction design choices, their potential impact on the reverse auction, and whether to conduct the forward auction before, after or simultaneously with the reverse auction.[10]

9. The discussion that follows begins with an overview of the current UHF band, developments leading to Congress's mandate to conduct the broadcast television spectrum incentive auction, and relevant provisions of the Spectrum Act. We then invite comment on the following issues:

- In the auction design section, we invite comment on auction design choices and the tradeoffs they present. For both the reverse and forward auctions, we invite comment on different procedures to collect bids, determine which bids are accepted, and what each bidder pays or receives in payment. We also seek comment on methodologies for the repacking process, which is part of the process for determining which broadcaster bids will be accepted in the reverse auction. And we seek comment on an Incentive Auction Rules Option and Discussion report prepared by *Auctionomics* and *Power Auctions* illustrating a comprehensive approach to the auction design choices presented. Further, we invite comment on how to design the incentive auction so as to facilitate the participation of a wide array of broadcasters and make it as easy as possible for them to submit successful bids.
- We interpret the Spectrum Act to limit eligibility to participate in the reverse auction to commercial and noncommercial full power and Class A broadcast television licensees. We also invite comment on whether to establish reverse auction bid options in addition to those identified in the Spectrum Act (to go off the air, to move from a UHF to a VHF television channel, and to share a channel), including bids to voluntarily accept additional interference.

[8] *See infra*, Section III.

[9] *See* Spectrum Act § 6403(b)(1)-(2).

[10] *See* Spectrum Act § 6403(f)(1) (authorizing the Commission to conduct the reverse auction, repacking and forward auction on a contemporaneous basis).

- In the repacking section, we invite comment on how to implement Congress's mandate to make "all reasonable efforts" to preserve the "coverage area and population served" of television stations as of the date of enactment of the Spectrum Act. In particular, we propose to interpret "coverage area" to mean a full power television station's "service area" as defined in section 73.622(e) of the Commission's rules, and we propose several approaches to preserving population served.
- We seek comment on a band plan for reclaimed broadcast television spectrum using 5 megahertz blocks, in which the uplink band would begin at channel 51 (698 MHz) and expand downward toward channel 37 based on the amount of reclaimed spectrum, and the downlink band would begin at channel 36 (608 MHz) and likewise expand downward. We propose establishing 6 megahertz guard bands between mobile broadband use and broadcast use, consistent with the Spectrum Act, and propose to make this spectrum available for unlicensed use. In addition, we seek comment on a number of alternative band plan approaches.
- We invite comment on whether or not to relocate the Radio Astronomy Service and wireless medical telemetry systems now operating on channel 37, and on whether and how to address the post-auction availability of UHF band spectrum for fixed broadcast auxiliary stations, low power auxiliary stations, and unlicensed wireless microphones.
- In the white space and unlicensed operations section, we propose measures that, taken together, would make a substantial amount of spectrum available for unlicensed uses, including a significant portion that would be available on a uniform nationwide basis for the first time. Television white spaces will continue to be available for unlicensed use in the repacked television band. In addition, we propose to make the guard band spectrum in our proposed 600 MHz band plan available for unlicensed use, propose making channel 37 available for such use, and propose making two channels currently designated for wireless microphone use available for white space devices. The measures we propose to promote unlicensed spectrum use are limited by the bounds of our statutory authority.
- In the auction rules section, we propose competitive bidding rules to govern the reverse auction of broadcast television spectrum, and consider changes to our general competitive bidding rules that may be necessary or appropriate to conduct the forward auction of new spectrum licenses for reclaimed broadcast television spectrum.
- We seek comment on how to implement the repacking of broadcast television spectrum and clear the reclaimed spectrum as expeditiously as possible while minimizing disruption to broadcast television stations and their viewers. In particular, we propose streamlined broadcast license modification procedures, invite comment on reasonable deadlines for stations to transition to any new channel assignments or cease broadcasting, and propose to allow stations eligible for reimbursement of relocation costs to elect between actual cost-based payments or advance payments based on estimated costs. We also seek comment on what kind of outreach efforts the Commission should undertake in order to ensure an orderly transition and minimize disruptions in service to consumers. Further, we invite comment on a number of post-auction broadcast regulatory issues raised by the incentive auction, as well as on licensing and operating rules for new licenses in the reclaimed spectrum.

10. Throughout this Notice, we also invite comment on goals and principles to guide our decisions. Our central goals are to repurpose the maximum amount of UHF band spectrum for flexible licensed and unlicensed use in order to unleash investment and innovation, benefit consumers, drive economic growth, and enhance our global competitiveness, while at the same time preserving a healthy, diverse broadcast television service. Under the terms of the statute, the achievement of these goals hinges on raising the minimum proceeds required to complete the reverse and forward auctions and to carry out the repacking.[11] Auction design considerations dictate additional principles. For example, we seek to

[11] *See id.* § 6403(c)(2)

make the reverse auction as transparent and easy to participate in as possible for broadcasters. Therefore, as discussed below, we invite comment on a process that would make it simple for broadcasters to place reverse auction bids and would place the technical and other complexities associated with the incentive auction of broadcast television spectrum squarely on the Commission. In addition to our responsibilities under the Spectrum Act, we also must be mindful of our responsibilities under the Communications Act. These goals and principles, and how best to achieve them, will be critical in determining the ultimate design of the broadcast television spectrum incentive auction. Consistent with these goals and principles, we anticipate that we will be able to conduct the auction in 2014.

II. BACKGROUND

11. The broadcast television spectrum incentive auction has the potential to significantly alter the landscape of the broadcast television bands. Therefore, we begin with an overview of the current UHF and VHF bands, including a discussion of broadcast television service and other services that occupy the broadcast television bands. Next, we briefly discuss the development of the Commission's flexible use policy, our competitive bidding authority, and Congress's call for more broadband spectrum. We then summarize the pertinent provisions of the Spectrum Act.

A. The Current Broadcast Television Bands

12. The broadcast television bands occupy 294 megahertz of spectrum in five frequency bands that are allocated for broadcasting use.[12] All five bands are allocated principally to broadcast television under Part 73 of the Commission's rules.[13] In addition, the 470-512 MHz band segment (UHF channels 14-20) is allocated for fixed and land mobile services on a co-primary basis with broadcasting.[14]

13. *Broadcast Television*. Broadcast television stations operate on six-megahertz channels designated 2 to 51. Broadcast television stations provide free video programming that is often highly responsive to the needs and interests of the communities they serve. Among other things, broadcast television stations provide children's educational programming, coverage of community news and events, reasonable access for federal political candidates, closed captioning, and emergency information.[15] A small but significant segment of the Nation's population relies solely on over-the-air broadcast television stations for video programming service.

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[12] *See* 47 C.F.R. § 2.106 (Table of Frequency Allocations); *see also* 47 C.F.R. § 73.603. The bands consist of 54-72 MHz (low VHF channels 2-4), 76-88 MHz (low VHF channels 5-6), 174-216 MHz (high VHF channels 7-13), 470-608 MHz (UHF channels 14-36) and 614-698 MHz (UHF channels 38-51).

[13] 47 C.F.R. Part 73. In addition, low power television stations (TV translators and low power TV stations) operate under regulations set forth in Part 74 of the Commission's rules. We use the term "low power television stations" herein to refer to low power television and TV translators, but not to Class A television stations. Low power television stations are permitted to operate under Subpart G of Part 74 on a "secondary" basis to full power stations, and on an equal basis with Class A stations, provided they meet technical requirements to prevent interference to reception of such stations. Class A television stations operate under Subpart J of Part 73 at the power levels permitted for low power television stations, but have certain protection rights vis-à-vis full power stations.

[14] *See* 47 C.F.R. § 2.106, footnote NG66. Use of the fixed and land mobile services in this band is limited to the geographic areas and purposes stated in footnote NG66 to the Table of Allocations.

[15] During emergencies, broadcast television stations serve a vital role by providing critical local news and information, as well as emergency alert warnings. As noted by some of the nation's largest local television groups, their stations provide around-the-clock coverage of severe weather events at a significant cost in resources and lost advertising revenue. Steve Waldman and the Working Group on Information Needs of Communities, FCC, THE INFORMATION NEEDS OF COMMUNITIES: THE CHANGING MEDIA LANDSCAPE IN A BROADBAND AGE at 76 (2011) (INFORMATION NEEDS OF COMMUNITIES), *available at* http://transition.fcc.gov/osp/inc-report/The_Information_Needs_of_Communities.pdf.

14. Although broadcast television continues to be a vital source of local news and information for most Americans, the other offerings in the video programming marketplace have diverted much of broadcast television's over-the-air viewing audience over the years. For example, in 1960 virtually all television households received video programming service by viewing a broadcast television station's over-the-air signal.[16] In contrast, during the 2011-2012 television season, the Nielsen Company estimates that only 10.7 million television households, or approximately 10 percent of the total, rely solely on over-the-air broadcast television service.[17] Nevertheless, 78 percent of Americans say that on a "typical day" they get news from their local broadcast television station (either directly over-the-air, or through cable and satellite services)—more than from newspapers, the Internet, or the radio.[18] Likewise, the three major broadcast network nationwide evening newscasts draw 22 million viewers (either directly over the air, or through cable and satellite services)—five times the number of primetime viewers for the three major cable news networks (CNN, FOX News Channel, and MSNBC).[19] In fact, broadcast content draws such significant viewership that 96 of the top 100 TV shows in the 2011-2012 season originated on broadcast television.[20] In addition, many households that subscribe to other video programming sources rely on over-the-air broadcast signals for some television sets in their homes.

15. The broadcast television business continues to evolve to keep pace with technological and marketplace changes. Many television broadcasters now pursue a three-screen approach, sharing their programming online and on mobile devices in addition to providing it free over the air.[21] These innovative strategies would not be possible absent the conversion to digital transmission by all full power broadcast television stations, which was completed in June 2009. Among other benefits of the conversion, digital broadcast operations take up less bandwidth than did analog.[22] Due to greater spectrum efficiency, broadcasters can now multicast, providing multiple programming streams on one 6 megahertz channel.[23] Digital broadcast technology also enables broadcasters to offer high definition

[16] *See Inquiry into the Impact of Community Antenna Systems, TV Translators, TV "Satellite" Stations and TV "Repeaters" on the Orderly Development of Television Broadcasting*, Report and Order, 26 F.C.C. 403, 406-408 (1959) (estimating that of the 44 million "television families," 500,000 subscribers, representing a population of between 1.5 and 2 million, received television service via cable).

[17] Nielsen Company, Nielsen National Universe Estimates, January 1, 2012. Several factors contribute to the decrease in reliance on over-the-air broadcast television, including high cable penetration rates and the fact that consumers increasingly turn to online and mobile broadband platforms to access news, information and video programming. BIA/Kelsey cites the emergence of newer media, such as mobile, as chipping away at traditional media's revenue. Michael Malone, BIA/Kelsey: Stations to Book $20 Billion in 2012 Revenue, Broadcasting & Cable, (May 1, 2012) (BIA/Kelsey Report), *citing* 2012 BIA/Kelsey Investing in Television Market Report.

[18] INFORMATION NEEDS OF COMMUNITIES at 76.

[19] *Id.* at 104.

[20] *See* TELEVISION BUREAU OF ADVERTISING, INC., TV BASICS: A REPORT ON THE GROWTH AND SCOPE OF TELEVISION, (June 2012), available at http://www.tvb.org/media/file/TV_Basics.pdf.

[21] By the end of 2011, 94 percent of full-power broadcast television stations operated a website and nearly 86 percent streamed video content. Additionally, approximately 44 percent of station websites had mobile applications available for smartphones. SNL Kagan, *TV Stations Deals Databook*, 2012 edition, at 11.

[22] As part of the statutorily-mandated transition from analog to digital transmission, 108 megahertz of UHF spectrum at 698-806 MHz was recovered for new uses, including fixed, mobile, and broadcasting, with 24 megahertz of the newly-recovered spectrum set aside for public safety uses.

[23] According to a report from SNL Kagan, based on its analysis of digital TV station programming offerings (including HD programming, multicast channels and mobile television channels), at the end of 2011 the total number of live over-the-air broadcast channels for the 1,726 full-power digital broadcast television stations jumped (continued….)

(HD) television service, Mobile TV, [24] datacasting, and other emerging applications. Among other things, Mobile TV offers the opportunity to enhance the Emergency Alert System, a critical service in the event of natural or man-made disasters.[25]

16. Not all broadcasters are in a position to take advantage of the opportunities created by the digital transition. For example, as of 2010, roughly 29 percent of commercial broadcast television stations did no multicasting.[26] Only a fraction of broadcasters at this point offer Mobile DTV channels.[27] Those broadcasters that are able to take advantage of these and other opportunities offered by an evolving marketplace have every prospect of continuing successfully to provide the public the benefits of free over-the-air television. For those that cannot, Congress's mandate to conduct a broadcast television spectrum incentive auction creates alternative opportunities. Broadcasters struggling financially and interested in exiting the business entirely, but unable to find a buyer for their facilities, may be able to obtain compensation in an amount acceptable to them by participating in the reverse auction. Their exit from the business would reduce the overall number of broadcast television stations competing for the same limited pool of advertising revenue.[28] Broadcasters that wish to remain in the business also have an opportunity to strengthen their finances through the cash infusion resulting from a winning reverse auction bid to channel share or to move from a UHF to a VHF channel.

17. The Commission already has undertaken numerous efforts to reach out to broadcasters concerning the opportunities presented by the incentive auction and to obtain their feedback, through webinars, workshops, presentations, and many individual discussions. We intend to continue these outreach efforts following the release of this Notice, focused particularly on explaining and seeking input on the proposals and questions in this Notice. In particular, as discussed below in section III, we intend to

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to 4,552, up 81percent year over year from the 2,518 delivered at the end of 2010. SNL Kagan, *TV Station Deals Databook* 2012 edition at 6.

[24] Mobile TV makes local, digital broadcast television programming portable. As of January 2012, 120 stations around the United States were broadcasting using Mobile DTV, according to the Open Mobile Video Coalition, an alliance of broadcasters formed to accelerate the development and rollout of mobile digital television products and services. Broadcasters Gear Up for 2012 Commercial Mobile DTV, Press Release (April 13, 2012), *available at* http://www.openmobilevideo.com/media-relations/press-releases/.

[25] In April 2012, the Mobile-Emergency Alert System group said field trials conducted in several states using the Mobile TV Standard, non-real-time delivery, and electronic service guides, demonstrated the system's capacity to deliver multimedia alerts to mobile digital television-equipped cellphones, tablets, laptops, netbooks, and in-car navigation systems in order to avoid the potential roadblocks of chronic congestion of cellular systems during emergencies. *See Successful Conclusion of Field Trials Sets Stage for ATSC Standardization*, PR Newswire (April 16, 2012), available at http://www.prnewswire.com/news-releases/mobile-emergency-alert-system-pilot-project-proves-viability-of-mobile-dtv-for-emergency-alerts-147577325.html

[26] SNL Kagan, *TV Station Deals Databook*, 2011 Edition.

[27] The first rollout of mobile broadcast channels began in 2010. OMVC, *Open Mobile Video Coalition Launching Comprehensive Mobile Digital Television Consumer Showcase During First Quarter of 2010,* press release (Jan. 5, 2010). At the end of 2010, 60 operating commercial mobile DTV stations broadcast more than 80 live mobile video channels in major markets. Justin Nielson, TV *Stations Multiplatform Analysis '11 Update: Multicasting Expands Programming Options, Mobile DTV Goes Live,* SNL Kagan (Jan. 28, 2011) at 8. This number increased to 105 live mobile DTV stations at the end of 2011. Justin Nielson, TV *Stations Multiplatform Analysis '12 Update: New Digital Networks and Mobile TV Channels Expand Content Options,* SNL Kagan (Jan. 31, 2012) at 10.

[28] On-air advertising is by far the most significant source of revenue for television stations, although the percentage of overall broadcast television station industry revenue coming from advertising continues to decline. Advertising revenue represented approximately 96% of broadcast television industry net revenues in 2006, but only 91% in 2010. Tony Lenoir, *Negative Growth Outlook for TV Station Revenue in '11 but Double-Digit Gains Seen in '12*, SNL Kagan, Oct. 3, 2011.

conduct webinars and other educational sessions for broadcasters interested in participating in the reverse auction, and will make available information on our incentive auctions webpage geared to help broadcasters make informed participation decisions.[29] We also intend to solicit broadcasters' input on how to design the incentive auction so as to facilitate the participation of a wide array of broadcasters and make it as easy as possible for them to submit successful bids, as well as how to structure the auction and repacking to take into account the interests of broadcasters that will not participate in the auction.

18. *Broadcast Auxiliary Service*. Under Subpart G of Part 74, certain broadcast auxiliary operations (Broadcast Auxiliary Service, or "BAS") also are permitted on television channels 14-69 on a secondary basis.[30] Only licensees of a full power broadcast television station, a Class A station, a television broadcast network entity, or a low power television station may hold fixed BAS licenses on channels 14-51.[31]

19. *T-Band Licensees*. Pursuant to the fixed and land mobile allocations in the 470-512 MHz band segment (channels 14-20, or "T-Band"),[32] Private Land Mobile Radio Service (PLMRS) licensees and Commercial Mobile Radio Service (CMRS) licensees operate on a co-primary basis with broadcast television in 11 metropolitan areas on one to three six-megahertz channels.[33] Licensees in this band provide public safety and other PLMRS systems and CMRS operations.[34] Although the Spectrum Act requires reallocation of the spectrum used by public safety eligibles in this band by 2021 (and provides for funding of the relocation of their operations), we do not address T-Band services in this Notice. The T-Band will be addressed in a forthcoming Public Notice intended to advance the record on issues related to the technical, financial, administrative, legal, and policy implications of the Act for T-Band licensees.

20. *Low Power Auxiliary Stations / Wireless Microphones*. Under Subpart H of Part 74, the Commission permits specified entities to operate wireless microphones and other low power auxiliary transmitters (Low Power Auxiliary Stations, or "LPAS") on vacant channels in the broadcast television bands on a secondary, non-interference basis.[35] Pursuant to a limited waiver granted in 2010, the

[29] http://www.fcc.gov/topic/incentive-auctions.

[30] *See* 47 C.F.R. § 74.602(h) (permitting television studio-transmitter links, television relay stations, and television translator relay stations to be authorized to operate fixed point-to-point service).

[31] *See* 47 C.F.R. §§ 74.600, 74.632(a). We note that the rules also permit television translator relay stations operating on channels 52-59 that were licensed prior to the end of the digital television transition to continue operating under the terms of their current authorizations indefinitely. 47 C.F.R. § 74.602(h)(4).

[32] The frequency bands are allocated to the land mobile service in designated urban areas on an exclusive basis for assignment to eligibles in the Public Mobile Services, the Public Safety Radio Pool, and the Industrial/Business Radio Pool, except that Commercial Mobile Radio Service licensees may also use their assigned spectrum to provide fixed service on a primary basis. See 47 C.F.R. § 2.106, NG66.

[33] *See* 47 C.F.R. Parts 20 (CMRS), 90 (PLMRS). The rules specify channels in 13 metropolitan areas. Operations are allowed in only 11 of those areas, however, due to spectrum limitations in the border areas. The eleven areas are: Boston, MA; Chicago, IL; Dallas, TX; Houston, TX; Los Angeles, CA; Miami, FL; New York, NY; Philadelphia, PA; Pittsburgh, PA; San Francisco, CA; and Washington, D.C.

[34] In addition, the Offshore Radiotelephone Service (ORTS) is a secondary service that operates on frequencies within channels 15-17 in certain regions in the Gulf of Mexico. See 47 C.F.R. § 2.106 NG66(b), 47 C.F.R. § 22.1007 and 47 C.F.R. § 90.315. In Hawaii, frequencies within channel 17 are reserved for inter-island communications. *See* 47 C.F.R. § 22.591. However, no active licensees currently use this channel in Hawaii.

[35] *See* 47 C.F.R. §§ 74.801 *et seq*.

Commission also currently permits unlicensed operations of wireless microphones (and related devices) in these bands under certain Part 15 rules.[36]

21. *Channel 37*. Channel 37 (608-614 MHz) is not allocated for broadcast television but rather is used for receive-only radio astronomy observations and for wireless medical telemetry service (WMTS), on a non-interfering basis to radio astronomy, under Part 95 of our rules.[37] Radio astronomy involves the reception of radio waves of cosmic origin to facilitate scientific research about the universe.[38] Medical telemetry equipment is used in hospitals and health care facilities to transmit potentially life-critical patient measurement data, such as pulse and respiration rates, to a nearby receiver.[39]

22. *Unlicensed Devices*. The Commission's Part 15 rules provide for the operation of low power radio transmitters on an unlicensed basis in the broadcast television bands, as well as in other spectrum bands.[40] In 2008 and 2010, the Commission authorized the operation in the broadcast television bands of "white space" devices in areas where specific channels are not used by television or other protected services.[41] White space devices employ novel cognitive radio techniques to identify television channels that are not being used by licensed services at or near a device's location.

B. Flexible Use Policy, Auctions and Calls for Broadband Spectrum

23. Historically, the Commission has carried out its spectrum management responsibility by taking steps to promote the efficient use of spectrum in order to meet the current and future needs of the American public.[42] The Commission's approach has evolved over time toward the adoption of flexible

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[36] *See Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band*, WT Docket No. 08-166, WT Docket No. 08-167, ET Docket No. 10-24, Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 643, 682-688, paras. 81-90 (2010) ("*Wireless Microphones Order and Further Notice*").

[37] 47 C.F.R. §2.106 n. US 246. In addition, under Part 15 of the rules, medical telemetry devices are permitted to operate on an unlicensed basis on any vacant television channels in the range of channels 7-46, and unlicensed remote control devices are allowed to operate on any television channels above 70 MHz (*i.e.*, above channel 4), except for channel 37. *See* 47 C.F.R. §§ 15.231, 15.241 and 15.242. Effective October 16, 2002, the Commission ceased granting certifications for new medical telemetry equipment that operates on television channels, but there is no cutoff on the sale or use of equipment that was certified before that date. *See* 47 C.F.R. § 15.37(i).

[38] *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610 to 1626.5/2483.5-2500 MHz Frequency Bands*, CC Docket No. 92-166, Notice of Proposed Rulemaking, 9 FCC Rcd 1094, 1120, para. 49 (1994).

[39] *See Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, ET Docket No. 99-255, 15 FCC Rcd 11206, para. 1 (2000). Wireless medical telemetry equipment may also operate on a primary basis in two bands at 1395-1400 MHz and 1427-1432 MHz.

[40] 47 C.F.R. Part 15. Under Part 15, unlicensed devices are allowed to operate on frequencies allocated to other services on the basis that unlicensed devices do not cause harmful interference and have no rights to protection from interference. The rules allow unlicensed operation across most frequency ranges, but specify radiated field strength and/or conducted power limits, as appropriate, at low levels in order to minimize the potential for interference. These limits provide substantial flexibility in the types of devices that can be operated, although they tend to limit the kinds of unlicensed applications that can be supported.

[41] 47 C.F.R. §§ 15.701-15.717. *See Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, Second Report and Order, 23 FCC Rcd 16807 (2008) (*TVWS Second Report and Order*); *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, Second Memorandum Opinion and Order, 25 FCC Rcd 18661 (2010); and *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, Third Memorandum Opinion and Order, 27 FCC Rcd 3692 (2012).

[42] *See, e.g., In the Matter of an Inquiry Relative to the Future Use of the Frequency Band 806-960 MHz; and Amendment of Parts 2, 18, 21, 73, 74, 89, 91 and 93 of the Rules Relative to Operations in the Land Mobile Service* (continued….)

rules governing both licensed and unlicensed use of spectrum and the use of auctions to assign licenses. The move from use-specific to more flexible rules has been especially important. For most of the twentieth century, the FCC limited the scope of a license to particular uses.[43] In 1997, however, Congress recognized the potential benefits of flexibility in spectrum allocations by granting the Commission authority to provide for flexibility of use under certain conditions.[44] Applying this authority over the past two decades, the Commission has developed and implemented a "flexible use" policy that focuses on technical rules to prevent or limit interference among multiple spectrum uses, rather than prescribing specific uses.[45] Licensees can make fundamental choices about how to use spectrum (including whether to use it or to transfer or lease their usage rights to others), taking into account market factors such as consumer demand, availability of technology, competition, and opportunity cost.[46]

24. Congress also has recognized the potential value of using auctions to assign Commission licenses. In 1993, Congress authorized the Commission to assign licenses through competitive bidding for the first time.[47] This competitive bidding authority allows the Commission to apply market forces to the assignment of spectrum licenses, helping to ensure that spectrum is put to its most productive use. And as part of the American Recovery and Reinvestment Act of 2009, Congress directed the FCC to

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Between 806 and 960 MHz, First Report and Order and Second Notice of Inquiry, 19 R R. 2d (P&F) 1663, para. 6 (1970). Spectrum management is a fundamental Commission responsibility under the Communications Act of 1934. *See* 47 U.S.C. § 151(c); *NBC v. U.S.*, 319 U.S. 190, 217 (1943) (The Communications Act confers on the FCC "comprehensive powers to promote and realize the vast potentialities of radio."); *NAB v. FCC*, 740 F.2d 1190, 1198 (D.C. Cir. 1984) ("[T]he FCC's paramount responsibility is to achieve a 'fair, efficient and equitable distribution of radio service … so as to make available, as far as possible, to all the people of the United States, a rapid, efficient, nation-wide, and world-wide wire and communications service.'"), *quoting* 47 U.S.C. § 151(c).

[43] For example, the Commission would designate particular frequencies for persons primarily engaged in specified activities listed in the rules such as tree loggers (Forest Products Radio Service), cement trucks (Special Industrial Radio Service), and taxis (Taxi Cab Radio Service). *See e.g.*, 47 C.F.R. §§ 90.67 (Forest Products Radio Service), 90.73 (Special Industrial Radio Service), 90.93 (Taxi Cab Radio Service) (1993).

[44] *See* Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251, 268-69; 47 U.S.C. § 303(y) (authorizing the Commission to provide for flexibility of use if: (1) such use is consistent with international agreements to which the United States is a party; and (2) the FCC finds, after notice and an opportunity for public comment, that (A) such an allocation would be in the public interest; (B) such use would not deter investment in communications services and systems, or technology development; and (C) such use would not result in harmful interference among users). The flexible rights regime has been codified in Parts 24 and 27 of the Commission's rules, which govern most "mainstream" mobile wireless services, including PCS, 700 MHz, BRS, and AWS. *See* 47 C.F.R. Parts 24, 27.

[45] *See Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Service*, WT Docket No. 96-6, Second Report and Order and Order on Reconsideration, 15 FCC Rcd 14680 (2000) (promoting flexible spectrum use by eliminating bright-line tests and adopting a policy of case-by-case review for determining whether particular wireless services should be treated as CMRS); *see also Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Services, WT Docket No. 96-6*, First Report and Order and Further Notice of Proposed Rule Making, 11 FCC Rcd 8965 (1996) (promoting flexible spectrum use by granting terrestrial CMRS carriers authority to provide fixed services in mobile service bands).

[46] *See, e.g.,* National Broadband Plan at 82.

[47] 47 U.S.C § 309(j) (1993). The Commission has found that spectrum auctions more efficiently assign licenses than either comparative hearings or lotteries. *See FCC Report to Congress on Spectrum Auctions*, WT Docket No. 97-150, Report, FCC 97-353 (rel. October 9, 1997) at 8. In 1997, Congress further amended section 309(j) to require auctions for non-exempt mutually exclusive applications for initial licenses. 47 U.S.C. § 309(j) (1997).

develop a "national broadband plan" to ensure that every American has "access to broadband capability."[48]

25. Incentive auctions are a new aspect of the Commission's efforts to make additional spectrum available for broadband, and are an important part of the spectrum agenda identified in the 2010 National Broadband Plan, which emphasized the indispensable importance of wireless spectrum.[49] As described in the National Broadband Plan, incentive auctions are a voluntary, market-based means of repurposing spectrum by encouraging licensees to voluntarily relinquish spectrum usage rights in exchange for a share of the proceeds from an auction of new licenses to use the repurposed spectrum.[50]

26. Congress passed the Spectrum Act in early 2012, authorized the Commission to conduct incentive auctions to help meet the increasing demand for spectrum to provide highly valued wireless broadband services, and directed that certain proceeds from the incentive auction must be deposited in the Public Safety Trust Fund to fund a national first responder network, state and local public safety grants, public safety research, and national deficit reduction. The Commission is now moving forward to do so.

C. The Spectrum Act of 2012

27. Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, commonly known as the Spectrum Act, addresses public safety communications and electromagnetic spectrum auctions.[51] Section 6402, codified at 47 U.S.C. § 309(j)(8)(G), authorizes the Commission to conduct incentive auctions in which licensees may voluntarily relinquish their spectrum usage rights in order to permit the assignment by auction of new initial licenses subject to flexible use service rules, in exchange for a portion of the resulting auction proceeds.[52] Section 6403 of the Spectrum Act, which is not codified in the Communications Act, requires the Commission to conduct an incentive auction of the broadcast television spectrum and includes specific requirements and safeguards for the required auction.

28. Section 6403(a) describes the reverse auction to determine the amount of compensation that each broadcast television licensee would accept in return for voluntarily relinquishing some or all of its broadcast television spectrum usage rights.[53] Pursuant to that provision, broadcast television licensees may bid in the reverse auction to indicate the amount of compensation that they would accept to relinquish different spectrum usage rights, including the following: (A) "all usage rights with respect to a particular television channel without receiving in return any usage rights with respect to another television channel"; (B) "all usage rights with respect to [a UHF] television channel in return for receiving usage rights with respect to a [VHF] television channel"; or (C) "usage rights in order to share a television

[48] American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 § 6001(k)(2) (2009).

[49] *See* Federal Communications Commission, Connecting America: The National Broadband Plan 88-91 (2010). In the Joint Statement on Broadband, the Commission similarly recognized the need for strategic policies for spectrum, in order to meet current and future needs and promote innovation, investment and competition. Joint Statement on Broadband, 25 FCC Rcd at 3421.

[50] *See* National Broadband Plan at 81-82.

[51] Spectrum Act §§ 6001-6703.

[52] 47 U.S.C. § 309(j)(8)(G); Spectrum Act § 6402. In any incentive auction, including the broadcast television spectrum incentive auction, the Commission must notify the appropriate committees of Congress of the methodology for calculating the amounts that will be shared with licensees that voluntarily relinquish spectrum usage rights. *Id.* § 309(j)(8)(G)(iv). In order for the Commission to accept a bid, at least two competing licensees must participate in a reverse auction to determine the amount of compensation for voluntarily relinquishing spectrum usage rights. *Id.* § 309(j)(8)(G)(ii).

[53] *See* Spectrum Act § 6403(a)(1).

channel with another licensee."[54] The amount of the proceeds shared under section 309(j)(8)(G)(i) with each licensee whose bid the Commission accepts may not be less than the amount of the bid.[55] The FCC must "take all reasonable steps necessary to protect the confidentiality of Commission-held data of a licensee participating in the reverse auction," including "withholding the identity of such licensee" until any reassignments and reallocations become effective.[56] Section 6403(a) also protects the carriage rights of broadcasters that participate in the reverse auction, providing that a participating broadcast television licensee that voluntarily relinquishes spectrum usage rights in order to share a television channel, and that previously possessed carriage rights, shall have at its shared location the same carriage rights that it would have at that location if it were not sharing a channel.[57]

29. Section 6403(b) of the Spectrum Act provides for reorganization of the broadcast television spectrum in conjunction with the incentive auction. Specifically, section 6403(b) directs the Commission to evaluate the broadcast television spectrum, including the spectrum made available through the required reverse auction, and authorizes the FCC, subject to international coordination along the border with Mexico and Canada, to "make such reassignments of television channels as the Commission considers appropriate," and to "reallocate such portions of such spectrum as the Commission determines are available for reallocation."[58] The right of a licensee to protest a proposed order of modification of its license under 47 U.S.C. § 316 does not apply in the case of a modification made under section 6403.[59]

30. Section 6403 also sets forth limitations for the Commission as it reorganizes or "repacks" broadcast television spectrum. In making any reassignments or reallocations under section 6403(b), "the Commission shall make all reasonable efforts to preserve, as of the date of the enactment of this Act, the coverage area and population served of each broadcast television licensee, as determined using the methodology described in OET Bulletin 69 of the Office of Engineering and Technology of the Commission."[60] In addition, the Commission may not involuntarily reassign a broadcast television licensee from a UHF to a VHF channel or from a high VHF (174 to 216 MHz) to a low VHF (54 to 88 MHz) channel.[61] Further, during a prescribed period,[62] the Commission may not involuntarily modify a

[54] Spectrum Act § 6403(a)(2).

[55] Spectrum Act § 6403(c)(1)(B).

[56] Spectrum Act § 6403(a)(3).

[57] Spectrum Act § 6403(a)(4).

[58] Spectrum Act § 6403(b)(1). The Spectrum Act preserves the Commission's broad spectrum management authority under the Communications Act. *See id.* § 6403(i)(1). In that regard, we note that in two previous instances, the Commission has reallocated UHF spectrum previously allocated for broadcast use for the development of land mobile communications, *see* Amendment of Parts 2, 89, 91, and 93; Geographic Reallocation of UHF-TV Channels 14 through 20 to the Land Mobile Radio Services for Use Within the 25 Largest Urbanized Areas of the United States, 23 FCC 2d 325, 337 (1970), and public safety and commercial wireless services. *See* Digital Television and Public Safety Act of 2005, which is Title III of the Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006) (*codified at* 47 U.S.C. §§ 309(j)(14) and 337(e)). These reallocations provided vital spectrum for the initial launch of the world's cellular services and, more recently, the world's first large-scale deployments using 4G Long-Term Evolution (LTE) technology, while preserving valuable broadcast uses.

[59] Spectrum Act § 6403(h).

[60] Spectrum Act § 6403(b)(2).

[61] Spectrum Act § 6403(b)(3).

[62] The prescribed period begins February 22, 2012, the date of enactment of the Spectrum Act, and ends on the earliest of: (A) the first date when the reverse auction, the reassignments and reallocations (if any), and the forward (continued….)

broadcast television licensee's spectrum usage rights or reassign it to another television channel except "(i) in accordance with [section 6403]; or (ii) in the case of a violation by a licensee of the terms of its license or a specific provision of a statute administered by the Commission, or a regulation of the Commission promulgated under any such provision."[63] These limitations potentially restrict the amount of spectrum that may be freed up for mobile broadband use.

31. In addition to imposing limits on the FCC's authority to reorganize the broadcast spectrum, section 6403(b) requires that the Commission "reimburse costs reasonably incurred by" broadcast television licensees that are reassigned to new channels, as well as multichannel video programming distributors (MVPDs) that incur costs in order to carry the signals of such reassigned licensees.[64] The reimbursements are for the costs of relocating television service from one channel to the other, not for lost revenues.[65] The maximum amount that may be available for reimbursements is $1.75 billion.[66] The FCC must make any reimbursements within three years of completing the forward auction.[67]

32. Section 6403(c) directs the Commission to conduct a forward auction in which it assigns licenses for the flexible use of the reallocated broadcast television spectrum.[68] No licenses may be assigned, and no reassignments or reallocations of broadcast television spectrum may become effective,

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auction "have been completed"; (B) the date the FCC determines that the forward auction proceeds do not meet the minimum proceeds requirement in section 6403(c)(2); or (C) September 30, 2022. Spectrum Act § 6403(g)(2).

[63] Spectrum Act § 6403(g)(1). During that same time period, the Commission may not reassign a licensee from a VHF channel to a UHF channel unless: "(i) such a reassignment will not decrease the total amount of [UHF] spectrum made available for reallocation under [section 6403]; or (ii) a request from such licensee for the reassignment was pending at the Commission on May 31, 2011." *Id.*

[64] Section 6403(b)(4)(A)(i) provides that "… the Commission shall reimburse costs reasonably incurred by . . . a broadcast television licensee that was reassigned under paragraph (1)(B)(i) from one [UHF] television channel to a different [UHF] television channel, from one [VHF] television channel to a different [VHF] television channel, or, in accordance with subsection (g)(1)(B), from a [VHF] television channel to an [UHF] television channel, in order for the licensee to relocate its television service from one channel to the other . . . ." Section 6403(b)(4)(A)(ii) provides that "the Commission shall reimburse costs reasonably incurred by . . . a multichannel video programming distributor in order to continue to carry the signal of a broadcast television licensee that—(I) is described in clause (i); (II) voluntarily relinquishes spectrum usage rights under subsection (a) with respect to an ultra high frequency television channel in return for receiving usage rights with respect to a very high frequency television channel; or (III) voluntarily relinquishes spectrum usage rights under subsection (a) to share a television channel with another licensee. . . ." As discussed below, section 6403(b)(4)(A)(iii) also provides for reimbursement of any relocation costs of channel 37 incumbent users.

[65] Spectrum Act §§ 6403(b)(4)(A)(i), (b)(4)(C). In lieu of reimbursement for relocation costs, "a broadcast television licensee may accept, and the Commission may grant as it considers appropriate, a waiver of the service rules of the Commission to permit the licensee, subject to interference protections, to make flexible use of the spectrum assigned to the licensee" so long as the licensee continues to provide at least one broadcast television program stream on such spectrum at no charge to the public. Spectrum Act § 6403(b)(4)(B).

[66] *See infra*, Section X.B.

[67] *Id.* § 6403(b)(4)(D). Any funds remaining in the TV Broadcaster Relocation Fund must be transferred out three years after completion of the forward auction, to the Public Safety Trust Fund (if transferred prior to the end of fiscal year 2022) or to the general fund of the Treasury and dedicated for the sole purpose of deficit reduction (if transferred after the end of fiscal year 2022). Spectrum Act §§ 6403(d)(4)(A), (B).

[68] Spectrum Act § 6403(c)(1). *See also* 47 U.S.C. § 309(j)(8)(G)(i); Spectrum Act § 6402 (allowing the Commission to encourage licensees to voluntarily relinquish spectrum usage rights in order to permit the assignment of new initial licenses subject to flexible use service rules).

unless the proceeds of the forward auction exceed the sum of (1) the total amount of compensation that the FCC must pay successful reverse auction bidders, (2) the estimated relocation costs the FCC must reimburse, and (3) the costs of conducting the broadcast television spectrum incentive auction.[69] In conducting the forward auction, "the Commission shall consider assigning licenses that cover geographic areas of a variety of different sizes."[70]

33. The Commission may conduct the reverse auction under section 6403(a), any reassignments or reallocations under section 6403(b), and the forward auction under section 6403(c) at the same time.[71] In addition to the financial requirements noted above, the Spectrum Act directs that no reassignments or reallocations may become effective until the completion of the reverse auction and the forward auction, "and to the extent practicable all such reassignments and reallocations shall become effective simultaneously."[72] The Spectrum Act also designates that certain proceeds from the incentive auction must be deposited in the Public Safety Trust Fund established by section 6413.[73] The Commission may not conduct the reverse auction under section 6403(a) or the forward auction under section 6403(c) after the end of fiscal year 2022.[74] In addition, the Commission may not complete more than one reverse auction under section 6403(a) or more than one reorganization of the broadcast television spectrum under section 6403(b).[75]

34. *International Considerations.* As Congress recognized in the Spectrum Act, the broadcast television spectrum incentive auction will involve technical coordination with Canada and Mexico.[76] More specifically, we must coordinate any changes in the authorizations of television stations operating in the border regions with Mexico and Canada. In addition, since wireless broadband operations are not currently allowed in the UHF band, new arrangements will have to be negotiated with Canada and Mexico to allow such operations in United States territory along the common borders. Because of our shared border with Canada and Mexico, the Commission routinely works in conjunction with the United States State Department, Canadian and Mexican government officials to ensure efficient use of the spectrum as well as interference-free operations in the border areas.[77] For example, bilateral

[69] Spectrum Act § 6403(c)(2). More specifically, section 6403(c)(2)(B)(ii) refers to "the costs of conducting such forward auction that the salaries and expense account of the Commission is required to retain under section 309(j)(8)(B) of the Communications Act of 1934." *Id.* § 6403(c)(2)(B)(ii). The statute also provides that such costs include the costs incurred by the Commission in conducting the reverse auction, the evaluation of the broadcast television spectrum, any reassignments or reallocations, and the forward auction. *Id.* 6403(c)(2)(C).

[70] Spectrum Act § 6403(c)(3).

[71] Spectrum Act § 6403(f)(1).

[72] Spectrum Act § 6403(f)(2). Section 6403 does not define "completion" of the reverse and forward auctions, but it makes satisfaction of the minimum proceeds requirements in section 6403(c)(2)(A) a precondition to revocation of any spectrum usage rights based on a reverse auction bid, assignment of any licenses through the forward auction, and effectiveness of any reassignments or reallocations. Spectrum Act § 6403(c)(2)(A).

[73] *See* Spectrum Act §§ 6401(c)(4), 6402, 6413.

[74] Spectrum Act § 6403(f)(3)-(4).

[75] Spectrum Act § 6403(e).

[76] *See* Spectrum Act § 6403(b)(authorizing such reassignments of television channels as the Commission considers appropriate, and reallocation of such spectrum as it determines is available for reallocation, subject to international coordination along the border with Mexico and Canada).

[77] The Commission works with other federal government agencies, foreign governments, and international organizations to promote standards and regulations that ensure optimal delivery of existing technology services, foster innovative implementation of new services and harmonize spectrum when appropriate. The initiation, rate of adoption, and degree of implementation for any new technology or use of spectrum often varies between countries.

arrangements governing territory in these areas afford each country the opportunity to develop digital television services, and to reallocate the 700 MHz spectrum for non-broadcast use, at implementation rates consistent with each country's prevailing intent.[78] These arrangements also provide for the establishment of new services, protection of new and existing services from cross-border interference, and the seamless integration of new services within each country's domestic agenda. It is the Commission's intent to work with the U.S. Department of State and telecommunications officials in Mexico and Canada on new bilateral instruments, as appropriate, to provide for flexibility in these frequency bands to our mutual benefit.

III. PROPOSED AUCTION DESIGN

35. In this section, we address auction design issues for the broadcast television spectrum incentive auction. The reverse and forward auctions present different challenges, but both can be discussed in terms of three basic auction design elements: (i) bid collection procedures that determine how bids in the auction are gathered, (ii) assignment procedures that determine which bids are accepted, and (iii) pricing procedures that determine what each bidder pays, or in the case of the reverse auction, receives in payment. The other major component of the incentive auction—the repacking—will help to determine which reverse auction bids we accept and, therefore, is discussed below in connection with reverse auction assignment procedures.[79]

36. We discuss these auction design issues at a high level in this section and seek comment on them. At the end of this section, we also seek comment on an Incentive Auction Rules Option and Discussion report illustrating one potential approach to addressing all of the auction design issues presented in an integrated manner.[80] In section IX below, we seek input on rules that are broad enough to encompass the specific auction design choices presented. As is typical with FCC auction proceedings, we anticipate issuing a series of public notices in the future that will provide additional opportunities for interested parties to comment on incentive auction design issues. We also intend to conduct webinars and other educational sessions regarding auction design issues for broadcasters to assist them as they participate in the comment process and in making informed decisions about participating in the reverse auction. As stated above, the Commission already has undertaken numerous efforts to reach out to broadcasters concerning the opportunities presented by the incentive auction and to obtain their feedback. We intend to continue these outreach efforts following the release of this Notice. We invite broadcasters' input on how to design the incentive auction so as to facilitate their participation and make it as easy as possible for them to submit successful bids, as well as how to structure the auction and repacking to take into account the interests of broadcasters that will not participate in the auction. In considering the auction design issues below, we also ask commenters to keep in mind their interrelated nature, as well as the different trade-offs they pose.

A. Reverse Auction and Broadcaster Repacking

37. The reverse auction will collect information about the price at which broadcast television spectrum can be cleared. This information, together with information from the forward auction, will enable the FCC to identify a set of bidders that would voluntarily relinquish spectrum usage rights and the

[78] 1998 USA-Mexico DTV Memorandum of Understanding, the 2000 USA-Canada DTV Letter of Understanding, 2008 USA-Canada DTV Exchange of Letters, the 2011 USA-Canada 700 MHz Commercial Land-Mobile Arrangement (Arrangement O), 2005 USA-Canada 700 MHz Public Safety Land Mobile Arrangement and the 2006 USA-Mexico 700 MHz Protocol for Non-Broadcast Use. Both Canada and Mexico are still undergoing the transition to digital television.

[79] We consider technical aspects of the repacking process in section V below.

[80] This report, which is attached as Appendix C, was prepared at the request of Commission staff by auction experts retained by the FCC.

compensation each would receive. In economic terms, the reverse auction is the supply side of the market for repurposed broadcast television spectrum. The reverse auction will incorporate the three basic auction design elements identified above: it will collect bids, determine which bids are accepted as winning bids, and determine the payments made for those winning bids. The determination of which bids will be accepted depends, in part, on the repacking, as explained below.[81]

1. Bid Collection Procedures

38. Here we discuss two options for the first auction design element, that is, collecting bids to voluntarily relinquish spectrum usage rights in the reverse auction. These relinquishments may include going off the air, sharing a channel, or moving to a lower broadcast television band. The first option is a single round sealed bid procedure, in which bidders would specify, during a single bidding round, the payment they would be willing to accept in exchange for relinquishing various spectrum usage rights.

39. The second option is a multiple round, or dynamic, procedure in which bidders would indicate their willingness to accept iteratively lower payments in exchange for relinquishing rights. For example, in a descending clock auction prices would start high and decline over time. As the price ticks down, stations would indicate whether they would be willing to relinquish certain spectrum rights at the current prices. Those that would still be willing to relinquish rights would remain active in the clock auction, while those that found the current prices for all the relinquishment options too low would decline all the offers, exit the auction, and continue broadcasting in their pre-auction band.[82] The exit decision would be irreversible. We could also offer bidders the option of submitting a "proxy bid" in advance of the clock auction indicating the minimum payment they would be willing to accept in exchange for relinquishing spectrum rights, making it possible for bidders to submit bids just once. The clock auction would then use the proxy bid to generate and submit bids dynamically on behalf of the bidder.

40. From the point of view of bidders, a dynamic procedure such as a clock auction with the option of making proxy bids may be preferable to a single round sealed bid procedure. A dynamic format does not require broadcasters to determine an exact bid at the beginning of the auction. They only need to determine their willingness to relinquish rights at the current price, which may make participation simpler and less expensive for bidders. On the other hand, the single round sealed bid procedure may require less complex software than a multiple round auction and thus be easier for the FCC to implement. We seek comment on these and any other bid collection procedure options commenters may suggest. Commenters advocating a particular option should address its advantages and disadvantages, including cost to bidders and how it would work with the other elements of the reverse auction.

2. Assignment Procedures

41. *Assignment Procedures in General*. The second auction design element—the assignment procedures used to decide which bids are accepted and which are rejected, thereby determining which stations remain on the air—is significantly more complicated in this reverse auction than in a typical auction. We must solve a complex engineering problem by determining how stations that retain their current spectrum usage rights are assigned channels ("repacked"), taking into account relinquishment options including channel sharing and moves from a UHF to a VHF channel, and consistent with statutory requirements and other constraints. We consider engineering and other technical aspects of the repacking process in section V below, but here we discuss briefly the repacking process as it relates directly to the assignment procedures.

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[81] *See* Section III. A. 2.

[82] For purposes of this Notice, we define "pre-auction bands" as including Lower VHF (TV channels 2-6), Upper VHF (TV channels 7-13), and UHF (TV channels 14 and above).

42. We must also analyze whether and how to consider factors in addition to bid amounts in determining which bids are accepted and which are rejected. In a reverse auction where bidders are offering the same good, minimizing the cost of procuring that good leads to a straightforward rule for determining winners: the lowest bids win. When the goods being offered are not homogenous, however, bids are sometimes weighted or scored to account for factors in addition to bid amount. The goods offered in the reverse auction of broadcast television spectrum will not be homogenous. For example, some stations have larger coverage areas and serve greater populations than others, affecting both their economic value to broadcasters and the effect of repacking them. Broadcast stations' bids in the reverse auction could be assigned a score incorporating such factors. Bids from stations that would make the repacking more difficult because they would block more potential channel assignments to other stations could receive a lower score, for example, making them more likely to have their bids accepted and, equivalently, less likely to be assigned a channel in their pre-auction band. The score could also be designed to reflect the fact that the value of a broadcasting license depends in part on its population served. For a bid to move to VHF, the score may also account for the scarcity of VHF spectrum in the station's broadcast area. Selecting bids and paying winning bidders in relation to their population served or other indicators of value may reduce the cost of clearing broadcast television spectrum.[83]

43. *Incorporation of Repacking Into the Assignment Procedures*. Repacking stations, which involves determining whether it is feasible, given the applicable constraints, to assign a collection of stations channels in a particular band, is part of the process for determining which broadcaster bids will be accepted in the reverse auction, which bids will not be accepted and what channel numbers will be assigned to the stations that will remain on the air. It may be helpful to think of the repacking of stations with different service areas and bid values into the broadcast television spectrum as being analogous to the process of packing boxes into a trunk when these boxes have different sizes and values.

44. We have considered two alternative assignment procedures. The first uses an integer programming "algorithm" (a mathematical recipe for solving a problem). The second uses a simpler mathematical recipe that we will refer to as a "sequential" algorithm.[84] Each involves the application of objective criteria to determine, using the analogy above, the best way to pack the trunk.

45. *Integer Programming Algorithm Approach to Establishing Assignments*. The first procedure would use computer optimization software to try to find the most efficient way of clearing a specified amount of broadcast television spectrum while satisfying all applicable constraints. Integer programming is a collection of mathematical algorithms that work to find and prove that a feasible solution has the best objective value of all feasible alternatives. In this case the software would, for a specified amount of spectrum to be cleared, minimize the sum of the reverse auction bids accepted and the relocation costs of stations that are reassigned to new channels. Due to the complexity of the problem, an "ideal" or provably optimal repacking solution using an integer programming model may not be feasible in a timely manner.[85] It may be possible, however, to calculate a close approximation to the

[83] Selecting bids based on the price per covered-population basis may promote greater competition among bidders to the extent that station values depend on population coverage. For example, if a Class A station that covers a small population were bidding against a full power station that covers a large population and they both submitted the same total bids, the FCC would select the full power station because the cost per population was less (because the bid amount is spread across a larger population). This would ensure that the Class A station's bid would only be competitive if it is low enough relative to full power stations on a per population basis

[84] In the computer science literature such algorithms are referred to as "heuristics" because in searching for the best solution they consider a limited set of alternatives and use relatively simple rules at each step to choose among those alternatives.

[85] The optimization approach, when stopped prior to proving that the solution is optimal, still provides a measure of optimality. Because speed will be an important goal of the broadcast television spectrum incentive auction, we propose to accept solutions that are within a certain tolerance of optimality if we adopt an optimization approach.

optimal solution in a reasonable amount of computing time. The approximate repacking solution may be highly efficient– coming close to minimizing the total bids of the cleared stations, given the amount of spectrum cleared– but it may be less than fully transparent, since the results cannot easily be replicated.[86] This procedure also does not generally minimize the FCC's cost of clearing or maximize the amount of spectrum cleared if the pricing rule does not pay winners their bid amounts, or if the pricing rule does pay winners their bid amounts but the bidders recognize their incentives to bid above their true values under this pricing rule.

46. *Sequential Algorithm Approach to Establishing Assignments*. A second approach whose results may be easier to replicate is to sequentially determine, again based on objective criteria, which stations should be assigned a channel, starting with stations that do not participate in the auction. For stations that do participate in the auction, the determination would be based on the scored bids from highest to lowest, as long as the station can feasibly be assigned a channel. In a descending clock auction, each bidder is faced with a declining sequence of price offers for relinquishing spectrum rights. The bidder can choose to accept an offer, or reject all offers. Once a bidder rejects all offers, it exits the auction and is assigned to its pre-auction band. Prior to each auction round, the auction software determines for each station that has not exited whether it can feasibly be assigned to its pre-auction band, given the assignments of other stations. If a station *cannot* feasibly be assigned to its pre-auction band, its compensation is set at the last price offer it accepted for its last preferred relinquishment option. Each station that *can* be assigned to its pre-auction band (but has not exited) submits a bid indicating its preferred relinquishment option at the (reduced) current prices. The rounds continue until every station has either exited the auction or can no longer be assigned to its pre-auction band. When the rounds stop, every bidder that has not exited receives its last preferred relinquishment option. Bidders that have exited and stations that did not participate are assigned specific channels in their pre-auction bands.[87] This sequential algorithm can also be implemented in a sealed-bid auction. At the beginning of each step of the sequential algorithm, for each station that has not yet exited, it would be determined into which bands the station could be feasibly moved. Among all such feasible moves, the algorithm would implement the move that minimizes cost on a scored basis. The process would continue until either the available spectrum is fully packed or there are no more stations to consider. Stations not selected to remain on the air in their pre-auction band would be paid to voluntarily relinquish their broadcasting rights.

47. These alternative assignment algorithms present tradeoffs in terms of simplicity, transparency and efficiency that must be considered in determining the auction design. We seek comment on these options.

48. We further seek comment on whether we should consider in the repacking and assignment procedures whether a given broadcaster going off the air would create areas without any commercial or noncommercial broadcast television service.[88] Adding an additional technical constraint

[86] It should be possible to verify that the solution arrived at using the integer programming algorithm approach is within some percentage of the maximal value, although other possible solutions also may satisfy this criterion.

[87] Integer programming can be used to determine the feasibility of an assignment to a band and to make specific channel assignments.

[88] Section 307(b) of the Act requires the Commission to "make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same." 47 U.S.C. § 307(b). Pursuant to this mandate, the Commission has strongly disfavored modification of a station's facilities that would create a "white" or "gray" area (an area where the population does not receive any over-the-air television service or only one over-the-air service, respectively), or an "underserved" area (where the population in the loss area would receive less than five over-the-air television signals). *See Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF,* ET Docket No. 10-235, Notice of Proposed Rulemaking, 25 FCC Rcd 16498, 16507, para. (continued….)

would increase the complexity of the repacking process, possibly requiring additional time and resources and limiting the efficiency of the outcome. How great is the risk of creating "white" or "gray" areas where the population receives little or no over-the-air television service as a result of the reverse auction? Should we seek to address any such risk as an auction design matter or through other steps outside of the incentive auction?

49. We note that, in June 2010, in conjunction with the National Broadband Plan, the Omnibus Broadband Initiative released Technical Paper No. 3: Options for Broadcast Spectrum, which examined different potential methodologies for repacking broadcast spectrum. Technical Paper No. 3 included a discussion of an Allotment Optimization Model ("AOM"), which applied optimization techniques to assign channels to television stations in a repacking process. The AOM discussed in Technical Paper No. 3 was an "alpha" version based on several simplifying assumptions about broadcast interference; it did not incorporate the methodology in OET Bulletin 69 which the Spectrum Act requires be used in the repacking. Moreover, many of the proposals in this Notice will have a direct bearing on the repacking methodology we adopt. Thus, the AOM in Technical Paper No 3 may have limited or no applicability to this proceeding.

50. Commission staff has continued work on repacking methodologies since June 2010, and further evaluation in light of the technical, policy and auction design issues discussed in this Notice will be required. We recognize that the approach to assigning broadcast television channels in this proceeding is novel, especially because it is part of the incentive auction process. We also recognize that it is vital to get input from all stakeholders. The Commission staff intends to reach out to engage all stakeholders on issues related to repacking methodologies, in order to ensure transparency and share ideas and information, and we seek comment on the best timing and agenda for such a process. We expect that, as with other issues regarding the auction process, interested parties will have an opportunity for meaningful comment on all specific methodologies that we are considering before we make a final decision.

3. Procedures to Determine Payments

51. The reverse auction must also determine the amount paid to winning bidders for relinquishing their spectrum rights. Some reverse auctions pay the winning bidder the amount of its bid. Another mechanism, known as "threshold" pricing, would pay a winning bidder the highest amount it could have bid and still have had its bid accepted, as illustrated in Appendix C. Threshold pricing gives bidders an incentive to bid its station's value regardless of the bids submitted by others: if it bids an inflated value, it may forfeit the opportunity to be bought out at a price at least as high as the station's value, and if it bids an understated value, it may relinquish its rights at a price below the station's value.

52. Above we discussed options for conducting the reverse auction in a single round or in a multiple round clock format. We anticipate that in a clock format, a bidder that has its bid to relinquish spectrum rights accepted would be paid the threshold price, which is the prevailing clock price at the time its bid is accepted. In a sealed bid format, we could determine payment either using the bid amount, or the threshold price. In choosing between these payment procedures, we will consider such factors as their likely impact on the cost to the government of clearing spectrum, the efficiency of assignment, whether they would increase the complexity of implementing the assignment process, what impact they may have on bidder incentives, and whether they would encourage participation in the reverse auction. We seek comment on the choices discussed above, the factors we should consider in deciding between them, and on any other considerations we should take into account.

(Continued from previous page)
26 (2010) (*Channel Sharing NPRM)*. Conversely, the FCC generally regards loss of service of marginal significance if the area is "well-served" by five or more signals. *KCRA License Corp*., 15 FCC Rcd 1794, 1802 (1999).

53. *Reserve Price*. As discussed in more detail in section IX below on proposed auction rules, we also will consider implementing a reserve price, or maximum payment, that would be made to broadcasters relinquishing spectrum usage rights. This reserve price could take the form of a maximum dollar payment to a broadcaster based on characteristics of the station such as population or viewership. We seek comment on the use of a reserve price, and the way it should be calculated.

B. Forward Auction

54. The forward auction will identify the prices that potential users of repurposed spectrum would pay for new licenses to use the spectrum. With this information, together with information from the reverse auction, we can determine the winning bidders for new flexible use licenses and the prices those bidders would pay. In economic terms, whereas the reverse auction defines the supply side of the market, the forward auction defines the demand side. The forward auction piece of the broadcast television spectrum incentive auction will differ from the typical spectrum license auction in which a fixed quantity of spectrum is licensed based on a band plan defined in the service rules. The licenses available in the forward auction will depend upon how much spectrum the reverse auction clears in specific geographic areas.[89] That interrelationship may require that the forward auction be conducted in stages, with bids collected for different numbers of potentially available licenses.

55. The forward auction will incorporate the three basic auction design elements discussed above: bid collection procedures, assignment procedures, and procedures to determine the prices that winning bidders will pay. Options for each of these elements are considered in turn below.

1. Bid Collection Procedures

56. *Items Available For Bid*. The FCC's typical spectrum license auctions have collected bids specific to a frequency block in a geographic area. That is, in auctions with multiple blocks of spectrum available, bids were collected separately for each block in each geographic area. Alternatively, where there are multiple blocks of spectrum available in a geographic area, as we expect to be the case in the forward auction, we could collect bids for one or more "generic" categories of licenses, such as paired or unpaired licenses, in a geographic area. Rather than indicating that a bid is for a specific frequency block in an area, bidders would indicate their interest in, for example, one or more paired 5 megahertz uplink and 5 megahertz downlink ("5 +5") blocks.[90]

57. *Multiple Round Bidding Formats*. We propose to collect forward auction bids using a dynamic auction design format, for the same reasons that we typically use a multiple round ascending auction design in spectrum license auctions. Multiple rounds permit a process of price discovery, allowing bidders to modify their bidding strategies in response to changes over the course of the auction in the absolute and relative prices of different licenses.

58. Two dynamic format options for the forward auction are a simultaneous multiple round ascending (SMR) auction and an ascending clock auction. In each, a bidder would indicate the license or licenses it seeks in a series of ascending price rounds, and would be required to satisfy an activity requirement, which provides an incentive for consistent bidding throughout the auction. The two formats differ in several ways.

59. As indicated above, bidders submit price bids for specific licenses in the SMR design typical of past FCC auctions. At the end of each round the FCC identifies a provisionally winning bidder for each license that has received bids. When the auction closes (typically after a round passes where there are no new bids on any licenses), the provisionally winning bids become final.

[89] *See infra*, Section VI.

[90] *See id.*

60. In contrast, in an ascending clock auction format the FCC would announce prices for generic licenses in each category in each geographic area, and bidders would submit quantity bids for the number of licenses they seek. Prices may differ across categories and geographic areas, but within each category in each geographic area every license would sell at the same price. If total demand for the licenses in a category exceeds supply, the price would be increased for the next round, but no provisional winners would be chosen. The rounds would continue until demand for licenses no longer exceeds supply. In a clock auction, when prices are increased between rounds, the quantity of licenses sought by bidders could fall so much in a category that instead of exceeding the supply, the demand is less than the supply. This possibility of overshooting can be avoided by permitting intra-round bidding, whereby bidders can indicate their change in demand in each category at specified prices between the opening and closing prices in each round.

61. Bidding for generic blocks would be expected to speed up the forward auction, reducing the time and, therefore, the cost of bidder participation, since bidders would no longer need to iteratively bid on the least expensive of several specific but substitutable licenses, as in a typical FCC SMR auction. We believe that speed is important to the successful design of the incentive auction for a number of reasons, including the interdependence of the reverse and forward auctions.

62. *Package Bidding*. Bid collection procedures in the forward auction could include provisions for package bidding—that is, bidders could be permitted to indicate a single, all-or-nothing bid amount that would apply to a group of licenses, such as more than one block in a geographic area or the same block in multiple geographic areas. Package bidding could be particularly helpful to bidders that face a risk of winning certain licenses but losing complementary licenses they consider essential to their business plans. Package bidding options generally complicate an auction, although such complexity can be limited if certain restrictions apply to the ways bidders can group licenses. Package bidding could take a number of specific forms, and its feasibility and potential usefulness to bidders would depend on auction design details. We seek comment on whether bidders are likely to have interests, such as those mentioned above, that may be addressed by package bidding, and on how package bidding options might work with the other auction design elements discussed herein.

2. Assignment Procedures

63. For the forward auction, the assignment procedures will determine which bidders win which new licenses to use repurposed broadcast television spectrum, with the number of available licenses in the forward auction depending on the quantity of spectrum recovered from the reverse auction. In general, winning forward auction bidders will be those that place the highest bids on the available licenses. If bidders are allowed to specify packages or other contingencies, the assignment procedures would take those conditions into account in determining a set of best bids that are consistent with our forward auction objective of maximizing the aggregate amount of the bids that we accept for the available licenses.

64. We anticipate that if generic blocks are made available in the forward auction, the assignment procedures would assign contiguous blocks to bidders that bid for multiple blocks in the same geographic area and could take into account the need to coordinate frequencies across adjacent areas. There could also be an additional auction phase to assign specific frequencies for generic licenses, which could be based on accepting additional bids. The specific frequencies that will be available in each area will be determined by the incentive auction process itself, and bidding on generic blocks facilitates conducting an auction given those interdependencies. Further, as noted above, bidding based on generic blocks will speed completion. We invite comment on these proposals and, alternatively, on how we could conduct an auction that would allow bids on specific frequencies rather than generic blocks

3. Procedures to Determine License Prices

65. Generally, under the two forward auction design formats discussed above, the SMR-type auction and a clock auction, final license prices would be the highest amount bid for the license. If there is an additional auction phase to assign specific frequencies for generic licenses, we would need additional procedures to determine license prices. We invite comment on these issues.

C. Integration – Putting the Reverse and Forward Auction Components Together

66. The reverse and forward auctions must be integrated to determine how much broadcast television spectrum is to be cleared and licensed for new uses. The timing of the reverse and forward auctions will affect the information available when bidding in each auction, and may also affect the length of the auction process.

67. An option that would provide reverse and forward auction bidders relevant information from the other side of the market while they are bidding would be to run the reverse and forward auctions concurrently in a series of stages. In each stage, the FCC would specify a provisional quantity of spectrum to be cleared in the reverse auction and a corresponding quantity of new licenses available in the forward auction. The first stage would be conducted with the provisional quantities set at the maximum possible amount of spectrum. We would compare the provisional outcomes of the forward and reverse auctions and determine whether the auction closing conditions had been met —for example, the closing conditions would fail if total clearing costs in the reverse auction were greater than the revenue from the forward auction.[91] If the closing conditions are met, the incentive auction process would end. If not, we continue running the forward auction to see if the closing conditions can be met. If the closing conditions cannot be met, another auction stage would be run, this time using a smaller provisional quantity of cleared spectrum and correspondingly smaller number of licenses available in the forward auction. If closing conditions were met at the end of this stage, the process would end. If not, additional stages would be run with the quantity of spectrum sought to be cleared further reduced, until the auction results met them. In addition to providing both reverse and forward auction participants with relevant information from the other side of the market while they are bidding, this approach is likely to take less time than conducting the auctions sequentially.

68. If the reverse and forward auctions are run sequentially, conducting the reverse auction first may be preferable, because it would allow greater certainty about the number of licenses available in each geographic area in the forward auction, based on broadcaster participation in the reverse auction. We invite comment on these issues.

69. *Closing Conditions*. As indicated above, the Spectrum Act requires that the forward auction generate proceeds sufficient to pay successful bidders in the reverse auction, cover the Commission's administrative costs, and cover the estimated costs of reimbursements required by the statute.[92] We seek comment on the best way to implement this statutory requirement, and whether there are additional statutory, policy or other considerations that should be addressed in establishing the closing conditions.

70. *Auctionomics and Power Auctions Report*. The Commission has attached, as Appendix C, a proposal developed by our team of expert auction consultants. It suggests an integrated approach to the broadcast television spectrum incentive auction: a reverse auction using a descending clock auction procedure using a sequential algorithm approach for repacking to determine supply; a forward auction using an ascending clock auction format to determine demand; and a clearing rule which links the outcome of the forward and reverse auctions by establishing closing conditions. This proposal illustrates

[91] *See* Spectrum Act § 6403(c)(2) (minimum proceeds requirements for closure of the forward auction).

[92] *Id.*

one potential approach to addressing the auction design issues discussed above, and we invite comment on it, as well as other proposed approaches.

71. *Cost-Effectiveness Analysis*. In connection with our Regulatory Impact Analysis, we also seek comment on the cost-effectiveness of the various auction design elements discussed in this section. In particular, are there auction design choices we can make that would make it significantly less costly for bidders to participate in either the reverse or the forward auction? Are there hidden costs associated with any of the auction design elements of which we should be aware?

IV. REVERSE AUCTION—ELIGIBILITY AND BID OPTIONS

72. In this section we solicit comment on reverse auction participation by broadcast television licensees. Our goal is to permit as many broadcasters to participate in the reverse auction as possible consistent with the Spectrum Act and our existing policies and rules.

A. Eligibility

73. The Spectrum Act makes full power and Class A broadcast television licensees eligible to participate in the reverse auction,[93] but not low power television stations.[94] Section 6403 of the Spectrum Act requires "a reverse auction to determine the amount of compensation that each *broadcast television licensee* would accept in return for voluntarily relinquishing some or all of its broadcast television spectrum usage rights."[95] The Spectrum Act specifically defines "broadcast television licensee" as "the licensee of (A) a full-power television station; or (B) . . . a Class A television station."[96]

74. Moreover, limiting reverse auction participation to full power and Class A broadcast television licensees is consistent with other Spectrum Act provisions and with our broadcast rules and policies generally. In particular, as discussed in section V below, section 6403(b)(2) of the Spectrum Act requires "all reasonable efforts" by the Commission to preserve the coverage area and population served of full power and Class A television licensees only.[97] This statutory mandate is consistent with our rules, under which full power and Class A television stations enjoy "primary" status[98] and, therefore, must be protected from interference by other primary and secondary facilities. Similarly, only full power and Class A television licensees are eligible for reimbursement of their relocation costs pursuant to the Spectrum Act.[99] In contrast, the Spectrum Act neither mandates protection of low power television stations during the repacking process nor eligibility for reimbursement.[100] Likewise, our rules and policies provide these facilities only secondary interference protection status, under which they receive no

[93] As discussed further below, our proposal extends to Class A stations regardless of whether they are analog or digital facilities.

[94] We use the term "low power television stations" herein to refer to low power television and television translators, but not to Class A television stations.

[95] Spectrum Act § 6403(a)(1) (emphasis added).

[96] *Id.* § 6001(6).

[97] *Id.* § 6403(b)(2).

[98] *See Establishment of a Class A Television Service*, MM Docket No. 00-10, Report and Order, 15 FCC Rcd 6355, para. 1 (2000) (*Class A R&O)*, Memorandum Opinion and Order on Reconsideration, 16 FCC Rcd 8244 (2001) *(Class A Recon.)*; 47 C.F.R. §§ 73.623, 73.6018, 74.793.

[99] Spectrum Act § 6403(b)(4)(A)(i) (requiring reimbursement of certain "broadcast television licensee[s]"); *see also id.* § 6001(6).

[100] *Id.* § 6403(b)(5) ("Nothing in this subsection shall be construed to alter the spectrum usage rights of low-power television stations.").

protection against interference received from primary users[101] and must resolve any interference caused to new, existing, or modified primary users, including going off the air if necessary.[102]

75. We note that Class A television stations must continue to meet the Community Broadcasters Protection Act of 1999 (CBPA) eligibility criteria in order to retain Class A status,[103] or else they are subject to modification of their license to low power television status.[104] We propose that Class A television licensees whose status has been changed from Class A to low power television will be ineligible to participate in the reverse auction—like all other low power television stations.[105]

76. Television licensees operating on noncommercial educational (NCE) reserved channels, as well as licensees operating with NCE status on non-reserved channels, would be eligible to participate in the reverse auction under our proposed approach.[106] The Spectrum Act grants eligibility to any full power or Class A "broadcast television licensee" without limitation as to commercial status.[107] Furthermore, the statute includes language specifically protecting the cable and satellite carriage rights of channel sharing NCE stations, thus indicating that Congress intended NCE stations to be eligible for reverse auction participation.[108] We anticipate that reverse auction participation by NCE licensees will promote the overall goals of the broadcast television spectrum incentive auction and serve the public interest by providing NCE licensees with opportunities to strengthen their financial positions and improve their service to the public.

77. We also propose to make eligible to participate in the reverse auction an entity that held an original construction permit for a full power television station on February 22, 2012, the date of

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[101] *See*, *e.g.*, *Digital Low Power Television, Television Translator, and Television Booster Stations and Digital Class A Television Stations*, Report and Order, 19 FCC Rcd 19331, 19332, para. 2 (2004) ("Stations in the low power television service are authorized with "secondary" frequency use status. These stations may not cause interference to, and must accept interference from, full-service television stations, certain land mobile radio operations and other primary services." (citing 47 C.F.R. §§ 74.703, 74.709, 90.303)).

[102] *See* 47 C.F.R. §§ 74.703 and 74.709.

[103] *See* CBPA, Pub. L. No. 106-113, *codified at* 47 U.S.C. § 336(f)(1)(A)(ii). In order to qualify for Class A status, the CBPA provides that, during the 90 days preceding enactment of that statute, a low power television station must have: (1) broadcast a minimum of 18 hours per day; (2) broadcast an average of at least three hours per week of programming produced within the market area served by the station; and (3) been in compliance with the Commission's rules for low power television stations. *See* 47 U.S.C. § 336(f)(2)(A)(i). Class A stations are also required to comply with certain full power television rules to maintain their Class A status. *Id*. § 336(f)(2)(A)(ii).

[104] *See*, *e.g.*, *Reclassification of License of Class A Television Station WGSA-CA, Savannah, Georgia*, Order to Show Cause, 27 FCC Rcd 2544 (MB 2012) (station silent almost continuously for the past three years subject to potential loss of Class A status for failing to meeting ongoing Class A eligibility obligations).

[105] Our proposal would apply whether or not the modification order is final and unappealable.

[106] We do not designate Class A television station licenses as NCE, although Class A licensees may operate their stations on a noncommercial basis.

[107] *See* Spectrum Act §§ 6006(6), 6403(a)(1).

[108] Section 6403(a)(4) of the Spectrum Act protects the "carriage rights under section … 615 of the Communications Act" of licensees that relinquish spectrum usage rights in order to share a channel. Section 615 applies only to NCE stations. *See* 47 U.S.C. § 535. Although the Communications Act exempts NCE stations from the FCC's general authority to grant "initial licenses or construction permits" through competitive bidding, *id.* § 309(j)(2)(C); *see NPR v. FCC*, 254 F.3d 226, 229 (D.C. Cir. 2001) ("the [Communications] Act unambiguously forbids the Commission from requiring NCEs to participate in auctions to obtain licenses for any channel, reserved or unreserved."), that exemption does not apply to the voluntary relinquishment of spectrum usage rights pursuant to section 6403(a).

enactment of the Spectrum Act, if it obtains a license by the commencement of the auction process.[109] We believe that this proposal is consistent with the language of the Spectrum Act, which authorizes reverse auction participation by licensees, and with our goal of maximizing the amount of spectrum available in the reverse auction.[110] We seek comment on this proposal.[111]

78. In contrast, we propose to make full power and Class A television licensees with expired, cancelled or revoked licenses ineligible to participate in the reverse auction.[112] This proposal includes license expirations and cancellations resulting when a station ceases operations for longer than one year,[113] when its license renewal application has not been filed prior to the license expiration date,[114] when the licensee has failed to timely construct a post-DTV transition facility,[115] and when a pending enforcement action has led to an initial decision to revoke or not to renew the license. We see no justification for compensating a broadcaster for relinquishing spectrum usage rights to which it may no longer be entitled. We invite comment on these matters.

79. We must also determine which spectrum usage rights an eligible licensee will be bidding to relinquish if it has a construction permit or a pending application for a construction permit to modify its authorized facilities or, in the case of a Class A station, has not yet completed its digital transition. With regard to full power stations, we propose to entertain bids to relinquish only the spectrum usage rights associated with the license held by such stations as of February 22, 2012. We believe that this proposal conforms to the Spectrum Act mandate that we make all reasonable efforts to preserve the coverage area

[109] Specifically, such a permittee would have to obtain a license by the date on which it submits its pre-auction short-form application under our proposal.

[110] *See* Spectrum Act § 6403(a)(1); 47 U.S.C. § 309(j)(8)(G)(i). *See also* Spectrum Act § 6403(b)(2) (requiring "all reasonable efforts" to preserve the coverage area and population served of each broadcast television licensee as of the date of enactment of the Spectrum Act). Also, this proposal is consistent with our decision in the *Channel Sharing Report and Order* to allow the holder of an original construction permit to execute a channel sharing agreement so long as it completes construction of its facilities and receives a license prior to the commencement of the auction process. *See Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to the VHF,* ET Docket No. 10-235, Report and Order, 27 FCC Rcd 4616, 4628, para. 21 (2012) (*Channel Sharing Report and Order*).

[111] We note that only three construction permits for new stations would fall into this category, all of which must be constructed by September 2014 or earlier to obtain a license under our rules.

[112] Our proposal applies regardless of whether the expiration, cancellation or revocation is final and unappealable. *See Stereo Broadcasters, Inc.*, Memorandum Opinion and Order, 74 F.C.C. 2d 543, 545-546, paras. 5-9 (1979) (disallowing a sale under the Commission's former "distress sale" policy where revocation proceedings had progressed to Initial Decision). We will, however, endeavor to resolve on an expedited basis any applications for review or petitions for reconsideration of actions resulting in expiration, cancellation, or revocation of a license prior to commencement of the reverse auction process.

[113] Under the Communications Act, "if a broadcasting station fails to transmit broadcast signals for any consecutive 12-month period, then the station license granted for the operation of that broadcast station expires at the end of that period…." 47 U.S.C. § 312(g).

[114] Licensees with pending renewal applications will be eligible to participate in the reverse auction so long as the licensee filed a renewal application prior to the expiration of the license. The timely filing of a license renewal application prior to the expiration date tolls the license expiration. *See* 47 U.S.C. § 307(c)(3).

[115] *See Third Periodic Review of the Commission's Rules and Policies Affecting the Conversion To Digital Television*, Report and Order, 23 FCC Rcd 2994 (2007); *Implementation of the DTV Delay Act*, MB Docket No. 09-17, Third Report and Order and Order on Reconsideration, 24 FCC Rcd 3399, 3429, para. 66 (2009) (establishing February 17, 2010 as the deadline by which all post-transition DTV facilities must be constructed absent tolling pursuant to Section 73.3598 of the rules).

and population served of each television licensee as of the Spectrum Act enactment date.[116] We do not propose to entertain bids to relinquish spectrum usage rights associated with construction permits or pending applications for construction permits to modify authorized facilities for which a license was not granted by February 22, 2012.[117] We seek comment on these proposals.

80. We propose a different approach for Class A stations that have not completed their digital transition based on the unique circumstances involved. Unlike full power stations, which completed their digital transition in 2009, Class A stations have until September 1, 2015 to convert to digital operation and cease analog operation.[118] As of February 22, 2012, the date of enactment of the Spectrum Act, a majority of Class A licensees had not completed their digital transition.[119] We believe it would be unfair to those Class A licensees that have yet to convert to digital operation, and that have made transition plans in reliance on the rules we adopted just months before the enactment of the Spectrum Act to protect only those facilities licensed as of February 22, 2012 in the repacking process. Consequently, we propose to evaluate the reverse auction bid of a digital Class A station licensed after February 22, 2012, based on the station's licensed facility on the date of commencement of the reverse auction process.[120] For a Class A licensee with no digital license as of the date of commencement of the reverse auction process, we propose to evaluate a reverse auction bid based on the licensed analog facility as of February 22, 2012. We seek comment on these proposals.

81. *Pending Renewal Applications and Enforcement Issues*. We do not propose to treat the pendency of a license renewal application or an enforcement action as rendering a station ineligible to participate in the reverse auction. Generally, the Commission will not grant an application to sell a station subject to a pending renewal application or enforcement action absent negotiation of an agreement between the seller and/or buyer and the Commission whereby the seller or buyer agrees to be liable for the outcome of the enforcement action after the sale.[121] The Commission instituted this policy in order to prevent licensees from evading responsibility for wrongdoing and undermining the deterrent effect of our

[116] *See* Spectrum Act § 6403(b)(2).

[117] With regard to the handful of unbuilt construction permits discussed above, we propose to evaluate any bids based on the spectrum usage rights authorized in the permits held on February 22, 2012.

[118] *See Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations*, Second Report and Order, 26 FCC Rcd 10732 (2011) (*LPTV DTV Second Report and Order*). Under the rules the Commission adopted in July 2011, these stations may transition by converting to digital operations on their analog channel (a "flash cut"), or by constructing a digital companion channel to which they must transfer their primary Class A status by September 1, 2015. *Id.* at 10756-57, paras. 51-53.

[119] These licensees may hold only an analog license, an application or construction permit for a digital flash cut facility, or a permit or license for a low power television digital companion channel to which they have not yet transferred their Class A status.

[120] For the same policy reasons, we propose in Section V to extend repacking protections to certain digital facilities not licensed on February 22, 2012 pursuant to a procedure set forth in that section. Again, we propose to treat the reverse auction process as commencing on the date a licensee submits its pre-auction application. We propose to consider the bid of a Class A licensee that held a digital license on February 22, 2012, based on the facility as licensed on that date (*i.e.*, in the same manner as full power stations).

[121] *See Questions Concerning Basic Qualifications of Broadcast Applicants*, Public Notice, 28 R.R.2d (P&F) 705, 706 (1973) (providing for "deferral of action on transfer applications, where the prospective seller is involved in a pending renewal, revocation or investigative proceeding regarding the particular station to be sold"). *See also Jefferson Radio Corp. v. FCC*, 340 F.2d 781, 783 (D.C. Cir. 1964) ("It is the recognized policy of the Commission that assignment of broadcast authorization will not be considered until the Commission has determined that the assignor has not forfeited the authorization.").

enforcement rules.[122] In certain circumstances, however, the Commission has waived this policy, finding that the benefits to the public in granting the transaction outweighed these detriments.[123] We believe that the public interest likewise justifies permitting an otherwise eligible station with a pending license renewal application or subject to an enforcement action to participate in the reverse auction. Our proposed approach will maximize opportunities for broadcasters to participate in the reverse auction and avoid the administrative burdens and potential delays that would be associated with requiring resolution of such matters prior to the commencement of the reverse auction process. We seek comment on this proposal regarding eligibility.

82. We also seek comment on how to address enforcement actions that are pending against a station whose bid to relinquish all usage rights is accepted (winning license termination bidder).[124] We seek to identify processes that would accommodate both our interest in structuring an efficient auction mechanism and our interest in enforcing broadcasters' compliance with their legal obligations. We do not want the pendency of enforcement actions to prevent the expeditious and efficient conduct and implementation of the incentive auction. Winning license termination bidders should, we think, have a reasonable degree of certainty about how pending enforcement actions will be handled. And it is essential that the pendency of enforcement actions against winning license termination bidders not throw into question the auction results or delay the repacking of remaining stations or the delivery of the auctioned spectrum to the winners in the forward auction. Undesirable uncertainty would be introduced into the incentive auction process if every winning license termination bidder were required to adjudicate or settle pending enforcement matters before the acceptance of its bid could be confirmed. At the same time, our approach to enforcement actions must respect the public interest in compliance with the Act and the Commission's rules and orders. Pending enforcement actions may include actions for violations of safety requirements, interference protections, closed captioning requirements, and other conduct rightly prohibited by law. Our approach also should be fair to those stations that do not participate in the auction or do not relinquish all usage rights.

83. As one possible approach to pending enforcement actions, we seek comment on whether we should require license termination bidders to enter into escrow arrangements to cover the potential costs of forfeitures.[125] Such escrow arrangements would preserve appropriate amounts to cover pending violations with the ultimate payment to be determined following the completion of enforcement proceedings, after the auction. In this regard, we seek comment on whether we should require license

[122] *M&M Broadcasting, Ltd.*, 25 FCC Rcd 4942, 4945 (MB 2010). *See also Cellular System One of Tulsa, Inc.*, Memorandum Opinion and Order, 102 F.C.C.2d 86, 90, para. 7 (1985) ("To permit a licensee to sell out from under a potential disqualification would significantly impair the Commission's ability to police and deter licensee misconduct.").

[123] For example, we have authorized the transfer of control of a licensee with pending renewal applications in order to facilitate multi-state, multi-market transactions. *See In re Application of Shareholders of CBS Corporation*, 16 FCC Rcd 16072, 16072, para. 3 (2001). Likewise, the Commission has permitted bankrupt licensees to sell stations involved in enforcement proceedings under certain circumstances, such as where the seller does not retain the proceeds of the sale, in order to protect creditors. *See e.g., Second Thursday Corp.,* 25 F.C.C.2d 112, 113-15, paras. 1-7 (1970). The Commission also had a policy allowing a seller subject to revocation proceedings to sell a station at a reduced price to a minority-controlled entity. *See Statement of Policy on Minority Ownership of Broadcasting Facilities*, 68 F.C.C.2d 979 (1978).

[124] Because winning bidders that move from a UHF to a VHF channel or channel share would continue to hold the license after the broadcast television spectrum incentive auction, pending enforcement proceedings against such bidders do not raise the same issue.

[125] *See, e.g., In the Matter of Bela TV, LLC,* 25 FCC Rcd 400, n.3 (EB 2010) (noting that prior to grant of television station assignment, FCC required seller to enter into agreement to place funds in escrow in order to cover potential liability for alleged indecency violation in 2006).

termination bidders to enter into such escrow arrangements either as a qualification for bidding in the auction, or after being selected as a winning license termination bidder. Should we establish in advance a ceiling for the escrow amount that a bidding station could face (in total or per violation) in the event it is a winning license termination bidder, so that stations would be able to consider that maximum exposure in advance of developing a reverse auction bid? As an alternative for winning license termination bidders, we seek comment on the option to settle any pending enforcement proceedings at a fixed amount based on the nature of the alleged violation. Are there other approaches that would enable us to dispose of pending cases in an expedited fashion, while not delaying or overburdening the auction process? Should the same procedures apply to a winning license termination bidder that will continue to hold other broadcast station licenses? Are there other options for handling pending enforcement actions that would address the concerns and priorities we have identified above, short of offering to close the enforcement actions pending against a winning license termination bidder, with the legal and policy issues that would raise?

B. Bid Options

84. Section 6403(a)(2) of the Spectrum Act provides that the reverse auction of broadcast television spectrum "shall include" three bid options for participants: (1) voluntary relinquishment of "all usage rights with respect to a particular television channel without receiving in return any usage rights with respect to another television channel . . . " (license termination bid); (2) voluntary relinquishment of "all usage rights with respect to an ultra high frequency television channel in return for receiving usage rights with respect to a very high frequency television channel . . ." (UHF to VHF bid); and (3) voluntary relinquishment of "usage rights in order to share a television channel with another licensee" (channel sharing bid).[126]

85. We invite comment on whether to establish additional bid options for participants in the reverse auction. Regarding option (2) above, we invite comment on whether to also allow UHF to VHF bidders to limit their bids to a "high VHF channel" (channels 7-13). Use of the "low VHF channels" (channels 2-6) for digital television service can be particularly difficult because of increased signal interference caused by the higher levels of ambient noise from other electronic devices operating on or near the low VHF frequency range.[127] Would allowing UHF to VHF bidders to limit their bids to high VHF channels increase reverse auction participation by granting potential bidders greater control over the channels to which we ultimately reassigned them? We also invite comment on whether, in order to encourage UHF to VHF bids generally, we should adopt a policy favoring grant of post-incentive auction requests for waivers of the VHF power and height limits for any winning UHF to VHF bidders that experience unusual coverage problems on their new VHF channels. We granted such waivers in some circumstances following the conclusion of the full power television digital transition in 2009 to assist stations on post-transition VHF channels in resolving reception issues.[128]

86. Should we also permit eligible licensees to participate in the auction by agreeing to relinquish a high VHF channel in exchange for a low VHF channel? The Spectrum Act prohibits the Commission from involuntarily reassigning a station from a high to a low VHF channel as part of the repacking process.[129] Allowing licensees on high VHF channels to bid to move to the less densely

[126] Spectrum Act § 6403(a)(2).

[127] *See Channel Sharing NPRM*, 25 FCC Rcd at 16512, para. 43.

[128] *See, e.g.,* Letter from Barbara A. Kreisman, Chief, Video Division, Media Bureau, to ABC, Inc. and Freedom Broadcasting of New York Licensee, LLC (March 16, 2011)(available at http://licensing.fcc.gov/cgi-bin/prod/cdbs/forms/prod/getimportletter_exh.cgi?import_letter_id=24962).

[129] Spectrum Act § 6403(a)(3).

populated low VHF channels might facilitate our ability to clear high VHF channels, thereby increasing our flexibility in the repacking process.

87. We also seek comment on whether we should allow eligible licensees to participate in the reverse auction by bidding to accept additional interference from other broadcast stations or reduce their service area or population covered by a set amount. As discussed below in section V, our rules specify certain geographic areas within which full power and Class A stations are protected from interference from other broadcast stations.[130] The Spectrum Act requires us to seek to preserve the coverage areas and population served of full power and Class A stations in the repacking process.[131] If we were to allow licensees to participate in the reverse auction by bidding to accept interference from which they otherwise would be entitled to protection, then we might be able to accommodate more broadcast stations in the same amount of spectrum during the repacking process, enabling us to clear more spectrum. Similarly, if we were to allow broadcast licensees to bid to reduce their service areas or populations served it could accommodate tighter repacking of the broadcast stations. What are the drawbacks, if any, of including these options? Would doing so complicate the bidding process or the repacking in a way that could make the incentive auction less successful?

88. Similarly, should we allow broadcasters to bid to accept additional interference from wireless broadband providers, or to accept a different antenna pattern or to deploy a distributed transmission system (DTS) in order to reduce their signal strength in portions of their service areas and reduce the size of their service areas? Entertaining such bids might enable the Commission to make available unencumbered new licenses while still permitting broadcast licensees to cover portions of their service areas.[132] It might also significantly complicate the reverse auction process. We invite commenters to address these and other potential bid options in addition to those required by the statute, as well as the potential costs and benefits associated with them.

89. We do not propose to allow channel sharing bids that would require changes in a station's community of license.[133] Allowing community of license changes in connection with a channel sharing bid would raise section 307(b) issues that could complicate acceptance of the channel sharing bid, requiring us to consider whether the new community of license would result in a fair, efficient and equitable distribution of service.[134] Because a station is assigned to a Designated Market Area (DMA) based on the location of its community of license rather than its transmission facilities,[135] our proposal effectively precludes channel sharing bids that would require changes to a station's DMA, thereby also minimizing the potential impact on MVPDs.[136] We do not expect our proposal to prevent channel sharing between stations licensed to different communities. In order to maintain its community of license, a channel sharing station must continue to place a signal of a certain strength over its community of license

[130] *See infra*, Section V. *See also* 47 C.F.R. §§ 73.616 (full power) and 73.6010 (Class A).

[131] *See* Spectrum Act § 6403(b)(2).

[132] Because the broadcast and wireless broadband signal coverage areas do not match, a broadcast signal coverage area can overlap two or more different wireless broadband service areas.

[133] The Commission stated that it would address this issue at a later date in the *Channel Sharing Report and Order*, 27 FCC Rcd at 4630, n.89.

[134] 47 U.S.C. § 307(b).

[135] *See Modification of FM and TV Authorizations to Specify a New Community of License*, Report and Order, 4 FCC Rcd 4870 (1989), *recon. granted in part*, 5 FCC Rcd 7094 (1990). A DMA consists of a group of counties served by the television stations licensed to communities within those counties.

[136] A broadcast television licensee's satellite and cable carriage rights on a particular MVPD system generally depend on the DMA assigned to the station. *See* 47 U.S.C. §§ 325(b), 338, 534(h).

from the shared facility.[137] The size of the area served by the shared broadcast signal generally will be large enough, however, to allow a station to move its transmission facilities several miles and still cover its existing community of license. We seek comment on this proposal.

90. We propose that a winning reverse auction bidder that relinquishes all of its spectrum usage rights with respect to its pre-incentive auction television channel will retain no further rights with regard to that channel. In other contexts, such as when a broadcast television licensee turns in its license for cancellation, or when we revoke or fail to renew a license, we terminate all spectrum usage rights, dismiss all outstanding applications and cancel all authorizations associated with the license. We believe the reverse auction context is no different. Therefore, a winning reverse auction bidder that relinquishes its rights with regard to a particular television channel would relinquish *all* usage rights for that channel and retain no further rights with regard to that channel. We would dismiss any pending modification applications associated with the channel in question and cancel any outstanding construction permits if we accept a bid. As discussed above, the Class A broadcast television service has not completed its transition to digital, so that a Class A bidder may still operate with an analog and a digital paired facility under our rules. We propose that a Class A licensee operating paired facilities must relinquish both if it is a winning license termination bidder. On the other hand, we propose to allow winning Class A channel sharing and UHF to VHF bidders that have paired facilities to continue operation of their analog facilities on a secondary basis until the analog facilities are predicted to interfere with a primary service, or until the September 1, 2015 digital transition deadline for Class A stations, whichever comes first. We seek comment on this proposed approach.

V. REPACKING

91. As stated above, repacking involves reorganizing the broadcast television bands so that the television stations that remain on the air following the broadcast television spectrum incentive auction occupy a smaller portion of the UHF band, allowing the Commission to reconfigure a portion of the UHF band into contiguous blocks of spectrum suitable for flexible use. We addressed the repacking process as it relates directly to auction design issues in section III above. In the following section, we address technical aspects of the repacking process, in particular Congress's mandate in the Spectrum Act that we make all reasonable efforts to preserve the coverage area and population served of television stations in the repacking.

92. *Background.* The Spectrum Act requires the Commission to "evaluate the broadcast television spectrum" and authorizes it to "make such reassignments of television channels as the Commission considers appropriate" (*i.e.*, to repack television stations) and reallocate portions of the broadcast television spectrum.[138] In doing so, the FCC must "make all reasonable efforts to preserve, as of the date of the enactment of this Act, the coverage area and population served of each broadcast television licensee, as determined using the methodology described in OET Bulletin 69 of the Office of Engineering and Technology" (OET Bulletin 69).[139] This provision places some limitations on freeing up spectrum.

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[137] *See* 47 C.F.R. § 73.625.

[138] Spectrum Act § 6403(b)(1), (2).

[139] *Id.* § 6403(b)(2). *See* OET Bulletin No. 69 (Feb. 6, 2004), available at http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet69/oet69.pdf. OET Bulletin 69 "provides guidance on the implementation and use of Longley-Rice methodology for evaluating TV service coverage and interference in accordance with sections 73.622, 73.623 and 74.704 of the FCC rules." *Id.* at 1. "The Longley-Rice radio propagation model is used to make predictions of radio field strength at specific geographic points based on the elevation profile of terrain between the transmitter and each specific reception point." *Id.*

93. The statutory terms "coverage area" and "population served" are not defined in the Spectrum Act or OET Bulletin 69. As an initial matter, therefore, we address the meaning of these terms under our rules and OET Bulletin 69. OET Bulletin 69 uses the word "coverage" synonymously with "service area."[140] Commission rules define "service area" as "the geographic area within the station's noise-limited F(50,90) contour where its signal strength is predicted to exceed the noise-limited service level."[141] "[N]oise" in this definition refers to background noise from thermal sources and from DTV receivers, not to interference from other stations.[142] Thus, "coverage" and "service area" do not concern interference from other stations under our rules and OET Bulletin 69.

94. OET Bulletin 69 and the Commission's rules address "population served" in terms of the persons who reside within a station's service area at locations where the station's service is not subject to interference from another station or stations. In particular, Section 73.616(e) of the Commission's rules provides that the population served within a station's service area "does not include portions of the population within the noise-limited service contour of that station that are predicted to receive … masking interference from any other station."[143] With regard to new interference, this section further provides that an application for a new or modified television station 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 … DTV station."[144]

95. OET Bulletin 69 requires evaluation of interference in approximately rectangular "grid cells" into which a station's coverage or service area is divided.[145] The output information of the computer program that implements OET Bulletin 69 is a set of aggregate population and area data (1) within the station's noise-limited contour, (2) not affected by terrain losses, and (3) lost to interference from other stations.[146]

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[140] *See id*.

[141] 47 C.F.R. § 73.622(e)(1). The rules define "noise-limited contour" as "the area in which the predicted F(50,90) field strength of the station's signal" exceeds specified levels. *Id.* "Within this contour, service is considered available at locations where the station's signal strength," as predicted using the Longley-Rice methodology, exceeds those levels. *Id.* § 73.622(e)(2).

[142] *See* OET Bulletin 69 at 7 (distinguishing between "evaluations of service coverage and interference").

[143] 47 C.F.R. § 73.616(e). Interference may occur between broadcast television signals on the same channel (co-channel) or on the channels immediately above and below (first adjacent channels) the desired signal. The standards for determining whether interference occurs to full power and Class A television stations from other full power and Class A stations are set forth in sections 73.623(c) and 74.793 of the rules, respectively. *See* 47 C.F.R. §§ 73.623(c), 74.793(b), (c), (d). Full power stations are protected from interference within their noise-limited contours, whereas Class A stations are protected within their "protected contours." These standards also are incorporated generally into OET Bulletin 69.

[144] *Id.*

[145] OET Bulletin 69 at 5. A computer program that implements the "Longley-Rice" propagation model retrieves "[t]he coordinates of census blocks falling inside each cell … along with the population of each block. From this information the total population and the coordinates of the cell centroid are determined for each cell." *Id.* at 11. The location of the "cell centroid" is the weighted center of the population (based on the locations of Census Blocks for cells with population) or the geometric center of the cell. That point "represents the cell in all subsequent service and interference calculations." *Id.* at 5. The program then examines, *inter alia*, "[r]adio paths between undesired TV transmitters and the point representing each cell… A cell being examined is counted as having interference if the ratio of the desired field to that of any one of the possible interference sources is less than a certain critical minimum value." *Id.* at 7.

[146] *Id.* at 12.

96. Figure 1 illustrates the relationship between "coverage" or "service area" and "population served" as those terms are defined in OET Bulletin 69 and our rules: the geographic area served by Station A is represented by a circle showing its "noise-limited service area," which encompasses "cells" with service, without service due to terrain losses, and without service due to interference; the population served is that within the first category.

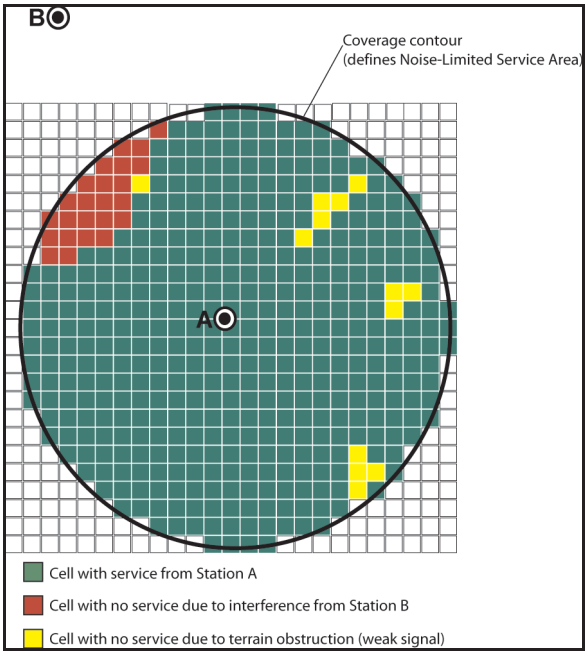

Figure 1. Illustration of OET Bulletin 69 coverage and interference

97. The broadcast television spectrum incentive auction and the associated repacking process could impact both the coverage area and the population served of television stations. If a station is assigned to a different channel, then its technical facilities must be modified in order to replicate its coverage area, because radio signals propagate differently on different frequencies.[147] These varying propagation characteristics also mean that a new channel assignment may change the areas within a station's noise-limited service area affected by terrain loss. Channel reassignments, and stations going off the air as a result of the reverse auction, also may change the interference relationships between stations, which relationships in turn affect population served. Existing interference to the stations that remain on the air is obviously eliminated by stations going off the air. Likewise, new channel assignments generally will eliminate interference that was caused by the previous assignment. At the same time, new channel assignments create a potential for new interference between nearby stations on the same channel or a first adjacent channel. Our repacking methodology must account for all of these impacts in order to carry out Congress's mandate in section 6403(b)(2). Thus, section 6403(b)(2) imposes significant technical constraints on the Commission's repacking authority under the Spectrum Act, and thus our ability to free up spectrum for mobile broadband.

[147] A broadcast signal transmitted on one channel will cover a slightly different area from a signal transmitted on a different channel at the same location using the same technical facilities (*e.g.*, antenna pattern, antenna height, and ERP). In order for a station on a new channel to replicate its existing coverage area, its transmission facilities must be adjusted to specify a new antenna pattern and/or ERP. "Replicate" in this context means to maintain the location of a station's noise-limited contour despite a channel change. Because of the ERP limits in our rules, full replication may not always be possible. *See* § 73.622(f).

98. *Discussion.* We set forth below our proposals and options under consideration for preserving the coverage area and population served of television stations in the repacking process. As an initial matter, we interpret section 6403(b)(2) to apply to full power and Class A television stations only.[148] We interpret it to require provision of a channel for each eligible station that will remain on the air following the completion of the incentive auction, *i.e.*, each station that does not participate in the reverse auction, participates but does not submit a winning reverse auction bid, or submits a winning bid to move to another band. The statutory preservation mandate is limited to such stations.[149] The Spectrum Act requires us to use "the methodology described in OET Bulletin 69" in the repacking.[150] And we interpret the mandate to preserve "as of the date of the enactment of this Act" to require preservation only with regard to 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.[151]

99. *Coverage area.* We propose to interpret the statutory term "coverage area" to mean a full power television station's "service area" as defined in section 73.622(e) of the Commission's rules.[152] As stated above, neither the Spectrum Act nor OET Bulletin 69 defines "coverage area," but the statute directs us to determine "coverage area" using OET Bulletin 69, which uses the word "coverage" synonymously with "service area" as defined in our rules.[153] In addition to being consistent with the statutory language, we believe that use of our "service area" definition will serve the public interest because that definition is familiar to broadcasters and, therefore, will promote transparency in the repacking process. The rules governing Class A stations do not define a "service area" for such stations. We propose to use a Class A station's "protected contour"—the area within which it is protected from interference under our rules—as its "coverage area" for purposes of the repacking. A Class A station's protected contour is different from, and generally smaller than, the noise-limited contour that defines a full power station's service area. The two contours are analogous, however, in that both define the area within which Class A stations and full power stations, respectively, are protected from interference from other stations. Accordingly, we believe "coverage area" reasonably may be interpreted to mean the area within which a Class A station is protected from interference.[154]

[148] Section 6403(b)(2) mandates preservation of coverage area and population served for each "broadcast television licensee," which is defined as "the licensee of (A) a full power television station; or (B) a low power television station that has been accorded primary status as a Class A television station under Section 73.6001(a)" of Commission rules. *Id.* § 6001(6). *See also id.* § 6403(b)(5) ("Nothing in this subsection shall be construed to alter the spectrum usage rights of low-power television stations.").

[149] *See id.* § 6403(b)(2) (requiring all reasonable efforts to preserve coverage area and population served "[i]n making any reassignments or reallocations under paragraph (1)(B)").

[150] *Id.*

[151] *Id.* Thus, licensees with construction permits, or parties with applications for construction permits, are not covered by section 6403(b)(2). Likewise, station facilities requested in applications for construction permits to modify existing licenses, even if granted, are not covered.

[152] 47 C.F.R. § 73.622(e).

[153] *See* OET Bulletin 69 at 1; 47 C.F.R. § 73.622(e)(1).

[154] We note that the Commission's rules define the "local programming" of a Class A station as programming produced within the station's noise-limited contour as defined for full power stations in section 73.622(e). *See* 47 C.F.R. § 73.6000. Given that Class A stations are not protected from interference beyond their protected contours, however, we do not believe it would be appropriate to define a Class A station's coverage area based on that definition.

100. As stated above, because signal propagation characteristics vary from channel to channel, the technical facilities of a station assigned to a different channel must be modified in order to replicate its existing coverage area.[155] The Commission's Office of Engineering and Technology has software that calculates the power and antenna pattern adjustments necessary to replicate a station's coverage area on a different channel. We propose to use that software in our repacking methodology to replicate the coverage areas of stations assigned to different channels. We recognize that construction of a transmitting antenna that matches precisely the antenna pattern created by the software is impractical in some cases, and that the closest practical design might slightly extend a station's coverage contour (that is, the area within which the station is protected from interference) in some directions and decrease it in others.[156] To address such circumstances, we propose that a station assigned to a new channel in the repacking be allowed to continue to use the station's existing antenna pattern, and to adjust its power level so that the station's coverage area in total square kilometers is the same as it was before the repacking, without regard to whether that area is served or unserved by the station's existing operation.[157] We believe this proposal is consistent with the approach we propose below for preserving each eligible station's population served. We also believe this proposal is consistent with Congress's mandate to make "all reasonable efforts" to preserve coverage area,[158] and that use of existing antenna patterns will help to ensure that stations assigned to new channels in the repacking are able to actually construct facilities that maintain their existing coverage areas.

101. We also propose to allow stations to propose alternative transmission facilities to those specified by our replication software, provided that such facilities would not extend the coverage area in any direction beyond those specified by our replication software or cause new interference. We note, however, that such alternative facilities may result in reduced population served and/or coverage area. We expect that any coverage area or population served differences under our proposed approach will be *de minimis*: based on the DTV transition, we anticipate that they generally will impact less than two percent of a station's total coverage area. We seek comment on these proposals.

102. The fact that signal propagation characteristics vary from channel to channel also means that new channel assignments may change the portions of a station's coverage area that are affected by terrain losses. As discussed above, OET Bulletin 69 provides for subtracting such areas from a station's coverage. We seek comment on whether it would be consistent with the Spectrum Act to consider a station's signal to be receivable at all locations within its noise-limited or protected contour (depending on whether it is a full power or Class A station) for purposes of the repacking. We believe that doing so is necessary to prevent small changes in coverage area as a result of new channel assignments. Accordingly, we believe that this proposal is consistent with Congress's intent that we make "all reasonable efforts" to preserve stations' coverage areas.[159] If we do not adopt this approach, how should we accommodate stations whose coverage areas change as a result of new channel assignments?

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[155] A broadcast signal transmitted on one television channel will cover a different area from a signal transmitted on a different channel at the same location using the same technical facilities (*e.g.*, antenna pattern, antenna height, and ERP). In order for a station on a new channel to replicate its existing coverage area, its transmission facilities must be redesignated to specify a new antenna pattern and ERP.

[156] The changes will increase with the distance between the original and reassigned channels and with the terrain diversity in a station's coverage area.

[157] We also recognize that not all stations are currently in compliance with maximum effective radiated power (ERP) and antenna height above average terrain limits. *See* 47 C.F.R. § 73.622(f). We propose to make all reasonable efforts to preserve the existing coverage areas of stations whose operations exceed the antenna height (but not ERP) limits.

[158] Spectrum Act § 6403(b)(2).

[159] *Id.*

103. *Population served*. We propose three alternative approaches to fulfilling the requirement to make all reasonable efforts to preserve population served in the repacking process. The first approach would allow no new interference to a station's population served as of February 22, 2012. Under this approach, we would apply the existing standard in section 73.616 that treats interference of 0.5 percent or less as "no new interference" in evaluating potential channel reassignments. That is, we would not allow reassignments that would, in the aggregate, reduce the population served as of February 22, 2012 by more than 0.5 percent. In adopting this standard for new and modified channel assignments in the post-digital television transition environment, the Commission treated 0.5 percent as "no new interference" because 0.5 percent is equivalent to zero when rounded to an integer value.[160] At the same time, it reasoned that the benefits of the flexibility provided by the standard for stations to modify their facilities in order to improve service outweighed the minimal amounts of additional interference that the standard might allow.[161] We believe that similar reasoning could apply here.

104. Although the first proposal would generally maintain each eligible station's total population served as of February 22, 2012, we note that the locations of persons affected by interference within a station's coverage area could change: new interference would be permitted anywhere in a station's coverage area, provided that the total interference-free population served by the station would not be reduced by more than 0.5 percent. For example, as illustrated in Figure 2 below, assume that Station B goes off the air as a result of the reverse auction, eliminating interference to Station A, and Station C is repacked on the cleared channel, creating new interference to Station A. The old and new interference areas overlap, but not completely. Under our proposal, interference from Station B may be replaced by interference from Station C, so long as the total interference-free population in Station A's coverage area decreases by no more than 0.5 percent.

[160] *See Third Periodic Review of the Commission's Rules and Policies Affecting the Conversion To Digital Television*, Notice of Proposed Rulemaking, MB Docket No 07-91, 22 FCC Rcd 9478, 9523 para. 106 (2007).

[161] *See Third DTV Periodic Report and Order*, 23 FCC Rcd at 3078-79 paras. 158-159 (2007).

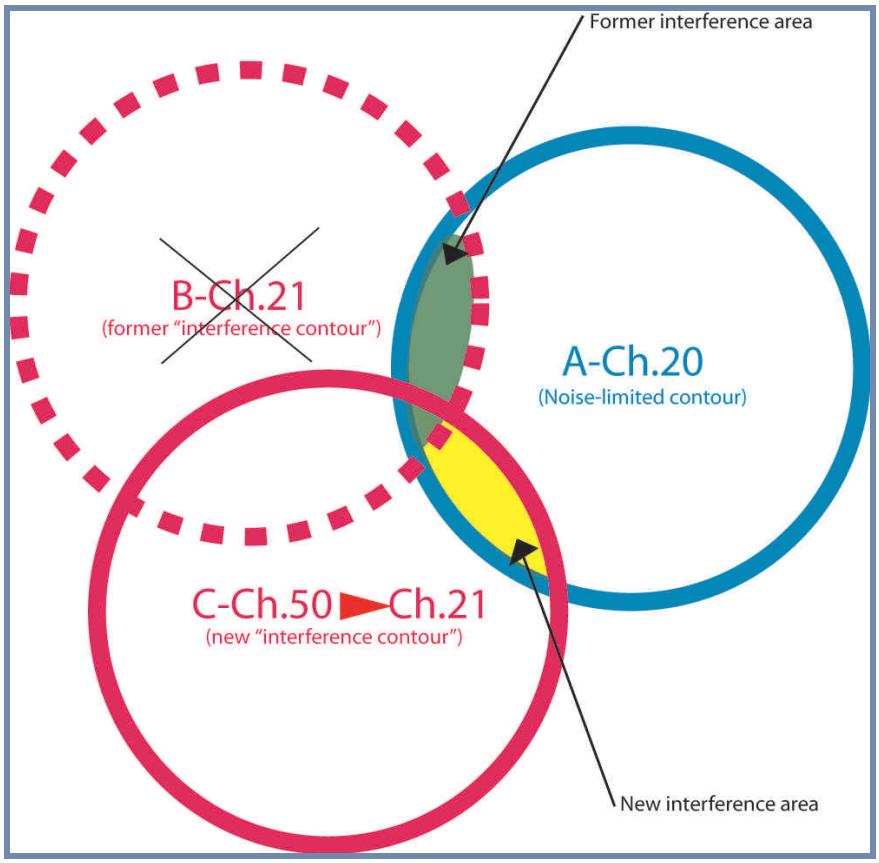

Figure 2: Illustration of "flexible" interference option

105. Thus, this first option would not ensure preservation of service to all of the specific viewers that currently can receive a station's signal, but rather would preserve service to approximately the same total number of viewers. We believe this approach would nonetheless be consistent with Congress's mandates in section 6403(b)(2). While the statute does not define the term "all reasonable efforts," that phrase is not uncommon: its meaning depends on the circumstances involved,[162] and comports with the common meaning of the word "reasonable."[163] Thus, the standard that the Commission

[162] For example, the Eleventh Circuit explained in one case that a district court's duty to "make all reasonable efforts" to reconcile an apparent inconsistency contained within a jury verdict does not allow it "to strain to reconcile an inconsistency when it is not reasonable to do so." *Wilbur v. Correctional Services Corp.*, 393 F.3d 1192, 1200 (11th Cir. 2004). In another case, the Seventh Circuit concluded that a company's agreement with union demands for an unbargained-for dispute resolution procedure, although it would have ended a labor dispute, exceeded the bounds of the company's statutory obligation to make "every reasonable effort" to settle labor disputes. *Brotherhood of Maintenance of Way Employees v. Union Pacific R. Co.*, 358 F.3d 453, 457-59 (7th Cir. 2004). *See also Rompilla v. Beard*, 545 U.S. 374, 385-86 (2005) (defense lawyers' duty to make "all reasonable efforts" to learn what they could about the offense "certainly included obtaining the Commonwealth's own readily available file on the prior conviction to learn what the Commonwealth knew about the crime, to discover any mitigating evidence the Commonwealth would downplay, and to anticipate the details of the aggravating evidence the Commonwealth would emphasize").

[163] *See* Blacks Law Dictionary (6th Ed. 1990) at 1265 (defining "reasonable," *inter alia*, as "[f]air, proper, just, moderate, suitable under the circumstances. Fit and appropriate to the end in view."); *Dictionary.com Unabridged* (accessed: June 13, 2012) (defining "reasonable" as, *inter alia*, "not exceeding the limit prescribed by reason; not excessive").

adopts must reasonably preserve each station's "population served" under all of the circumstances involved. As stated above, neither the statute nor OET Bulletin 69 defines the term "population served" or states whether it refers to total or specific, existing viewers.[164] We believe that interpreting the statute as referring to total, rather than specific, population served would satisfy the statutory mandate. First, this approach is not likely to result in significant disruption. Most interference typically occurs near the edge of a station's coverage area, limiting the potential disruption to existing viewers as a result of the repacking.[165] There also are inherent limits on changes to a station's existing viewership as a result of the dual statutory mandate to preserve population served and coverage area: a station that serves the same geographic area is unlikely to serve an entirely different population. 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. We seek comment on this proposal.

106. As a second option, we also invite comment on whether to interpret the statutory mandate to require all reasonable efforts to preserve service to the same specific viewers for each eligible station. Under this approach, no individual channel reassignment, considered alone, could reduce another station's specific population served on February 22, 2012 by more than 0.5 percent. This approach is illustrated by Figure 3 below: interference to Station A from Station B could be replaced by interference from Station C only to the extent that the interference affects the same viewers. The second option differs from the first option stated above in two ways. First, it allows "replacement interference" only where interference existed as of February 22, 2012. Second, it is calculated on a station-to-station rather than aggregate basis. Although this second option likely would cause less disruption to viewers than the first option above, it might increase the cost of clearing spectrum by preventing the Commission's repacking methodology from accounting for overall reductions in interference due to stations going off the air or being reassigned to different channels. We seek comment on this second option, including whether we should calculate interference on a per station basis if we adopt it.

[164] We note that the output specified by the methodology of OET Bulletin 69 is a set of aggregate population data for a station's entire coverage or service area. OET Bulletin 69 at 12.

[165] This can be seen from analyses prepared by Commission staff for the DTV transition. *See, e.g.,* http://transition.fcc.gov/dtv/markets/. We note that, in the case of major network stations, viewers in the fringes of a station's coverage area often have access to the same programming from other stations. Because changes in viewership would be unlikely to occur in the center of a station's coverage area where population density is likely to be high, they also are less likely to impact a station's economic viability.

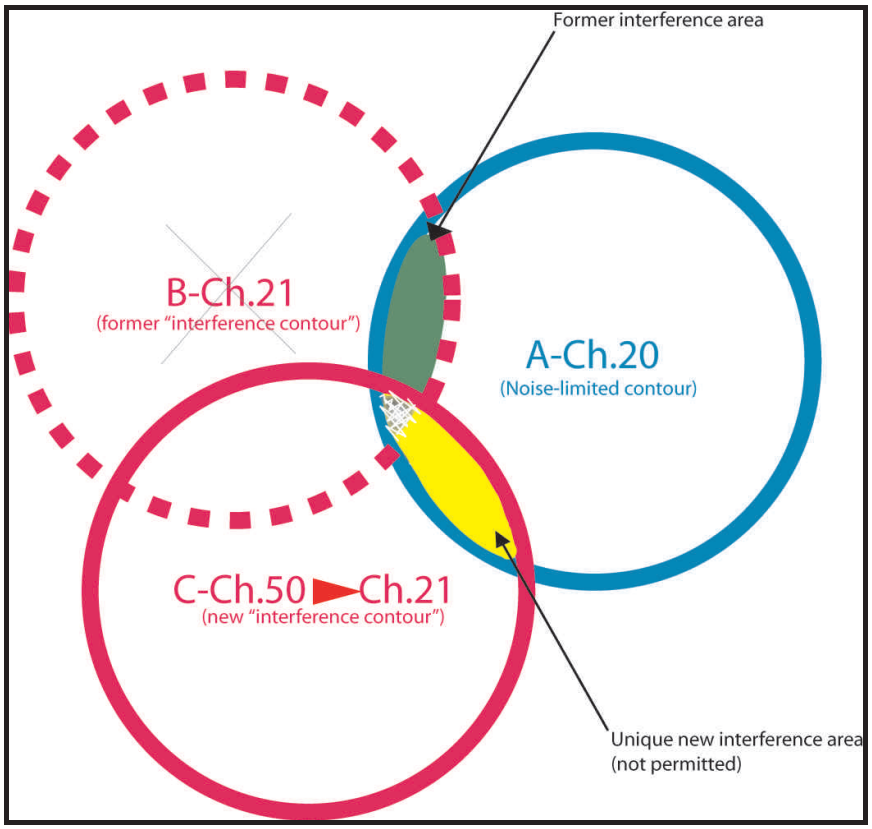

Figure 3: Illustration of "fixed" interference option

107. We also seek comment on a third option that, like the second option, would consider interference on a station-to-station, rather than an aggregate, basis. Under this approach, any interference between two individual stations, considered by themselves, that existed on February 22, 2012, would continue to be allowed regardless of whether the stations are assigned to different channels in the repacking. We would establish a separate interference standard for stations that did not interfere with one another as of February 22, 2012. This approach would differ from option two in that it would allow "replacement interference" only from the specific station that caused the interference previously, as opposed to from any station.[166] This limitation in replacement interference likely would give the Commission significantly less repacking flexibility than under the second option.

108. To help mitigate the loss of repacking flexibility should we adopt the third option, we propose to establish a higher, *de minimis* interference standard that would allow greater interference than the current 0.5 percent standard for stations that did not interfere with one another as of February 22, 2012. More specifically, we propose to allow up to two percent interference between stations that did not interfere with one another as of February 22, 2012.[167] Establishing a higher standard for the station-to-

[166] "Replacement interference" refers to interference that would "replace" some or all of the interference that existed as of February 22, 2012 and that may be eliminated as a result of the repacking.

[167] In the digital transition process, the FCC allowed up to two percent new interference for stations with an analog channel in the core digital spectrum (television channels 2-51) and an out-of-core digital channel. *See* Public Notice, "DTV Channel Election: First Round Conflict Decision Extension and Guidelines For Interference Conflict Analysis," 20 FCC Rcd 13415 (MB 2005); *See Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television,* MB Docket No. 03-15, Report and Order, 19 FCC Rcd 18279, 18301-04, paras. 44, 53-57 (2004) (*Second DTV Periodic Report and Order*) (describing conflict analysis). The (continued….)

station interference option would help to mitigate the repacking flexibility sacrificed under the third option, reducing the number of stations that would have to voluntarily relinquish all of their spectrum rights in order to clear broadcast television spectrum for other uses. We seek comment on this third option, including whether, if we decide to adopt it, we should also impose an overall cap on interference.

109. In addition, we invite comment on whether we should allow new interference—that is, whether we should establish a different interference standard that allows greater interference than the current 0.5 percent standard—under either of the first two options to preserving population served proposed above. Would it be consistent with the statute's "all reasonable efforts" mandate to allow minor reductions in total population served for some stations in order to meet the technical challenges involved in the repacking stations? Any commenters that support the adoption of a new interference standard should specify the new standard that they advocate and address both its consistency with the statute and the potential costs and benefits of its implementation.

110. For each of the options discussed, we seek comment on the costs and benefits, including quantitative estimates, of each repacking option in comparison to the others. In that regard, we invite commenters to address the computational complexity of the channel assignment process under the first, second and third options—in determining whether a particular channel assignment is permissible, the second and third options would require examination of interference only between channel pairs, whereas the first option would require examination of all channel assignments—and how we should factor that consideration into our decision. In addition, we invite commenters to suggest additional approaches that would fulfill the statutory mandate while permitting an efficient repacking of stations. For example, should we limit any new interference that we decide to allow only to geographic areas with high MVPD penetration rates? If so, what should the required level of MVPD penetration be? Would 70% penetration by MVPDs be sufficient? Alternatively, should we apply a separate standard for new interference in portions of a station's coverage area that are located outside of that station's DMA? We invite commenters to submit appropriate economic studies to support their views or proposals on these issues.

111. We anticipate that whatever approach we adopt to preserving population served will have a significant impact on the amount of spectrum we are able to repurpose for mobile broadband use, as well as on the overall costs of clearing broadcast television spectrum. For each of the three options proposed above, therefore, we also invite comment on those assumptions, and on the potential magnitude of the impact on the amount of spectrum we are able to make available for mobile broadband, as well as the cost of doing so.

112. In section IV, we invite comment on whether we should provide a reverse auction bidding option for broadcast television licensees to voluntarily accept additional interference. We invite comment on how any of the above-proposed approaches (or any alternative approaches proposed by commenters) might be implemented in conjunction with such a bidding option. Further, we invite comment on any other changes to the FCC's existing technical standards that would be consistent with the requirements of the Spectrum Act and that we should consider.

(Continued from previous page)
Commission also allowed higher amounts of interference in a few cases where there was no channel available that would not result in *de minimis* interference to some other station. In addition, the Commission allowed various modifications to stations' transmission facilities, both analog and digital, that extended their signal coverage and thus had the potential to cause new interference up to two percent to a neighboring station, so long as the total interference received by the neighboring station from all stations did not exceed 10 percent. *See Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, MM Docket No. 87-268, Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, 13 FCC Rcd 7418, 7450-52, paras. 78-87 (1998). We also note that some stations accepted increased interference for a variety of reasons, such as a preferred coverage pattern or a preferred channel.

113. *Protection of Certain Authorized Facilities.* As stated above, we interpret the section 6403(b)(2) mandate to preserve coverage area and population served "as of the date of the enactment of this Act" to require preservation only with regard to 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.[168] At the same time, we recognize that full power and Class A stations may have applications or construction permits to modify their authorized facilities, and that there are several unbuilt construction permits for new full power television stations. Although section 6403(b)(2) mandates preservation only of certain licensed facilities, we do not interpret it to prohibit the Commission from granting protection to additional facilities where appropriate.[169]

114. Accordingly, in the repacking process we propose to protect the facilities authorized in unbuilt construction permits for new full power television stations as of February 22, 2012.[170] These permittees obtained their construction permits through participation in an auction or an NCE point system proceeding. Further, as discussed in section IV, only three such facilities exist, so protecting them in the repacking process will not significantly limit our flexibility. We do not propose to protect the facilities specified in applications for modification of authorized facilities pending as of February 22, 2012. Such facilities were not authorized as of the date of enactment of the Spectrum Act, were not obtained through participation in an auction or an NCE point system proceeding, and we believe that protecting such facilities in the repacking process might significantly limit our flexibility.

115. We do propose to protect in the repacking process certain digital Class A facilities that were not licensed as of February 22, 2012.[171] We believe that such protection is appropriate because, as discussed in section IV, we received broadcast television spectrum incentive auction authority in the midst of the Class A digital transition, the deadline for which is not until September 2015.[172] Class A licensees made their digital conversion plans in reliance on the rules the Commission adopted in July 2011. Under the circumstances, we believe that failing to protect the prospective digital facilities of Class A television licensees that were not licensed by February 22, 2012, would be fundamentally unfair to such licensees and would deprive the public of important benefits of the Class A digital transition. In order to limit the potential impact of this proposal on the repacking process, we propose to protect only a single Class A facility for each station in the repacking process.[173] We also seek to avoid any delay in the repacking process as a result of this proposal. Accordingly, we propose the following procedure to enable Class A licensees to elect which facility is preserved or protected in the repacking. Prior to commencement of the reverse auction process, we propose to delegate authority to the Media Bureau to issue a Public Notice requiring all Class A stations with unbuilt digital construction permits to inform the Commission of their digital transition plans by a specified date (the Notification Deadline),[174] including election of either their licensed analog facility or their permitted digital facility to be preserved or

[168] Spectrum Act § 6403(b)(2).

[169] The Spectrum Act specifically provides that nothing in section 6403(b) "shall be construed to expand or contract the authority of the Commission except as otherwise expressly provided." Spectrum Act § 6403(i)(1).

[170] We do not propose to protect any changes to unbuilt construction permits authorized after February 22, 2012.

[171] A Class A licensee that held its digital Class A license on February 22, 2012 falls under the discussion in paragraph 80 above.

[172] *LPTV DTV Second Report and Order*, 26 FCC Rcd at 10732, para. 2 (2011).

[173] Under the digital conversion procedures the FCC adopted, Class A stations may choose to either flash-cut to digital on their analog channels or transfer their primary, protected status from their analog facilities to digital companion channels. *LPTV DTV Second Report and Order*, 26 FCC Rcd at 10752, para. 51-53.

[174] The *LPTV DTV Second Report and Order* establishes the Class A digital conversion procedures. *See id.* at 10753-4, para. 45.

protected.[175] We propose to preserve the analog facilities licensed on February 22, 2012 for an analog Class A station that takes no action by the Notification Deadline, without protecting any other authorized or prospective facilities.[176] We seek comment on this proposed procedure.

116. We also invite comment on whether we should protect any other authorized full power or Class A television station facilities in the repacking process. In particular, we invite comment on whether we should protect outstanding construction permits issued to effectuate a channel substitution following a rulemaking proceeding.[177] In such cases, the station already has completed a rulemaking process and we have modified our DTV Table of Allotments to reflect the channel change.[178] We also invite comment on what procedures, if any, we should adopt to implement any protection outside the Class A digital transition context discussed in the preceding paragraph.

117. We do not propose to extend any protection to facilities proposed in pending petitions for rulemaking for which a notice of proposed rulemaking has not been issued.[179] This category includes a small number of pending rulemaking petitions filed by stations seeking to move from a VHF to a UHF channel (UHF channel substitution requests). The Spectrum Act specifically prohibits the Commission from allowing a UHF channel substitution until completion of the entire incentive auction process unless: (i) doing so would not decrease the amount of UHF spectrum available for reallocation; or (ii) a request to do so was pending on May 31, 2011, the date the Commission imposed a freeze on the filing of such requests.[180] We cannot, at this time, determine whether grant of any of the UHF channel substitution requests would reduce the amount of UHF spectrum available for reallocation. Accordingly, we cannot grant any such requests filed after May 31, 2011. Moreover, we propose to exercise our discretion not to act at this time on the requests filed before that date, in order to ensure that we do not unnecessarily compromise our flexibility in the repacking process. We cannot know at this time what the balance of available channels in the UHF and VHF bands will be after the auction and repacking.[181] We seek comment on this proposal.

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[175] A Class A licensee that has not yet applied for a digital construction permit, but that obtains one by the Notification Deadline, could also choose the facility to be protected during repacking. We also invite comment on whether there are any circumstances in which we should grant an extension of the Notification Deadline for Class A stations that do not obtain grant of their pending digital construction permit application by that date. We do not propose to change the September 1, 2015 digital transition deadline for Class A and low power television stations.

[176] In such cases, the Class A licensee would have to engineer its digital facilities within the constraints of the repacked band when it converts to digital operations.

[177] Such licensees hold authorizations for two channels—a license for the channel on which they currently operate, and a permit to construct a facility on their substitute channel. Commission records indicate that less than 20 such construction permits for channel substitutions remain outstanding and unbuilt.

[178] Under our rules, existing DTV allotments are entitled to interference protection. 47 C.F.R. § 73.623(h)(ii)(C).

[179] Our current rules do not grant protection to facilities proposed in such petitions prior to the release of a notice of proposed rulemaking. 47 C.F.R. § 73.623(h)(ii)(D).

[180] Spectrum Act § 6403(g)(1)(B). *See Freeze on the Filing of Petitions for Digital Channel Substitutions, Effective Immediately*, Public Notice, 26 FCC Rcd 7721 (MB 2011). Ten UHF channel substitution requests were filed prior to May 31, 2011, by the licensees of WJW(TV), Cleveland, Ohio; WNCT-TV, Greensville, North Carolina; WRDW-TV, Augusta, Georgia; WJTV(TV), Jackson, Mississippi; WJHL-TV, Johnson City, Tennessee; WBTW(TV), Florence, South Carolina; WVTM-TV, Birmingham, Alabama; WMC-TV, Memphis, Tennessee; WCBY-TV, Bristol, Virginia; and WFLT-TV, Tampa, Florida.

[181] We also note that granting these UHF channel substitution requests prior to completion of the incentive auction could create an opportunity for these stations to relinquish their newly allotted UHF channels through a UHF to VHF bid – an opportunity they did not have as of February 22, 2012.

118. Finally, we do not propose to extend protection in the repacking process to low power television and translator stations. Such stations have always had secondary status for interference purposes,[182] and as noted above the Spectrum Act's mandate with respect to preservation of coverage in the repacking process does not extend to them.[183] In addition, the Act specifies that nothing in the repacking provision "shall be construed to alter the spectrum usage rights of low-power television stations."[184] We do not interpret these provisions, when read together, to limit the Commission's discretion in determining how best to satisfy the goals of the incentive auction provisions of the Spectrum Act by "mak[ing] such reassignments of television channels as the Commission considers appropriate."[185] Nor do we believe that a channel repack, implemented by the Commission pursuant to the statutory reverse auction mandate in section 6403, should be governed by the interference protection previously accorded to such secondary facilities against modifications of Class A facilities. This protection prevents the Commission from approving a modification of a Class A license "unless the . . . licensee shows" non-interference to low power television or translator facilities authorized or proposed before "the application for . . . modification of such a license . . . was filed."[186] We believe this language reflects an intention to grant protection against changes in Class A facilities proposed by licensees, not to limit the previously unanticipated broadcast television spectrum auction required by Congress in the Spectrum Act. We seek comment on this view.

VI. FORWARD AUCTION—RECONFIGURING THE UHF BAND

A. Allocations

119. *Previous Proposals*. In the *Notice* in ET Docket No. 10-235, the Commission proposed to amend the Table of Allocations to add new allocations for fixed and mobile services in the entire range of the UHF and VHF bands for non-Federal use, to be co-primary with the allocation for broadcast services.[187] The Commission stated that its goal is to adopt a band plan that will provide for flexible use while continuing to support the needs of the broadcast television service. It further explained that "this proposal would also expand the existing land mobile allocation in the areas where PLMRS and CMRS systems operate on specific frequencies in the 470-512 MHz band to be the same more generalized and flexible mobile allocation that would be specified for other frequencies in the U/V bands."[188] The

[182] *See* 47 C.F.R. § 74.702(b).

[183] *See* Spectrum Act §§ 6001(6), 6403(b)(2).

[184] Spectrum Act § 6403(b)(5).

[185] *Id.* § 6403(b)(1)(B)(i).

[186] 47 U.S.C. § 336(f)(7)(B). This provision implements the Community Broadcasters Protection Act of 1999, Pub. L. No. 106-113, 113 Stat. App. I at 1501A-594 to -A-598 (1999). *See also* 47 C.F.R. §§ 73.6012, 73.6019; Establishment of Class A Television Service, *Report and Order,* 15 FCC Rcd 6355, 6389 ¶ 80 (2000).

[187] *Notice* in ET Docket No. 10-235, 25 FCC Rcd at 16504 para. 16. *See* 47 C.F.R. § 2.106. In accordance with the Communications Act, the Commission allocates radio frequencies and bands of frequencies to stations and classes of stations, *i.e.*, specific radio services. *See* 47 U.S.C. 303(a)-(c). These frequency allocations are set forth in the Table of Frequency Allocations in (Table of Allocations) Section 2.106 of the Commission's rules. *See* 47 C.F.R. § 2.106. Section 2.102 of the rules provides that "…the assignment of frequencies and bands of frequencies to all stations and classes of stations and the licensing and authorizing of use of all such frequencies … shall be in accordance with the Table of Frequency Allocations in [Section] 2.106." There is also an International Table of Frequency Allocation. Currently there are no mobile allocations in these bands on a primary basis in the International Telecommunication Union's (ITU) region 2 (where the U.S. is located). Since international allocations are contained in the international treaty governing the use of radio frequency, they can be revised only by the ITU World Radio Conference (WRC). The next WRC will be held in 2015.

[188] *Notice* in ET Docket No. 10-235, 25 FCC Rcd at 16504 para. 16.

Commission did not, however, propose to allow PLMRS and CMRS operators to expand their areas of operation under the existing service rules. The Commission also did not propose to change or add to the existing allocations for land mobile (medical telemetry and medical telecommand) and radio astronomy that are at 608-614 MHz (channel 37). In the *Report and Order* in that proceeding, the Commission deferred action on these proposals.[189] In this subsection, we seek further comment on our proposals in ET Docket No. 10-235 and request comment on an additional change to the Table of Allocations.[190]

120. Participating parties submitted 73 comments and 25 reply comments in response to the *Notice* in ET Docket No. 10-235. Parties representing the interests of wireless broadband providers were generally supportive of our proposals to add new fixed and mobile allocations in the entire range of the UHF and VHF bands for non-Federal use.[191] On the other hand, a number of parties representing broadcast and other interests expressed concerns about piecemeal action by the Commission. In particular, National Association of Broadcasters/Association for Maximum Service Television, Inc., ION Media Networks, Inc., and LIN Television Corporation stated that the *Notice* was not clear on the specific steps the Commission has in mind or what consequences could flow from them.[192] These parties questioned how the proposed new allocations would affect opportunities for broadcasters to innovate and new uses of their spectrum in the future, as well as broadcasters' interference rights vis-à-vis wireless operations. They argued that the Commission should not act on its proposals independent of other issues concerning the broadcast television spectrum incentive auction. The Public Broadcasters and others argued that the proposal to establish fixed and mobile allocations throughout the UHF and VHF bands was overbroad given the FCC's intention is to make only a portion of the UHF band available for wireless services.[193]

121. *Discussion*. As stated above, prior to the enactment of the Spectrum Act we sought comment in ET Docket No. 10-235 on adding new fixed and mobile allocations to the UHF and VHF bands. We seek further comment on our proposals in light of the Spectrum Act's passage. Our goal is to adopt a band plan that will provide for flexible use of these bands for new wireless broadband services while continuing to support existing uses. In particular, we invite comment on the views expressed by broadcasters advocating retention of some of the UHF and VHF television bands exclusively for broadcast use. What are the benefits and drawbacks of such an approach? What effect would it have on the Commission's future flexibility to manage the spectrum? As a practical matter, how could such an approach be implemented, given that the amount of broadcast spectrum recovered in any specific geographic area depends on the results of the broadcast television spectrum incentive auction?

122. As discussed below in section VII, we are considering whether to relocate existing radio astronomy and wireless medical telemetry systems on channel 37 (608-614 MHz) to new spectrum. In the event that we decide to do so, we also propose to add fixed and broadcast allocations to the channel 37 spectrum and modify the existing land mobile allocation in the UHF band, which is limited to medical

[189] *See Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF*, Report and Order, 27 FCC Rcd 4616 (2012).

[190] The relevant record materials from the proceeding in ET Docket No. 10-235 will be incorporated into this proceeding.

[191] Parties supporting the proposed new allocations include AT&T, Cablevision, Consumer Electronics Association, CTIA The Wireless Association, Brown, Ericsson, Harris, HTSC, ION, Minority Media and Telecommunications Council, NJDRC, OMVC, TechAmerica, Telecommunications Industry Association, and T-Mobile.

[192] NAB comments responding to the Notice in ET Docket No. 10-235 at 15-16; ION Comments at 6; LIN Comments at 8.

[193] Association of Public Television Stations, et al. (Public Broadcasters) Comments responding to the Notice in ET Docket No. 10-235 at 8.

telemetry and telecommand, to the more general mobile allocation. Similarly, if we were to make changes to allocations for the channel 37 spectrum, we ask whether we should remove the radio astronomy allocation from that spectrum.

B. 600 MHz Band Plan

123. Creating a band plan from relinquished broadcast spectrum usage rights (hereinafter called the "600 MHz band") presents unique challenges. The forward auction's interdependence with the reverse auction and the repacking mean that we will not know in advance the amount of spectrum we can make available in the forward auction, the specific frequencies that will be available and, perhaps, the geographic locations of such frequencies. Therefore, instead of a band plan with identified frequencies, a set number of spectrum blocks and a uniform set of geographic area licenses, we must establish a band plan framework that is flexible enough to accommodate varying amounts of spectrum from relinquished broadcast television spectrum usage rights in different locations. At the same time, the band plan must provide as much information and certainty as possible, to enable interested wireless providers to make informed business decisions about whether, and how, to bid for and use 600 MHz spectrum.

124. *Overview of the Band Plan*. Keeping these challenges in mind, we propose to adopt a band plan that balances flexibility with certainty, accommodating varying amounts of available wireless spectrum in different geographic areas rather than requiring that a uniform set of television channels be cleared nationwide. Specifically, we propose a structure to keep the downlink spectrum band consistent nationwide while allowing variations in the amount of uplink spectrum available in any geographic area. As explained in more detail below,[194] by keeping the downlink spectrum consistent nationwide, we can help ensure as a technical matter that wireless providers will be able to offer mobile devices that can operate across the country, which should minimize device cost and interoperability concerns, and allow for greater economies of scale. We also propose designating specific uplink and downlink blocks, pairing them where possible, to support expansion of cutting-edge wireless broadband technologies.

125. In proposing this band plan, we focus on five key policy goals: utility, certainty, interchangeability, quantity, and interoperability. First, to ensure that wireless providers are able to deploy broadband services quickly to consumers and to ensure productive use of spectrum reclaimed in 6 megahertz increments, we propose using 5 megahertz "building blocks." We further propose to pair these blocks wherever possible, in keeping with the leading mobile broadband technologies. Second, to provide as much certainty about the operating environment as possible, we propose technical solutions to ensure that the spectrum blocks are as free from interference as possible. Specifically, we propose ways to address potential interference issues between wireless operations and broadcast television operations within the United States and discuss cross-border interference issues between domestic operations and operations in Canada and Mexico. Third, we consider whether using technical solutions such as guard bands can make the spectrum blocks more closely interchangeable, which will allow for enhanced substitutability among building blocks, and may give us more flexibility in our auction design choices.[195] Fourth, we strive to maximize the amount of spectrum we can repurpose for both licensed and unlicensed wireless broadband services from the voluntarily relinquished broadcast television spectrum usage rights. By establishing a framework that can accommodate variations in the amount of uplink spectrum, we can vary the total amount of spectrum available by area, rather than being tied to the minimum amount of spectrum available nationwide. We also increase the quantity of wireless spectrum for unlicensed use by allowing for unlicensed use in our proposed guard bands and in any excess spectrum that is too small to license on a 5 megahertz block basis, supplementing current unlicensed use in existing white spaces.

[194] *See infra*, Section VI.B.2 (Block Configuration).

[195] For example, if the spectrum blocks are technically interchangeable, bidders would not necessarily need to know the particular frequency block or blocks they are bidding for.

Finally, to reduce interoperability concerns, our proposed band plan would allow for wide band radio operations using common radio components and improvements as technology evolves over time.

126. *600 MHz Spectrum Band*. We seek comment on the establishment of a 600 MHz band plan approach using 5 megahertz blocks, in which the uplink band begins at channel 51 (698 MHz), and, depending on the amount of spectrum available from the spectrum usage rights that broadcasters voluntarily relinquish in the reverse auction, will expand downward toward channel 37. Similarly, the downlink band would begin at channel 36 (608 MHz) and expand downward based on the amount of reclaimed spectrum. Figure 4, below, illustrates this band plan approach, in which X megahertz have been cleared for downlink use, and Y megahertz have been cleared for uplink use. Under this approach, the downlink band would start at channel 36, in order to take advantage of the natural separation between television and wireless operations, given that channel 37 is presently used for non-broadcast operations.[196] We also propose establishing guard bands between mobile broadband use and broadcast use when necessary to create spectrum blocks that are as technically and functionally interchangeable as possible to allow for enhanced substitutability among building blocks and flexibility in our auction design choices.[197] We propose to make the guard band spectrum available for unlicensed use.[198] We seek comment on this proposal, and on alternative uses for the guard bands, including approaches that involve licensing and/or auctioning this spectrum. We note that the Spectrum Act constrains the Commission to guard bands "no larger than is technically reasonable to prevent harmful interference between licensed services outside the guard bands,"[199] and requires a forward auction in which "the Commission assigns licenses for the use of the spectrum that the Commission reallocates."[200] Under these provisions, we must license the spectrum we recover through the broadcast television spectrum reorganization, with the exception of guard bands.

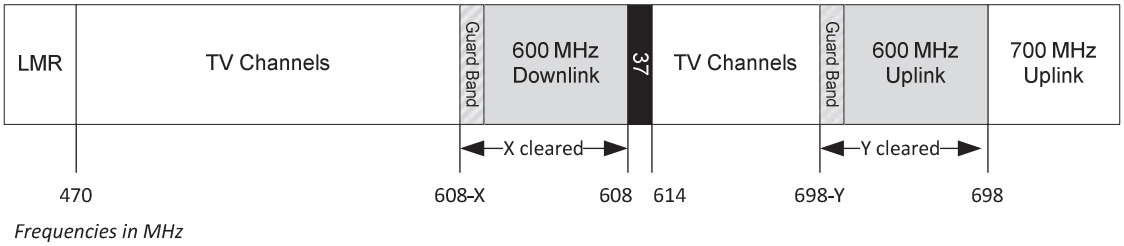

Figure 4. 600 MHz Band Plan

[196] We note that if we decide to move channel 37 operations to other frequencies, we could start the downlink band at a different frequency than at channel 36. For example, as explained below in the Alternative Band Plan Approaches section, we could place the downlink band at channel 32. *See infra*, Section VI.B.7.b (Relocating Existing Channel 37 Operations).

[197] Although we are striving to provide interchangeable spectrum blocks to allow for increased flexibility, we may nonetheless encounter instances in which we cannot do so. *See infra*, Sections VI.B.5.e, VI.B.6.a (Border Issues, Interchangeable Blocks).

[198] *See infra*, Section VIII (White Spaces and Unlicensed Operations). This unlicensed spectrum is in addition to (rather than in lieu of) the white space spectrum that exists today in the UHF band, and will continue to exist after the repacking of the broadcast services.

[199] Spectrum Act § 6407(b). For a discussion of the proposed unlicensed uses in the guard bands and other spectrum, *see infra*, Section VIII (White Spaces and Unlicensed Operations).

[200] Spectrum Act § 6403(c).

1. Spectrum Block Size

127. In determining the spectrum block size to create the 600 MHz band, we seek to maximize utility and allow for efficient use of this band. Given the unique circumstances of this spectrum, we also seek to optimize: (1) the efficiency with which the spectrum usage rights in the relinquished broadcast television spectrum can be rebanded; and (2) the process of transitioning from broadcast to mobile broadband use. To accomplish these goals, we must consider which technologies may be used in this band. Consistent with our longstanding policy on technology neutrality, we do not propose to prescribe a specific technology for use in the band. Nonetheless, for band planning purposes we expect that the most likely technologies that will operate on this spectrum are 3G and 4G Frequency Division Duplex (FDD) technologies. Various globally-standardized technologies, including Wideband-Code Division Multiple Access (W-CDMA), High Speed Packet Access (HSPA), and their variants, use 5 + 5 megahertz paired blocks when deployed as FDD.[201] Long Term Evolution (LTE) supports a variety of block sizes, including multiples of 5 megahertz.[202] Additionally, new versions of LTE and HSPA specify "channel aggregation" that can be used to bond smaller channels for greater performance.

128. To allow for the greatest amount of flexibility and efficiency, we propose to license the 600 MHz spectrum in 5 megahertz "building blocks." Five megahertz blocks can support a variety of wireless broadband technologies, as described above. Licensing spectrum in 5 megahertz blocks also promotes efficiency in converting broadcast television licenses to flexible-use mobile channels because it is close in size to the 6 megahertz television channels that will be relinquished.[203] Five megahertz blocks will optimize efficiency in the rebanded spectrum, allowing wireless spectrum demand in a given market

[201] W-CDMA is commonly used to refer to the UTRA (Universal Terrestrial Radio Access) air interface used by UMTS networks (Universal Mobile Telecommunications Systems). It is defined by the 3rd Generation Partnership Project (3GPP) starting in the initial release, R99, through their fourth release, R4. HSPA refers to the addition of a high-speed shared data channel to UTRA, defined in 3GPP R5 and subsequent releases. HSPA+ refers to additional enhancements to HSPA defined in 3GPP R7 and subsequent releases. *See* 3GPP release descriptions for R99 through R10, available at http://www.3gpp.org/ftp/Information/WORK_PLAN/Description_Releases. WCDMA and HSPA are generally considered 3G technologies, while HSPA+ has been marketed as 4G. *See, e.g.* 4G Americas, *Understanding 1G vs. 2G vs. 3g vs. 4G*, http://www.4gamericas.org/index.cfm?fuseaction=page&sectionid=361 (last visited Sep. 28, 2012), Gizmodo, *The Dirty Secret of Today's 4G: It's Not 4G*, http://gizmodo.com/5725501/atts-4g-is-hspa%252B-like-t+mobiles (last visited September 13, 2012).

[202] LTE refers to the addition of a new air interface, E-UTRA (Enhanced Universal Terrestrial Access), to 3GPP in R8 and subsequent releases. E-UTRA is based on OFDMA (Orthogonal Frequency Division Multiple Access), and is oriented towards providing high speed data services. It supports a purely packet-switched interface, without legacy circuit-switched voice, and is generally capable of higher speeds than HSPA. LTE (through 3GPP release 9) is generally considered to be 4G technology. 4G Americas, Understanding 1G vs. 2G vs. 3g vs. 4G, http://www.4gamericas.org/index.cfm?fuseaction=page&sectionid=361 (last visited Sep. 28, 2012). The LTE air interface (E-UTRA) is scalable in the sense that a number of different channel sizes can be easily supported in one device. Therefore, unlike the UTRA air interface used by WCDMA, HSPA, and HSPA+, which supports only one channel size, 5 megahertz, LTE supports channel sizes of 1.4, 3, 5, 10, 15, and 20 megahertz. However, the 1.4 and 3 megahertz channel sizes are not widely deployed. For example, of the 23 FDD bands defined for LTE in R10.6.0 of the 3GPP standards, all 23 bands support 5 and 10 megahertz channels, while only 13 bands support 15 megahertz channels, only 10 bands support 20 megahertz channels, and only 8 bands support 1.4 and 3 megahertz channels. See 3GPP RF standard for handsets, TS 36.101 v10.7.0 at 23 (table 5.6.1-1), available at http://www.3gpp.org/ftp/Specs/html-info/36101.htm (last visited Sep. 28, 2012) (*3GPP RF Standard for Handsets*).

[203] For example, if in a given area three television channels, totaling 18 megahertz of spectrum were reclaimed, three 5 megahertz blocks of 600 MHz spectrum could be created, with a 3 megahertz remainder. If the wireless broadband block size were 10 megahertz, only one 10 megahertz block could be created, with a significantly larger (8 megahertz) remainder.

to more closely match the amount of spectrum supplied by participating broadcasters. We seek comment on our proposal and whether this block size offers the best opportunity to use the spectrum efficiently.

129. We also seek comment on licensing the 600 MHz spectrum in six megahertz blocks. One advantage of six megahertz blocks is that they precisely correspond to the size of digital television broadcast channels relinquished.[204] Because six megahertz blocks do not precisely map onto the channel sizes used for most wireless broadband technologies in the market at this time,[205] use of such blocks may result in spectrum inefficiency.[206] Further, using six megahertz blocks may reduce the number of blocks auctioned in some circumstances.[207] We seek comment on the relative costs and benefits of licensing the blocks in 6 megahertz increments.

130. Some prospective 600 MHz licensees may want to obtain spectrum in larger spectral units–for example, in 10 megahertz blocks. As discussed in section III, we are seeking comment on auction design options that would facilitate the aggregation of larger contiguous blocks composed of multiple 5 megahertz building blocks. We also anticipate that licensees could aggregate larger blocks post auction through the secondary market or using technological approaches such as channel aggregation.[208] With these aggregation mechanisms in mind, we seek comment on the extent to which bidders view 5 megahertz building blocks as an acceptable balance between network performance and our ability to convert the 6 megahertz broadcast spectrum blocks into terrestrial wireless spectrum. Would the use of larger blocks (*e.g.,* 10 megahertz blocks) reduce the amount of spectrum that could be reclaimed in an auction? Do secondary markets or carrier aggregation technologies provide sufficient options for aggregating 5 megahertz building blocks?

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[204] We have auctioned 6 megahertz uplink and downlink blocks in the past, including the A, B, and E blocks within the 700 MHz band licensed in Auction 73. *See* 47 C.F.R. § 27.5.

[205] Although the 700 MHz band includes 6 and 11 megahertz block licenses, we note that 700 MHz licensees have typically deployed channels that are multiples of five. Specifically, Verizon has deployed LTE technology using 10 + 10 MHz channels in its upper 700 MHz C-Block nationwide license. AT&T has deployed 10 + 10 MHz channels where possible, and 5 + 5 MHz channels elsewhere. Phil Goldstein, *Report: Sprint's LTE Network is as Fast as its Competitors*, Fierce Wireless, June 19, 2012, available at http://www.fiercewireless.com/story/report-sprints-lte-network-fast-its-competitors/2012-06-19 (last visited Sep. 28, 2012).

[206] Since licensees are likely to deploy technologies that use a block size that is a multiple of 5 megahertz, winners of 6 megahertz blocks will have 1 megahertz unused, winners of two contiguous blocks will have 2 megahertz unused, and so forth. Because the blocks are aligned (*i.e.,* downlink blocks are next to downlink blocks and uplink blocks are next to uplink blocks), such unused portions will not serve any useful function as guard bands between blocks. Furthermore, because these small fragments will be spread throughout the band, they cannot easily be aggregated for any other purpose.

[207] If 6 broadcasting channels could be cleared for downlink operations, a 5 megahertz block size would result in 6 blocks being available for auction, whereas a 6 megahertz block size would result in 5 blocks being available. In both cases, however, 30 megahertz would be available for auction with a 6 megahertz guard band.

[208] Carrier aggregation is a technique where two separate RF carriers can be bound to effectively combine their channel bandwidths, and thus increase peak data rates and capacity. The carriers can be contiguous in the same band , non contiguous in the same band or even in different bands. Carriers of different bandwidths can be aggregated as well. This feature is currently under development in 3GPP's LTE-Advanced standard. Up to five 20 MHz carriers may be combined for a total of 100 MHz in bandwidth See Jeanette Wannstrom, *Carrier Aggregation Explained*, 3GPP.org, May 2012, http://www.3gpp.org/Carrier-Aggregation-explained (last visited Sep. 28, 2012).

2. Block Configuration

131. Our proposed band plan provides a general framework that will allow us to license different amounts of wireless spectrum in different license areas. We propose to offer a uniform amount of downlink spectrum nationwide on spectrum formerly allocated for broadcast use with no in-band television stations, so that wireless service providers can use uniform mobile device filters and so we can ensure that there is no interference between television and wireless services.[209] We also propose to offer varying amounts of uplink spectrum in each service area, depending on the amount of spectrum available, due to the greater flexibility to accommodate different filters in base stations than in mobile terminals.[210] Thus, our band plan aims to pair spectrum for FDD operations when possible, but may yield varying amounts of unpaired downlink spectrum blocks in different areas.

132. *Paired Blocks.* Existing transmission procedures for mobile broadband FDD operations generally operate on paired spectrum bands, so pairing spectrum, where possible, will allow mobile broadband providers to deploy and expand 4G wireless broadband services quickly and efficiently. We seek comment on our proposal to pair licensed spectrum when possible. Where we are able to make paired spectrum blocks available, we propose to auction and license these blocks on a paired basis. Are there any advantages to ensuring that a certain amount of spectrum is paired in each license area?

133. *Unpaired Spectrum*. Although we plan to provide paired spectrum blocks wherever possible, the relinquished broadcast television spectrum usage rights that allow us to offer wireless spectrum licenses will not always fit neatly into pairs in each license area. In order to maximize the amount of spectrum we can make available, as described above, where we have excess wireless spectrum that cannot be paired we propose to offer unpaired downlink spectrum that can serve as supplemental downlink expansion for FDD operations. In keeping with our proposed approach of offering a uniform amount of downlink spectrum nationwide, while allowing variable amounts of uplink spectrum on a more local basis, we propose to license the unpaired downlink spectrum in 5 megahertz increments too.[211] These downlink expansion blocks would be located immediately adjacent to the downlink portion of paired blocks to minimize interference issues. We seek comment on our proposal to license unpaired spectrum blocks for downlink expansion. Alternatively, we seek comment on whether we should auction and license uplink and downlink spectrum separately. In discussing the amount of paired and unpaired spectrum that should be allocated for wireless broadband, commenters should discuss the relative costs and benefits of each approach.

134. Because wireless broadband traffic tends to be asymmetrical (*i.e.,* downlink Internet traffic is greater than uplink traffic because users download more data than they upload), we anticipate

[209] In areas where minimal spectrum usage rights are reclaimed through the reverse auction, we could choose to not clear any spectrum of broadcast usage rights instead of limiting the amount of downlink wireless spectrum available nationwide by the amount cleared in these areas. For example, if we could clear at least 10 TV channels in every market but one, where we can clear only 3 TV channels, we could choose not to clear any channels in that market and instead offer wireless spectrum licenses in all other markets. This would help us to maximize the amount of wireless spectrum that we can license overall while avoiding unnecessary disruption of broadcast television service. Where we choose to clear no TV channels and offer no wireless licenses on these frequencies, mobile devices operating in these geographic areas will need to operate on another frequency band (through other assets of the operator or roaming agreements, for example); therefore, TV stations in the band will not interfere with those mobile devices.

[210] It is easier for base stations to support multiple band plans than mobiles because base stations are: (1) not subject to the same size and power limitations as mobiles; and (2) in a fixed location and base station filters can be specialized for local spectrum conditions.

[211] *See infra*, Section VI.B.3.a (Band Plan "Families" with Consistent Nationwide Downlink Bandwidth).

that wireless providers could use this excess downlink spectrum to support their wireless broadband services in this spectrum band, or supplement their spectrum holdings in other bands. We seek comment on the extent to which mobile wireless traffic today is symmetrical or asymmetrical and on how these patterns are expected to evolve in the future. To what extent do traffic patterns support the notion of unpaired downlink expansion blocks?

135. *Block Locations*. In deciding where to place the uplink and downlink spectrum bands, we aim to provide the best technical solution to reduce interference issues between adjacent bands and wireless operations. As illustrated in Figure 4 above, we propose an uplink band starting at channel 51 (698 MHz), and a downlink band beginning at channel 36 (608 MHz) to greatly reduce interference concerns, and consequently, our need for guard bands. Specifically, the 600 MHz uplink band will be adjacent to the 700 MHz uplink band, and therefore we are not proposing a guard band between the two uplink bands.[212] In addition, we do not anticipate needing a guard band between the downlink band and existing channel 37 operations (radio astronomy and wireless medical telemetry), because they currently operate adjacent to broadcast television bands without interference.[213] By designating downlink and uplink operations in specific frequencies, we reduce potential interference with adjacent operations, thus minimizing the need for guard bands; and we also minimize interference between wireless operations. We seek comment on this proposal, including the expected costs and benefits.

3. Offering Different Amounts of Spectrum in Different Markets

136. As explained above, our proposed band plan approach would accommodate non-uniform amounts of relinquished broadcast TV spectrum in each geographic area. In allowing for different levels of clearing in different geographic areas, we can allow more broadcasters the opportunity to voluntarily relinquish their spectrum usage rights and allow wireless providers to obtain additional wireless spectrum, where available. The alternative – requiring the same amount of broadcast spectrum to be cleared in all markets – would limit the total amount of spectrum usage rights that broadcasters can choose to relinquish and that wireless providers can use for wireless broadband services. Figure 5 depicts our proposed band plan, which includes different amounts of uplink spectrum:

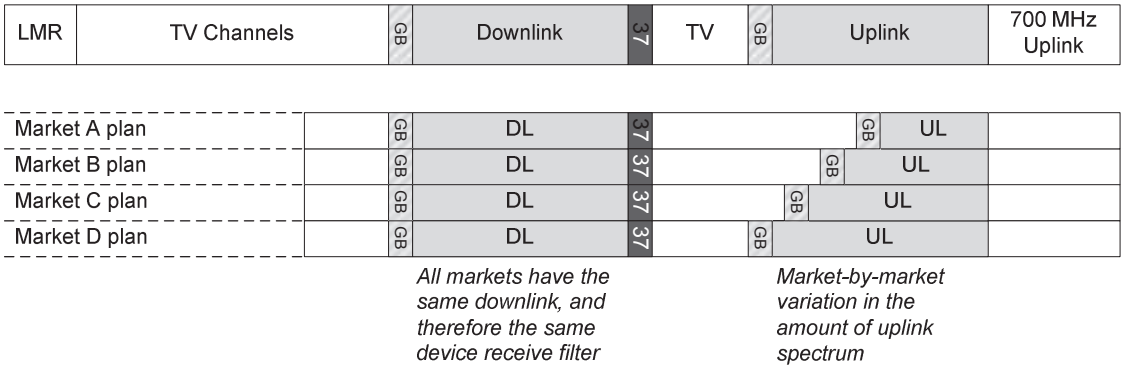

Figure 5. Fixed downlink with uplink varying by market

137. On the other hand, proliferation of band plans is often considered undesirable from a technical perspective. Multiple band plans are undesirable because each band plan typically requires a different design of the filters and/or duplexers in mobile devices to support those band plans. To balance

[212] *See infra*, VI.B.5.a (Guard Bands).

[213] *See infra*, *VI.B.5.a*However, if channel 37 operations are relocated we will probably need a guard band.

these two goals, we propose creating "families" of related band plans, and depending on the amount of spectrum that is relinquished, "extended families" of band plans.

a. Band Plan "Families" with Consistent Nationwide Downlink Bandwidth

138. A band plan "family" is a group of possible band plans with a consistent amount of nationwide downlink spectrum to allow for market-by-market differences in the quantity of uplink spectrum. This concept ensures that user devices can operate nationwide with common receive filter components. The variable amount of uplink blocks means, however, that base stations in different markets may require different receive filtering. We believe that due to form factor, power, and other requirements, it is less costly to implement differential receive filtering in the base station than in the mobile device. We seek comment on this premise.

139. Figure 6 demonstrates the concept of a band plan family.[214] If we reclaim 10 broadcast television channels in most areas, but fewer channels in some areas, we can only offer the minimum amount of paired blocks available nationwide if we offer the same amount of uplink spectrum, even though there is more available wireless spectrum in some areas. In contrast, if we allow for a variation in the amount of uplink spectrum offered in each area (with a minimum of one uplink block offered in each area), we can offer more spectrum: four paired blocks in areas where we clear 10 channels, three paired blocks where we clear 9 channels, and two paired blocks in areas where we clear 8 channels. Because we must clear the same amount of downlink spectrum nationwide for technical reasons,[215] we propose to offer the unpaired downlink blocks for downlink expansion.[216]

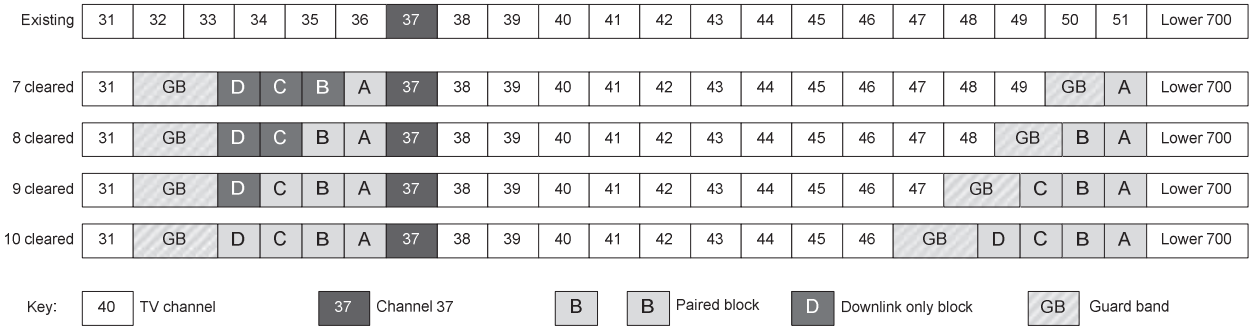

Figure 6. Example family for minimum clearing of 7 channels

[214] The guard bands shown in this figure include the minimum guard band and the remainder spectrum that occurs in these cases. *See infra*, Sections VI.B.5.a, VI.B.6.b (Guard Bands, Remainder Spectrum for Unlicensed Use).

[215] *See supra*, Section VI.B.2 (Block Configuration).

[216] Because some of the spectrum in the uplink and downlink bands is needed for guard bands and the remaining spectrum is not divisible by the proposed spectrum block size, some spectrum available from broadcasters' relinquished spectrum usage rights cannot be licensed for wireless mobile broadband. *See* Sections VI.B.5.a, VI.B.6.b (Guard Bands, Remainder Spectrum for Unlicensed Use).

b. "Extended Families" Using Multiple Downlink Band Plans

140. If broadcasters voluntarily relinquish spectrum usage rights in more spectrum than can be supported in one pass band due to current technical limitations, we may need to support two downlink band plans from the outset.[217] As discussed below in more detail, two or more downlink band plans allow for a wider variation of cleared spectrum in different geographic areas. Figure 7 illustrates this example.

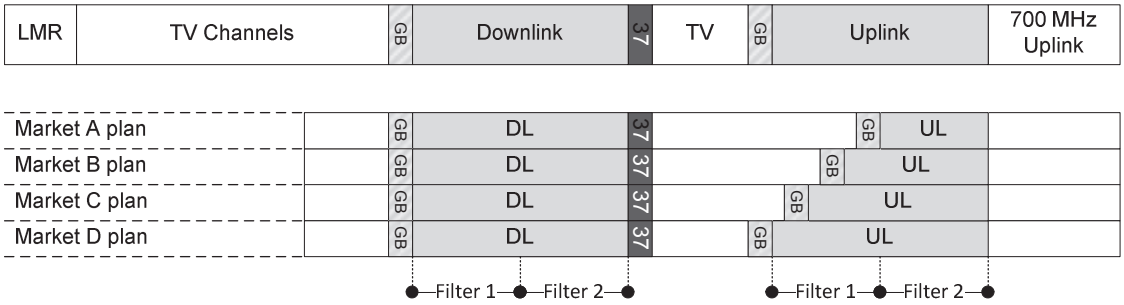

Figure 7. Example of family requiring two filters

141. In this case, mobile devices would need two filters rather than one filter to support service in the entire band. Because two filters are necessary due to technical limitations, there is no additional cost incurred to support a second band, provided it aligns with the installed filters. Figure 8 shows how the two families would align.

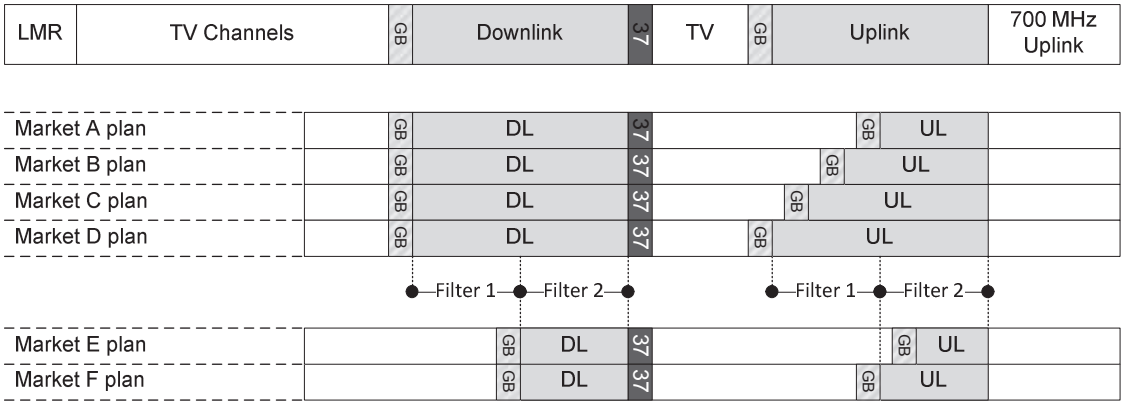

Figure 8. Two related plans based on aligning filters, an "extended family"

There is a fixed relationship between the two families, however, because the second family must align with the upper filter of the first family. Due to this alignment, it is not possible to arbitrarily combine any two families; only ones that align by having the number of downlink channels cleared in the smaller family align with one of the filters used in the larger family. We refer to these sets of families as "extended families."

142. Supporting extended families of band plans significantly increases the amount of market variation that can be accommodated by the band plan. Figure 9 shows an example of an extended family of band plans based on the assumption that the pass bands can be no more than 4.2% of the center

[217] Each filter has a pass band, which is the set of frequencies that the filter allows to be received by the equipment. *See also infra*, para. 169.

frequency.[218] If only the larger family, labeled family B in the illustration, is supported, then market clearing between 11 and 16 TV channels can be supported. By supporting the smaller family, labeled family A in the picture, a range of clearing from 7 to 16 TV channels can be supported. There is also significant variation in the uplink to downlink mix by market in a way that is more variable and uneven than in the single family case, however. For example, a market with 10 channels cleared is fully symmetric, while a market with 11 channels cleared is highly asymmetric.

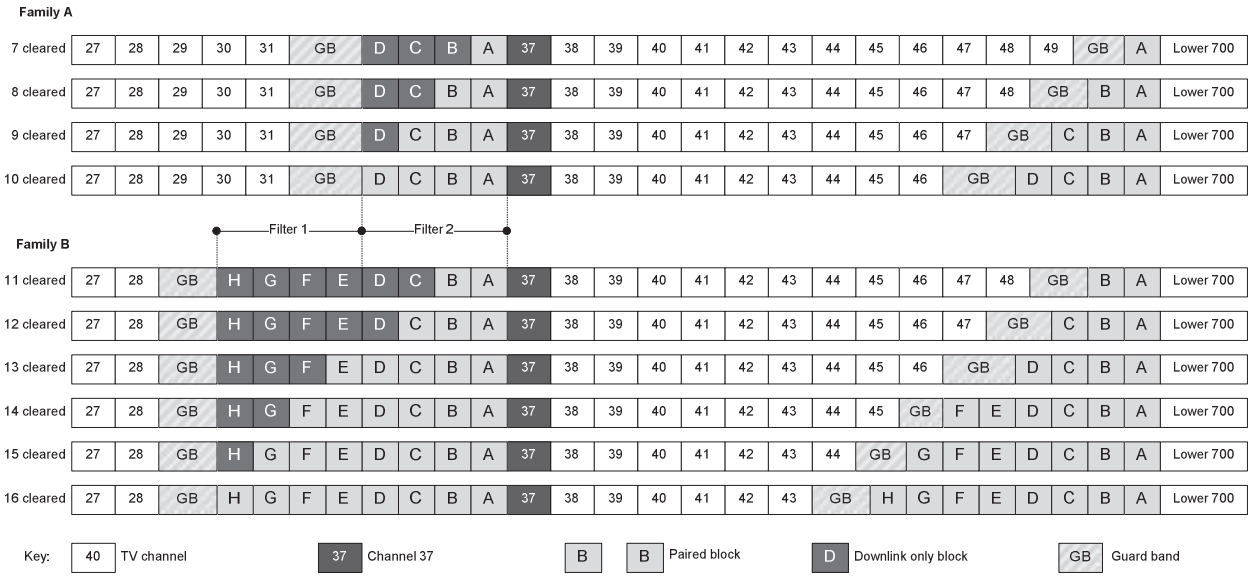

Figure 9. Example of an extended family combining two families

143. Supporting these extended families has certain benefits, but also some drawbacks. It will extend the range of market clearing options supported by the band plan, possibly enabling us to allow more broadcasters to voluntarily relinquish their spectrum usage rights by allowing us more flexibility for dealing with market variation in the number of television channels we can clear in each market. However, this approach adds complexity to the process and requires us to make assumptions about filter capability to align the families into extended families. Supporting two band classes also results in additional interoperability concerns.[219] We seek comment on supporting extended families of band plans. Should we assume that certain amounts of spectrum will require two or three filters to implement? If we make this assumption, should we vary the amount of 600 MHz spectrum available by market based on the expected number and bandwidth of the required filters? What are the benefits and drawbacks of this approach?

4. Geographic Area Licensing

144. We propose to license the 600 MHz band using a geographic area licensing approach, and we seek comment on this proposal. A geographic area licensing approach is well suited for the types of fixed and mobile services that would likely be deployed in this band. Additionally, geographic licensing is consistent with the licensing approach adopted for other bands that support mobile broadband

[218] This assumption was chosen because this is the size of the pass band in largest 3GPP FDD band, Band 3 (1710-1785 MHz and 1805-1880 MHz bands), *see e.g.*, *3GPP RF Standard for Handsets* at 20. *See infra*, Section VI.B.5.d (Pass Band Size).

[219] *See infra*, Section VI.B.5.b (Interoperability Considerations).

services.[220] In the event that interested parties do not support geographic licensing for the 600 MHz spectrum, those commenters should explain their position, identify any alternative licensing proposal and the costs and benefits associated with that alternative.

145. Section 6403(c)(3) of the Spectrum Act directs the Commission to "consider assigning licenses that cover geographic areas of a variety of different sizes."[221] We discuss below appropriate geographic areas for licensing the 600 MHz spectrum and seek comment on how we should take account of this directive. The Commission has previously used a variety of geographic area sizes to license spectrum, ranging from nationwide and large regional areas such as Regional Economic Area Groups (REAGs)[222] and Major Economic Areas (MEAs)[223] to medium-sized geographic areas such as Economic Areas (EAs)[224] and Component Economic Areas (CEAs),[225] to smaller areas such as Metropolitan Statistical Areas/Rural Statistical Areas (MSAs/RSAs).[226]

146. We are concerned that licensing the 600 MHz spectrum on a nationwide, or large regional, basis would require the Commission to reclaim an equal amount of spectrum nationwide, or throughout large regions. As a result, if only a few broadcasters in one geographic market voluntarily relinquish their spectrum usage rights, we would be constrained by that amount of available spectrum as the baseline for offering wireless spectrum in the broader area. Thus, the spectrum may not be put to its highest valued use, if broadcasters in other markets within the area want to relinquish spectrum usage rights and wireless providers want to purchase licenses for those rights, but cannot because of the uncleared market. Similarly, using REAGs would present the same problem of limiting the amount of

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[220] *See Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, Report and Order, 18 FCC Rcd 25162, 25174, para. 30-31 (2003) (*AWS-1 Report and Order*); *modified by Service Rules for Advanced Wireless Services In the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, Order on Reconsideration, WT Docket No. 02-353**,** 20 FCC Rcd 14058 (2005)**;** *Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands*, WT Docket No. 04-356, Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, Notice of Proposed Rulemaking, 19 FCC Rcd 19263, 19271-72, para. 18-19 (2004) (*AWS-2 NPRM*); *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band*, WT Docket No. 07-195, Notice of Proposed Rulemaking, 22 FCC Rcd 17035, 17050-51, para. 31-32 (2007) (*AWS-3 NPRM*); *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, WT Docket No. 12-70, Notice of Proposed Rulemaking and Notice of Inquiry, 27 FCC Rcd 3561, 3572, para. 25 (2012) (*AWS-4 NPRM*); *Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, GN Docket No. 01-74, Report and Order, 17 FCC Rcd 1022, 1058-59, para. 89 (2001) (*Lower 700 MHz Report and Order*).

[221] Spectrum Act § 6403(c)(3).

[222] 47 C.F.R.§ 27.6.

[223] *Id*.

[224] *Id*.

[225] The CEA service areas are based on the CEAs delineated by the Regional Economic Analysis Division, Bureau of Economic Analysis, U.S. Department of Commerce, February 1995. *See* Kenneth P. Johnson, Survey of Current Business, *Redefinition of the BEA Economic Areas*, (February 1995) *available at* http://www.bea.gov/scb/pdf/regional/proj/1995/0295rea.pdf (last visited Sep. 28, 2012). We are referencing the CEAs that were adopted in 1995 and not the current CEAs that were established in 2004 because the EAs that the Commission uses to license its spectrum are based on the 172 EAs that the Bureau of Economic Analysis of the U.S. Department of Commerce developed in 1995. *See* 47 C.F.R. § 27.6; *see also* In the Matter of the Commission's Rules to Establish Part 27, the Wireless Communications Service ("WCS"), GN Docket No. 96-228, Notice of Proposed Rulemaking, 11 FCC Rcd 21713, 21720, n.23 (1996). This will allow the CEAs to properly nest into EAs.

[226] *See Common Carrier Public Mobile Services Information, Cellular MSA/RSA Markets and Counties*, Public Notice, 7 FCC Rcd 742 (1992).

spectrum that could be repurposed for wireless broadband because there are only 6 REAGs in the continental United States.[227]

147. On the other hand, the use of small geographic license areas, such as MSAs/RSAs, could potentially support much greater variation in the amount of reclaimed spectrum from area to area, but impose different tradeoffs.[228] While it is more likely that we can license more wireless spectrum that is not encumbered by potential interference with nearby remaining broadcast television spectrum, having a large number of very small licenses may raise implementation risks for the auction designs contemplated in this proceeding. Moreover, more licenses could complicate potential bidders' efforts to plan for, and participate in, the auction for such licenses, as well as subsequent roll-out of service.

148. EAs, which the Bureau of Economic Analysis defines as "one or more economic nodes—metropolitan areas or similar areas that serve as centers of economic activity—and the surrounding counties that are economically related to the nodes,"[229] represent a natural market unit for local or regional service areas. EAs nest within and may be aggregated up to larger license areas, such as Major Economic Areas (MEAs) and Regional Economic Area Groupings (REAGs) for operators seeking larger service areas.[230] Depending on the licensing mechanism we adopt, licensees may aggregate or otherwise adjust their geographic coverage through auction or through secondary markets. We believe that for this spectrum, EA licensing strikes an appropriate balance between geographic granularity from a spectrum reclamation standpoint and having a manageable number of licenses from an auction design standpoint. We propose to license the 600 MHz band on an EA basis and seek comment on this approach. We ask commenters to discuss and quantify the economic, technical, and other public interest considerations of licensing on an EA basis, as well as the impacts this approach may have on auction design, rural service, and competition.

149. We also seek comment on whether we should use geographic areas other than EAs. Specifically, we seek comment on using geographic areas such as CEAs or MSAs/RSAs, which have a greater number of service areas throughout the United States and the reasons why using these geographic license sizes are more advantageous than using EAs. We also seek comment on whether there are certain circumstances in which using larger – nationwide or regional – licenses would be more appropriate or advantageous. For example, if we are able to reclaim a large amount of broadcast television spectrum nationwide or regionally, should we license a portion of the spectrum on a nationwide or regional basis? We encourage commenters to consider the auction design implications of any proposed geographical licensing scheme, as well as any associated costs and benefits.

150. In addition, we seek comment on whether and how to license areas outside of the continental United States as the Commission typically has done. Although we note that the Spectrum Act makes no special provisions for Alaska and Hawaii, we seek comment on whether any modifications to our proposed or current regulations are necessary to accommodate licensing spectrum in these areas. Similarly, if we decide to include the United States territories in the incentive auction, are any changes necessary? Finally, should we include the Gulf of Mexico in our licensing scheme for this spectrum? Should the Gulf of Mexico be part of another service area(s)[231] or should we separately license a service

[227] The REAGs can encompass more than 20 EAs. *See* 47 C.F.R. § 27.6.

[228] *See infra*, Section VI.B.6.a (Interchangeable Blocks).

[229] Final Redefinition of the BEA Economic Areas, 60 Fed. Reg. 13,114 (Mar. 10, 1995).

[230] 47 C.F.R. § 27.6.

[231] *See Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, WT Docket No. 99-168, First Report and Order, 15 FCC Rcd 476, 500, para. 56, n.137 (2000).

area(s) to cover the Gulf of Mexico.[232] Commenters who advocate a separate service area(s) to cover the Gulf of Mexico should discuss what boundaries should be used, and whether special interference protection criteria or performance requirements are necessary due to the unique radio propagation characteristics and antenna siting challenges that exist for Gulf licensees.

5. Technical Considerations

151. As noted above, we may not know in advance of the forward and reverse auctions how much spectrum will be available to license for wireless services. As a result, we propose to configure the 600 MHz band in a way that will make the 600 MHz spectrum blocks as similar and technically interchangeable as possible to allow for enhanced substitutability across blocks and allow for greater flexibility in our auction design choices.[233] To create spectrum blocks that achieve these goals, we must make certain technical decisions. These include creating guard bands, ensuring interoperability of devices, and deciding how to address spectrum in border areas that may be encumbered by neighboring television stations in Canada or Mexico. In addition, we must determine the appropriate duplex gap and pass band size. These issues are discussed below.

a. Guard Bands

152. In order to minimize interference between dissimilar adjacent operations, we propose to create guard bands in which there are no high powered operations. These guard bands may be used for low-powered unlicensed operations that are secondary and cannot cause interference. To determine the appropriate size of these guard bands, we must take into account two primary considerations. First, the guard bands must be large enough to ensure that wireless spectrum blocks adjacent to television operations or other adjacent high powered operations will support wireless broadband services to the same level of performance as spectrum blocks adjacent only to other spectrum blocks used for wireless broadband service. As described above, we propose creating spectrum blocks that are as similar and technically interchangeable as possible to allow for enhanced substitutability across blocks.[234] Second, the Spectrum Act requires that the "guard bands shall be no larger than is technically reasonable to prevent harmful interference between licensed services outside the guard bands."[235] We propose to establish guard bands that meet this requirement.

153. Below we depict the proposed band plan and the location of the proposed guard bands to protect 600 MHz licensees and television broadcasters from adjacent operations. As further detailed in this section, we propose no separation between the 600 MHz uplink band and the lower 700 MHz uplink band, and no separation between the 600 MHz downlink band and Channel 37 operations (radio astronomy and wireless medical telemetry), assuming Channel 37 operations are not relocated. We seek comment on the appropriate size for guard bands between television operations and the lower edge of the 600 MHz downlink band and between television operations and the lower edge of the 600 MHz uplink band. We ask commenters to provide detailed engineering analysis and data in support of the guard bands they propose.

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[232] *Service Rules for the 746-764 and 776-794 MHz Bands*, WT Docket No. 06-150, Report and Order and Further Notice of Proposed Rulemaking, 22 FCC Rcd 8064, 8085, para. 49 (2007).

[233] *See supra*, para. 123-125.

[234] *See supra*, para. 125.

[235] *See* Spectrum Act § 6407(b).

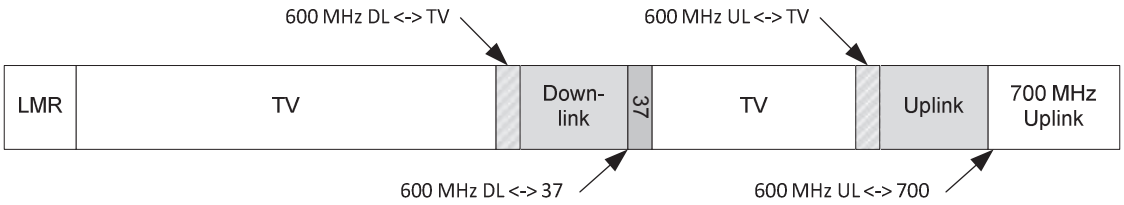

Figure 10. Guard band locations in the proposed band plan

154. *No Guard Band between 600 MHz Uplink and 700 MHz Uplink Spectrum*. The 600 MHz uplink band is adjacent to the lower 700 MHz A block (698 MHz to 704 MHz), which is used for terrestrial uplink services.[236] Because both bands are designed for terrestrial uplink systems, the new 600 MHz block and the lower 700 A blocks are harmonized. Generally, we do not allocate any spectrum for guard bands when adjacent operations are harmonized.[237] Therefore, we are not proposing a guard band between the 600 MHz uplink spectrum and the lower 700 MHz spectrum.

155. *No Guard Band between 600 MHz Downlink and Channel 37 (Assuming Existing Channel 37 Operations)*. In our proposed band plan, the upper edge of the downlink band borders Channel 37, which is not allocated for broadcast television, but radio astronomy and wireless medical telemetry. Currently, there is no guard band between television stations in channels 36 and 38 and the services in channel 37. Because the proposed in-band and out-of-band emissions of the 600 MHz downlink band are significantly lower than those of the television stations, we do not propose a guard band between the 600 MHz downlink band and channel 37.[238]

156. *Guard Band between 600 MHz Uplink and Television.* At the lower edge of the 600 MHz uplink band, the adjacent systems – television channels used for downlink transmissions and 600 MHz uplink transmissions from mobile devices – are not harmonized. Interference can occur at either the television receiver or the mobile broadband base station receiver, either by out-of-band emissions (OOBE) or by receiver overload ("blocking") from the adjacent service. We seek comment on the appropriate guard band size at the lower edge of the 600 MHz uplink spectrum to protect both remaining television stations and new wireless broadband licensees from interference. The Commission has previously found six megahertz of spectrum separation is sufficient to protect digital television receivers against 1 MW DTV transmitters.[239] We propose a six megahertz guard band to protect television

[236] For example, 3GPP defines 699 MHz to 716 MHz for uplink operations in Band 12. *See 3GPP RF Standard for Handsets* at 20.

[237] For example, we have not created guard bands between harmonized wireless operations in adjacent PCS, cellular, and AWS blocks. *See* 47 C.F.R. §§ 22.905, 24.229, 27.5(h). As discussed above, we are proposing to place the 600 MHz uplink band next to the 700 MHz uplink spectrum to take advantage of this harmonization, and reduce the need for guard band spectrum. *See supra*, Section VI.B.2 (Block Configuration).

[238] For a more detailed discussion of how 600 MHz operations will protect existing Channel 37 operations from interference, *see infra*, Section VI.C (Technical Rules).

[239] To address DTV to DTV interference, the Commission's Part 73 rules restrict digital television stations from being placed on co- and adjacent channels, but do not restrict the placement of stations if they are separated by 6 megahertz or greater of spectrum. 47 C.F.R. § 73.623(c)(2). This requirement indicates that 6 megahertz of frequency separation is adequate to protect DTV receivers from high power television transmissions. We also note that, based on our analysis in the TV Band Devices (aka "TV White Spaces") proceeding, zero megahertz is sufficient to protect digital television receivers against television white space transmitters operating at 40 mW. *TVWS Second Report and Order*, 23 FCC Rcd at 16868-69, para 176-177; *see also* 47 C.F.R. § 15.712(a)(1). No guard band or other spectral separation is necessary at this low power level.

operations and 600 MHz uplink operations. Additionally, below we propose to add "remainder" spectrum to the guard bands to further mitigate any potential interference concerns. We also invite comment on how much guard band would be sufficient to prevent harmful interference between licensed services outside the guard bands, as well as how to interpret Congress's mandate that guard bands be "no larger than technically reasonable."

157. Specifically, we ask commenters to analyze 600 MHz uplink interference into digital television receivers within the television station's protected contour, for receivers using indoor antennas and receivers using rooftop antennas, as considered in OET 69.[240] Likewise, we ask commenters to analyze television station interference into 600 MHz base station receivers. In addition, we seek input on the types of user equipment (UE) likely to be deployed in the 600 MHz band (*e.g.,* handheld, laptops, tablets, fixed modems) and their operations to assist in determining the likelihood and severity of potential interference. We also seek information on device characteristics such as EIRP, antenna gain, body losses at 600 MHz, and the effects of power control on average UE power level. We also seek data on environmental factors such as typical interior/exterior wall penetration losses and polarization mismatch. Furthermore, we invite comments on potential improvements through the use of filters on digital television transmitters to reduce OOBE into 600 MHz base station receivers and improvements needed to prevent blocking. Could broadcasters be reimbursed under the Spectrum Act for installing the improved filters because such filters would increase the amount of relinquished spectrum that could be made available to wireless providers?[241]

158. *Guard Band between 600 MHz Downlink and Television.* The lower edge of the 600 MHz downlink band and the adjacent television systems are harmonized to the degree that both systems are downlink, meaning that each produces transmissions from higher power fixed stations to smaller, more portable, and more numerous receivers. They are not fully harmonized, however, because broadcast television stations operate at a considerably higher power than what we are proposing for 600 MHz base stations, and television receivers are used differently than we anticipate 600 MHz devices will be. We seek comment on the appropriate guard band size to prevent harmful interference to the 600 MHz mobile broadband and DTV services. Similar to the guard bands between television and 600 MHz uplink, we propose a guard band of six megahertz plus remainder spectrum, where available. We also invite comment on how much guard band would be sufficient to prevent harmful interference between licensed services outside the guard bands, as well as how to interpret Congress's mandate that guard bands be "no larger than technically reasonable."

159. Specifically, we ask commenters to analyze interference from 600 MHz base stations into digital television receivers within the television station's protected contour for digital receivers using indoor and rooftop antennas. Additionally for this guard band, we are requesting commenters to analyze interference from television stations into 600 MHz mobile devices. We also invite comments on potential improvements through the use of filters on digital television transmitters to reduce OOBE into 600 MHz mobile receivers and improvements needed to prevent blocking. With respect to analyzing interference to 600 MHz downlink from television stations, we ask that commenters provide data to evaluate several scenarios for filtering and colocation, including: (1) using existing mask digital television transmit filters with 600 MHz base station and television facilities not colocated; (2) using existing mask DTV transmit filters with 600 MHz base station and television facilities colocated; and (3) using improved mask digital television transmit filters, with 600 MHz base station and television facilities colocated. To support this analysis, commenters should provide data on the types of user equipment, their operational use, and

[240] OET Bulletin No. 69, Longley-Rice Methodology for Evaluating TV Coverage and Interference, page 9 (Feb. 6, 2004) available at http://www.fcc.gov/encyclopedia/oet-bulletins-line (last visited Sep. 28, 2012).

[241] *See* Spectrum Act § 6403

device receiver characteristics such as antenna gain, body losses, adjacent channel rejection and blocking characteristics. In addition, commenters should justify any assumptions they make in their analysis.

b. Interoperability Considerations

160. As explained above, if we decide to adopt our band plan approach, we do not need to clear the same amount of spectrum in each geographic area. In allowing for different levels of clearing in different geographic areas, we can allow more broadcasters the opportunity to voluntarily relinquish their spectrum usage rights, which will allow wireless providers to obtain additional wireless spectrum licenses where available. The alternative– requiring the same amount of spectrum to be cleared in all markets– would likely limit the total amount of spectrum usage rights that broadcasters can relinquish and wireless providers can obtain.

161. On the other hand, proliferation of band plans is often considered undesirable from a technical perspective. In an FDD system, both the base station and user equipment (such as mobile devices) have pairs of filters, called duplexers, which screen out certain frequencies[242] to allow the equipment to both transmit and receive data while minimizing interference. Typically, each band plan requires a different design of the filters and/or duplexers in user equipment, such as mobile devices, to support those band plans. Therefore, each band plan supported by a device requires a separate duplexer (or filter, in the case of Time Division Duplex (TDD) bands), and associated components. So, if we choose to clear different amounts of downlink spectrum in different markets, mobile device manufacturers would need to create separate duplexers for different markets or risk interference in areas where we cleared less spectrum for wireless use (to and from remaining broadcast television operations, for example). Supporting multiple band plans would increase the cost, size, and/or complexity of these devices. We seek comment on whether we should minimize the number of band plans that need to be supported in mobile devices using the 600 MHz spectrum by creating uniform downlink spectrum nationwide. Given that most user devices already support many bands, is the burden of adding one more band to support 600 MHz service significantly different from the burden of adding multiple bands to support 600 MHz operations? What is the maximum number of band plans we should offer in this spectrum?

162. In addition to potentially increasing a device's cost, size, and/or complexity, multiple band plans can also reduce interoperability. For example, if a provider's license area covers only two of the four band plans available nationwide, it might choose to support only that subset of bands in its devices. As explained above, one of our goals in deciding how best to license this wireless spectrum is encouraging interoperability. Interoperability has often been important in ensuring rapid and widespread deployment of mobile devices in a new spectrum band.[243] Do our proposals sufficiently encourage and ensure interoperability in the 600 MHz band? Alternatively, should we require interoperability by adopting a specific interoperability rule? We seek comment on this issue.

163. As discussed above, to balance our goals of making more wireless spectrum available by clearing different amounts of spectrum in different areas and minimizing the burden of multiple band plans, we propose creating "families" of related band plans, where the same downlink band is available

[242] Each filter has a pass band, which is the set of frequencies that the filter allows to be received by the equipment, while those frequencies outside the pass band are screened out, or attenuated, by the duplexer. With current technology, mobile filters are generally discrete components that operate at fixed frequencies, and cannot be re-tuned.

[243] *See Promoting Interoperability in the 700 MHz Commercial Spectrum*, WT Docket No. 12-69, Notice of Proposed Rulemaking, 27 FCC Rcd 3521, 3531, para. 17 (2012).

nationwide but the amount of spectrum cleared for uplink use will differ among areas.[244] By keeping the same downlink spectrum nationwide, all user devices on the 600 MHz spectrum can potentially be supported with a single receive filter in the mobile device, thereby minimizing the costs associated with user devices and promoting interoperability. To obtain these benefits, however, the mobile device must be able to use a single duplexer for all the band plans. This will not result in interference, however, because the mobile devices will only operate where the network instructs it to transmit.[245]

164. Given the variation in uplink spectrum, however, base stations will require different receive filters in different areas. We believe that creating a band plan that requires different filters on base stations results in fewer problems and is less costly to resolve than requiring multiple filters in mobile devices because providers use fewer base stations, the stations are fixed, and there is more physical room in a base station to install multiple receive filters. We seek comment on this proposition.

165. *Channel 51 Early Relocation*. Some have argued that we should consider interoperability because of the experience with lower 700 MHz A Block licensees. They further contend that exclusion zones designed to protect broadcasting have presented significant deployment challenges for lower 700 MHz A Block licensees. We seek comment on these arguments and on resolving issues related to coexistence of Lower A Block operations and channel 51 even before we commence the incentive auction by facilitating requests for channel relocation associated with voluntary agreements between affected parties addressing these issues.[246]

c. Duplex Gap

166. As described above, we propose that our band plan will offer 5 megahertz paired building blocks of spectrum wherever possible. One important parameter in determining the band plan is the required separation between the uplink and downlink bands, referred to as the duplex gap. Figure 11 illustrates the following duplexing terminology: duplex gap, pass band, duplex spacing, and pass band center frequency.

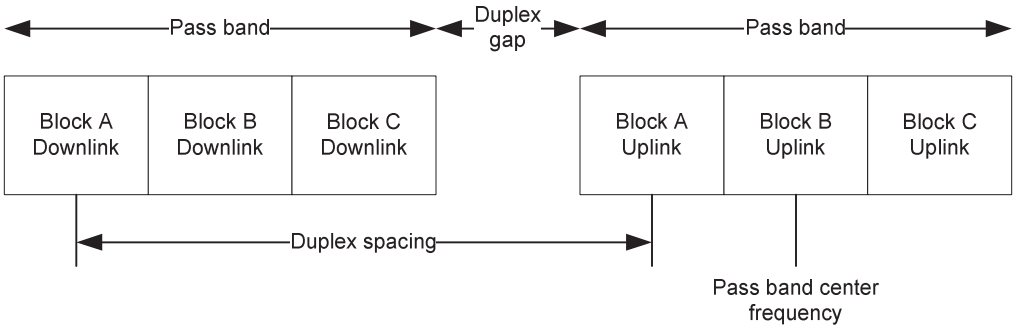

Figure 11. Illustration of duplexing terminology

[244] *See supra*, Section VI.B.3, VI.B.2 (Offering Different Amounts of Spectrum in Different Markets, Block Configuration).

[245] Mobile devices will not transmit on frequencies that overlap with uncleared TV channels in the uplink band, and will not generate excess out-of-band-emission (OOBE) in uncleared TV channels in the uplink band. Although the mobile filter would allow it to transmit full power on television stations that are not cleared in the lesser cleared markets, the network would not indicate to the mobile device that it should transmit on these frequencies. Further, because we generally require OOBE limits to be met on frequencies outside a licensee's assigned block, even within the band, devices generally meet OOBE limits without the additional attenuation provided by a transmit filter.

[246] The FCC has been facilitating such relocation requests since August of 2011, pursuant to "*Freeze on Applications for Channel 51 Effective Immediately and Sixty (60) Amendment Window for Pending Channel 51 Low Power Television, TV Translator and Class A Applications*," Public Notice, 26 FCC Rcd 11409 (MB 2011).

167. We seek comment on the necessary size of the duplex gap. In the LTE bands specified by 3GPP,[247] the smallest duplex gap is 10 megahertz for Band 8 (880-915 MHz and 925-960 MHz bands), with gaps ranging up to 355 megahertz for Band 4 (AWS-1).[248] The size of the duplex gap relative to the width of the pass band is often considered more important than the absolute size, however, as filter roll off is generally proportional to frequency.[249] Other factors can affect the appropriate duplex gap as well, such as the pass band width relative to the center frequency of the pass band, the duplex spacing between the transmitted and received signals, and allowances for temperature and manufacturing variation in components. In our proposed band plan, the duplex spacing is 90 megahertz, but we are not proposing a specific size for the duplex gap. Instead, we seek comment on the appropriate size of the duplex gap, and whether it should be specified as a minimum number of megahertz, a percentage of the pass band, another metric, or a combination of such metrics.

d. Pass Band Size

168. In our band plan proposal we have aimed to create large amounts of contiguous spectrum in a single band, minimize fragmentation of spectrum, and minimize proliferation of separate bands for flexible use spectrum. We recognize that there may be technical limitations on the maximum size of a band that can be supported, however.

169. Filters commonly used in mobile devices may have an upper limit on the pass band size they can support.[250] Examination of the bands defined for LTE show the largest pass band for an FDD band is Band 3(1710-1785 MHz and 1805-1880 MHz band), where the pass band is 4.2% of the center frequency.[251] Larger pass bands may be possible, however. For example, Band 41(2496-2690 MHz band), which is used for TDD operations, has a pass band of 7.5%.[252] IWPC indicates that SAW filters

[247] 3GPP stands for the "Third Generation Partnership Project"—a global standards body that is responsible for many of the cellular technology standards, including WCDMA, HSPA, and LTE. *See generally* www.3gpp.org.

[248] In the LTE bands specified by 3GPP, the smallest duplex gap is 10 megahertz for Band 8 (880-915 MHz and 925-960 MHz bands), with gaps ranging up to 355 megahertz for Band 4 (1710-1755 MHz and 2110-2155 MHz band (AWS-1)). Several other bands have small gaps, including 11 megahertz for Band 20 (791-821 MHz and 832-862 MHz bands), 13 megahertz for Band 12 (698-716 MHz and 728-746 MHz band (lower 700 MHz)), and 15 megahertz for Band 25 (1850-1915 MHz and 1930-1995 MHz bands extended PCS including the G block)). *See 3GPP RF Standard for Handsets* at 20.

[249] Looking at this metric, the smallest LTE band specified by 3GPP is Band 25 (1850-1915 MHz and 1930-1995 MHz bands extended PCS including the G block)) where the 15 megahertz duplex gap (1915 to 1930) is 23.8% of the 65 megahertz pass band (1930 to 1995 and 1850 to 1915). Similarly small bands include Band 22 (3410-3500 MHz and 3510-3600 MHz bands) with 25.0%, Band 3 (1710-1785 MHz and 1805-1880 MHz band) with 26.7%, and Band 8 (880-915 MHz and 925-960 MHz bands) with 28.6%. *See 3GPP RF Standard for Handsets* at 20.

[250] For example, in a 3GPP submission, Ericsson states that current mobile filter technology is limited to maximum pass band of 3-4% of the pass band's center frequency. *See* 3GPP, 3rd Generation Partnership Project; Technical Specification Group Radio Access Networks; LTE for 700 MHz digital dividend Work Item Technical Report (Release 11), R4-123128 at 19, available at http://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_63/Docs/R4-123128.zip, last visited Sep 28, 2012). Similarly, IWPC has stated that surface acoustic wave (SAW) filters using Lithium and Tantalum (Li-Ta), which are most commonly used in mobile devices, cannot support a pass band size of more than 4.2% of the pass band's center frequency. *See* IWPC presentation to the FCC "IWPC Mobile RF Filter Group" March 11, 2011 at 14, available at http://www.iwpc.org/ResearchLibrary.aspx?ArchiveID=165&Display=doc (last visited Sep 28, 2012) (*IWPC Presentation*).

[251] *See 3GPP RF Standard for Handsets* at 20.

[252] Although TDD technologies do not use a duplexer, TDD mobiles still require transmit and receive filters which use the same filter technology as FDD mobiles. *See 3GPP RF Standard for Handsets* at 20.

using an alternative manufacturing process with Lithium and Niobium (Li-Ni) can support pass bands of up to 6% of the pass band center frequency.[253]

170. In our proposed band plan, we may reach a potential technical limit of 4-6% of the pass band if we make 10 or more 5 megahertz blocks available for auction.[254] We also recognize that there may be other technical limitations on band size, due to antennas or other components, and seek comment on any other limiting factors. We seek comment on any technical limitations on pass band size. Does current filter technology limit the pass band size to no more than 4% of the pass band center frequency, no more than 6% of the pass band center frequency, or some other limit? Are there other limitations on pass band size due to other components of the system? Are these hard limits or soft limits, that is, what are the consequences of slightly exceeding any stated limit? Are these limits likely to change by the time the 600 MHz band is deployed, or in the future, and how should we allow for any potential changes in configuring our band plan?

171. Even if the maximum size of a band is limited by current technologies, we believe it is better long-term spectrum policy to clear larger bands that can take advantage of future technology innovations. We seek comment on this issue. We also seek comment on how these limits may relate to the duplex gap, duplex spacing, and guard bands. Does increasing the size of the guard bands allow support of a larger pass band? If so, should we consider setting the minimum guard band size relative to the pass band size? Do the relatively large duplex gap and duplex spacing in our proposed band plan allow large pass bands?

e. Border Issues

172. As explained below in the Canadian and Mexican Coordination subsection, we recognize that TV broadcast operations in Canada and Mexico may reduce the amount of spectrum fully cleared for wireless use.[255] We seek comment on how to address these border issues, particularly given the disparate timeframes for conversion to digital television in Canada and Mexico. For example, in specific license areas, should we place the 600 MHz uplink bands only in the available channels in channels 38-51 where wireless broadband operations will not be affected by remaining TV operations in the border areas? How can downlink spectrum be maximized in the border areas?

6. Additional Band Clearing Considerations

a. Interchangeable Blocks

173. We aim to provide as much certainty as possible to wireless providers bidding for 600 MHz spectrum blocks. As explained above, we propose creating sufficient guard bands between wireless services and other services to ensure that wireless spectrum blocks adjacent to high-powered operations (such as broadcast television) will support wireless broadband services to the same level of performance as spectrum blocks adjacent to wireless broadband service to allow for enhanced substitutability across building blocks, among other things.[256]

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[253] See *IWPC Presentation* at 14 (discusses further extending the possible bandwidth with the use of discrete components).

[254] For example, if we offer 10 spectrum blocks (5 pairs of 5 + 5 megahertz uplink and downlink blocks), the 25 megahertz of uplink spectrum will extend from 673 MHz to 698 MHz, with the pass band center frequency at 685.5 MHz. The ratio of the 25 megahertz to the 685.5 MHz center frequency is 3.6% (25 / 685.5). The downlink spectrum band will extend 25 megahertz from 583 MHz to 608 MHz, with a pass band center frequency of 595.5 MHz, leading to a ratio of 4.2% (25 / 595.5). Because the downlink band is lower in frequency and therefore results in a larger ratio when calculating the pass band, the downlink band is the limiting factor in this case.

[255] *See infra*, Section VI.C.5 (Canadian and Mexican Coordination).

[256] *See supra*, Section VI.B.5.a (Guard Bands).

174. Although we posit that creating spectrum blocks that are interchangeable will be advantageous to wireless bidders, we also seek comment on whether wireless bidders would prefer access to a greater amount of spectrum, even if not all blocks are protected equally from interference. For example, if we adopt a plan that allows for non-nationwide clearing of broadcast television stations, only a portion of a wireless broadband service area may be cleared in some areas because the contour of a broadcast station and the contour of a wireless license service area are not identical. If interchangeability is more important than quantity, we could choose not to offer wireless broadband licenses in these types of areas. We seek comment on whether we should refrain from offering blocks in areas where part of the spectrum is encumbered. If we offer only non-encumbered spectrum blocks, however, we will be able to offer fewer blocks of spectrum for wireless use, particularly along border areas.[257] Alternatively, should we offer these encumbered blocks to interested bidders? If so, how? Should we establish a threshold (*e.g.*, a percentage of a license area's population or geography) for determining whether a license is considered "clear" even if some portion of the license area has incumbent operations that must be protected? If so, how would such a concept affect the auction design? If we decide not to license certain heavily encumbered blocks, should we make the "cleared" spectrum available for unlicensed use? For example, if 90 percent of the geographic area of a spectrum block is encumbered by broadcasters, should we make the remaining 10 percent available for unlicensed use? We seek comment on potential approaches to address this issue.

b. Remainder Spectrum for Unlicensed Use

175. In order to maximize the number of valuable blocks for licensing, to improve the interference environment for mobile operations, and to increase the substitutability of blocks in the auction, we propose to add "remainder" spectrum to the guard bands. As described in section VIII, these guard bands would be available for unlicensed use. The downlink and uplink 600 MHz bands would each be organized into 5 megahertz blocks, which can be aggregated by licensees into larger contiguous blocks as needed. Because 5 megahertz blocks match the prevailing channelization increments of modern cellular systems, this block size could enable a greater quantity of usable licensed blocks in any given market as compared to other approaches. The cleared TV broadcast stations operate on 6 megahertz wide channels, however, and as explained above, some spectrum from broadcasters' relinquished spectrum usage rights must serve as guard bands.[258] Therefore, to determine the number of wireless spectrum blocks available for downlink and for uplink in each market, we look at the total amount of spectrum cleared, divide that number by 2, subtract the guard band, divide by 5 (megahertz), and round down.[259] Because we must round down to a number divisible by 5 to create the wireless spectrum blocks, we will

[257] *See supra*, Section VI.B.5.e (Border Issues).

[258] *See infra*, Section VI.B.5.a (Guard Bands).

[259] We express this calculation in a simple formula for the downlink, as:

$$Blocks_{DL} = Floor\left(\frac{X - Guard_{DL}}{5}\right),$$

where X is the amount of downlink spectrum cleared (equal to half of the total amount of spectrum cleared in each market), $Guard_{DL}$ is the guard band between 600 MHz downlink and television operations, Floor(x) means that x is to be rounded down to the nearest integer, and $Blocks_{DL}$ is the resulting number of 5 megahertz blocks for downlink. The analogous formula for the uplink is:

$$Blocks_{UL} = Floor\left(\frac{X - Guard_{UL}}{5}\right).$$

have 0 to 4 megahertz of "remainder" spectrum in any given market for each half of the duplex pairing. For the reasons described above, we believe that licensing in 5 megahertz increments is ideal from a technological perspective, and we propose auctioning interchangeable blocks of equal size to allow for enhanced substitutability among building blocks, which may give us more flexibility in our auction design choices. Therefore, we must find an alternative use for the "remainder" spectrum.

176. As discussed in the Guard Bands subsection, we propose a minimum of 6 megahertz guard bands between wireless and broadcast operations. Because we may have no "remainder" spectrum available in some areas, we must ensure that our proposed minimum size for guard bands is sufficient to protect against interference between broadcast and wireless operations. As noted above, providing additional guard band protection beyond 6 megahertz would further improve any potential interference concerns, and therefore, we propose to add this remainder spectrum to the guard bands. For example, if we clear 30 megahertz for downlink operations, and the guard band between wireless downlink and television is 6 megahertz, then the number of spectrum blocks available is four.[260] Thus, in that market, we can offer four 5 megahertz blocks, and the remaining 4 megahertz of spectrum will be added to the 6 megahertz guard band, and offered for additional unlicensed use. Under this proposal, there could be between 6 and 10 megahertz of spectrum between the television channels and the 600 MHz uplink band in a market. In addition, there could be another 6 to 10 megahertz of spectrum between the television channels and the 600 MHz downlink band in a market. We seek comment on this approach. We also seek comment on alternative ways to make use of the remainder spectrum. For example, we note that it may be possible, when the remainders total 5 megahertz or more, to apportion some or all of the remainder spectrum to one half of the duplex pairing, *e.g.*, the downlink. This would increase the total number of 5 megahertz blocks available for licensing, but would have a tendency to reduce the number of uplink blocks and increase the asymmetry of the band plan. We seek comment on the advantages and disadvantages of various approaches to remainder spectrum.

7. Alternative Band Plan Approaches

177. In our proposed band plan, we have tried to balance flexibility with certainty while maximizing the amount of spectrum we can make available for wireless broadband services in each geographic area. We recognize that other band plans are possible that may achieve these goals. Below we discuss a few possible alternatives, compare them to our lead proposal, and seek comment on these approaches. In addition, we invite commenters to offer variations on our proposed band plan, address the alternative band plans we discuss below, or propose their own band plan. We also invite commenters to address whether there are other advances in technology that would improve efficiency in the band, and allow more flexibility in the band plan, perhaps similar to the manner in which the development of cognitive radio and the ability to query databases enabled the development of television white spaces devices. Commenters should discuss and quantify the costs and benefits of their proposed band plan, explain why their band plan better serves the public interest and our policy goals than our lead proposal, and discuss which proposed technical rules would need to be modified to accommodate their proposal.

[260] The calculation to arrive at the 4 spectrum blocks is as follows: 30 megahertz (total spectrum cleared) minus 6 megahertz (guard band) = 24 megahertz available for downlink use. The 24 megahertz of available spectrum is divided by 5 (assuming each block is 5 megahertz wide) = 4.8, which is then rounded down to 4. Thus, we are able to license 4 spectrum blocks.

a. Down from Channel 51

178. Using an alternative approach to our lead band plan proposal, we could clear broadcast television channels starting at channel 51 and expand downward. As illustrated in Figure 12, we would organize the cleared spectrum into an uplink portion, a downlink portion, and any necessary guard bands. Adopting this alternative would require us to designate a quantity of spectrum as a duplex gap between the uplink and downlink bands, which would not be used for licensed wireless broadband operations.[261]

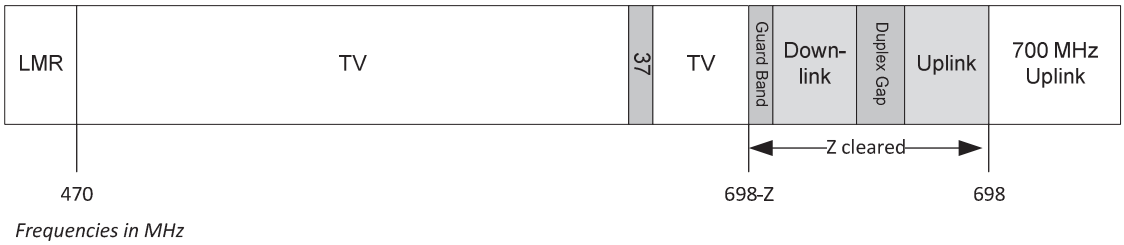

Figure 12. Alternative Approach, Down from 51

As a result, this alternative band plan requires a tradeoff between the duplex gap size and the amount of licensed spectrum. Minimizing the duplex gap size would increase the amount of spectrum available for licensing but could have a negative impact on mobile performance.[262] A wider duplex gap, conversely, could enhance mobile performance. We anticipate that regardless of the size of the duplex gap, some portion of the spectrum could also be available for unlicensed operations.[263] We seek comment on whether, with a wider duplex gap, as with the alternative approach in which the downlink starts at channel 36, it may be possible to leave some television operations, as well. We seek comment on this alternative band plan proposal, and its relative costs and benefits in making spectrum available for broadband, including both licensed and unlicensed uses.[264]

179. *Channel 37 Services Fixed.* If the existing wireless medical telemetry and radio astronomy operations remain fixed in channel 37, and if we clear more than 84 megahertz of spectrum, the channels above and below channel 37 would need to be cleared under this alternative band plan because channel 37 would be located in the downlink band, as shown in Figure 13. If we decide not to move incumbent channel 37 services, then this alternative is less advantageous than our lead proposal, which places the downlink band against channel 37, and assumes that existing channel 37 operations will remain in that frequency band.[265]

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[261] *See supra*, Section VI.B.5.c (Duplex Gap).

[262] For example, in the 3GPP standards for LTE, the smallest duplex gap in absolute terms is Band 8 (880-915 MHz and 925-960 MHz bands) at 10 megahertz, and the smallest gap in relative terms is Band 25 (1850-1915 MHz and 1930-1995 MHz bands (extended PCS including the G block)) at 23 percent of the pass band. However, these bands have degraded reference sensitivities, 3 dB and 3.5 dB worse than the best reference sensitivities respectively. The 3GPP bands with the best reference sensitivities have duplex gaps of at least 28 megahertz and at least 1.4 times the pass band size (both figures are for Band 11 (1427.9-1452.9 and 1475.9-1500.9 MHz band)). *See 3GPP RF Standard for Handsets* at 20, 75.

[263] *See* Section VIII (White Spaces and Unlicensed Operations).

[264] *See* Spectrum Act § 6407.

[265] Further, under our lead proposal, by placing the downlink band against existing Channel 37 operations, we gain 6 megahertz of effective guard band without clearing additional spectrum.

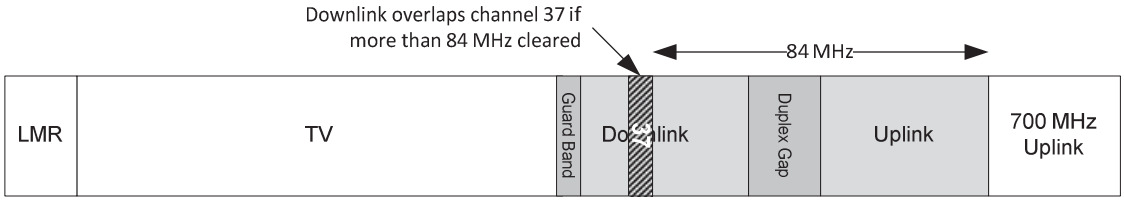

Figure 13. Impact of Fixed 37 on Down from 51 Alternative Approach

b. Relocating Existing Channel 37 Operations

180. As described above, the Spectrum Act gives us authority to reimburse the move of incumbent operations in channel 37, with certain constraints.[266] Our proposed band plan does not require us to move channel 37 operations, and instead, attempts to benefit from allowing existing channel 37 operations to remain in that frequency band by using channel 37 as a guard band between television operations and mobile broadband operations. If we decide to relocate channel 37 operations, however, should we consider other alternative band plans, which may be just as spectrum-efficient? Figure 14 below shows some examples of how these approaches would work if we relocate channel 37 operations. For example, we could consider placing the downlink band at channel 32 instead of channel 36, which allows for symmetry between the amount of potential uplink and downlink spectrum. We seek comment on these alternatives and the costs and benefits associated with adopting them and in making spectrum available for broadband, including both licensed and unlicensed uses.

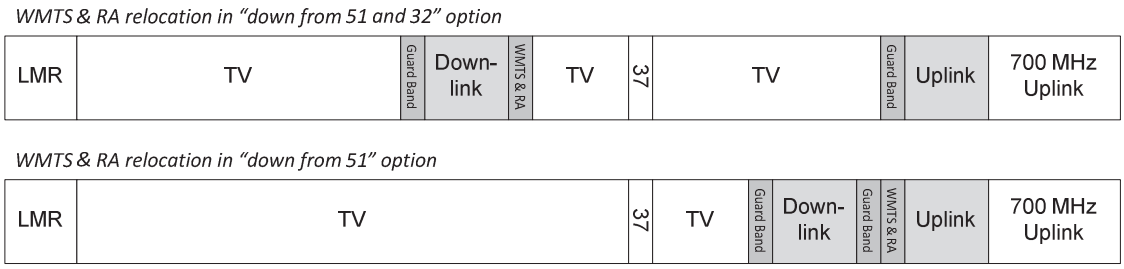

Figure 14. Alternatives, Relocation of Channel 37

c. In from Channels 51 and 21

181. Another alternative approach is to situate the 600 MHz uplink band adjacent to the 700 MHz uplink spectrum (as in our lead proposal), and situate the downlink band at the lower end of the broadcast television spectrum, at channel 21. The uplink spectrum would expand downward, and the downlink spectrum would expand upward, as depicted in Figure 15 below. Similar to our proposed band plan, this alternative allows us to keep existing channel 37 operations on that channel, because channel 37 sits in the duplex gap. Further, like our lead band plan proposal, we would not need to create a duplex gap, because the remaining broadcast television operations would operate in the duplex gap. We would need to create guard bands where the mobile broadband operations and television operations meet, however. We would also need to determine whether such a large pass band size would be able to be supported by one band plan, as discussed in the Technical Considerations subsection. We seek comment on this approach and the costs and benefits associated with adopting it and in making spectrum available for broadband, including both licensed and unlicensed uses.

[266] Spectrum Act § 6403(b)(4)(A)(iii) (the total relocation costs of channel 37 users cannot exceed $300 million).

Figure 15. Alternatives, In from Channels 51 and 21

d. Prioritizing Paired Spectrum

182. Our lead proposal allocates equal amounts of downlink spectrum and possibly different amounts of uplink spectrum in each market. Such an approach would maximize the amount of downlink spectrum available nationwide as well as the total amount of spectrum reallocated from television broadcasting to flexible use. In some circumstances, however, the proposed approach might result in highly asymmetrical markets. An alternative approach might prioritize the pairing of spectrum nationwide rather than the amount cleared in each individual market. Under this approach, the number of channels reallocated would be the same in every market and the spectrum cleared would be evenly split between paired downlink and uplink spectrum, with any residual blocks used to create no more than one block of unpaired downlink spectrum. Like our primary proposal, this approach would create a uniform downlink band plan to help ensure interoperability, and nationwide guard bands that could be used by unlicensed white space devices, at least on a secondary basis. On the other hand, such an approach might constrain overall spectrum recovery by limiting the amount of flexible use spectrum to the spectrum that can be recovered in the "lowest common denominator" markets. As a third possibility, could we allow two families of paired spectrum, one nationwide and another in less congested markets? Such an approach might increase the total amount of spectrum reallocated for flexible use, while prioritizing the pairing of spectrum. We seek comment on these alternatives, including the costs and benefits of prioritizing the pairing of spectrum versus maximizing the total number of megahertz reallocated.

e. Designating Spectrum for TDD Use

183. We recognize that TDD technologies can also be used to provide wireless broadband service and seek comment on whether the Commission should allow for TDD use in the 600 MHz band. For example, should we set aside a separate TDD-only block in our band plan or allow TDD operations throughout the entire band? If we set aside a TDD-only block, should it be contingent on creating a certain number of paired FDD spectrum blocks first? What is the minimum block size (*e.g.,* 5 megahertz, 10 megahertz) necessary for TDD operators to effectively provide mobile broadband service? What is the ideal geographic area license size for this type of service? If we allow for TDD operations throughout the band, what other considerations should we take into account in establishing block size and geographic area license size?

184. Furthermore, if we allow for TDD in the 600 MHz band, what technical rules should we adopt to accommodate TDD technologies while minimizing interference concerns? For example, if we allow TDD operations, is it necessary to establish a guard band where a TDD block adjoins an FDD block or another TDD block? If a guard band is necessary, should we require the TDD bidder to internalize that guard band or otherwise mitigate interference to those adjacent blocks? What other technical issues arise from allowing TDD in the 600 MHz band? We seek comment on this issue, and the costs and benefits of allowing for TDD technologies in this band. Commenters are also invited to discuss how such issues have been resolved in other countries where TDD systems have been licensed or are expected to be deployed (*e.g.*, India and China).

C. Technical Rules

185. We aim to establish technical rules that maximize flexible use of the spectrum while appropriately protecting incumbent operations in neighboring bands. Many of the technical rules we propose below are based on the rules for the lower 700 MHz band, which is adjacent to the 600 MHz

band. We believe that the proposed technical rules on power, antenna height, and OOBE emissions limits, together with appropriate guard bands,[267] will provide sufficient protection from interference to the existing services and future 600 MHz licensees so that no additional restrictions are necessary. We seek comment on our proposed technical rules and whether they best achieve our objectives of permitting more flexible use of this spectrum, while at the same time protecting adjacent spectrum users from interference.

1. OOBE Limits

186. Under the proposed band plan, we plan to license 600 MHz spectrum in paired 5 + 5 megahertz blocks as well as unpaired 5 megahertz downlink expansion blocks, using Economic Area licenses.[268] Therefore, we must consider how to address interference between adjacent blocks within the 600 MHz band, and between 600 MHz spectrum and adjacent bands.

187. *Emissions limits*. The Commission has previously concluded that attenuating transmitter out-of-band emissions (OOBE) by $43+10*\log_{10}(P)$ dB, where P is the transmit power in watts, is appropriate to minimize harmful electromagnetic interference between operators.[269] This is consistent with the service rules that the Commission has adopted for other bands, including the lower 700 MHz band, that are used for wireless broadband services.[270] To fully define an emissions limit, the Commission's rules generally specify details on how to measure the power of the emissions, such as the measurement bandwidth. For the lower 700 MHz band, the measurement bandwidth used to determine compliance with this limit for both mobile stations and base stations is 100 kHz, with some modification within the first 100 kHz.[271] Similarly, we believe that it is reasonable to apply this procedure to both mobile and base transmissions in the 600 MHz band.

188. *Proposal*. To address potential harmful electromagnetic interference within the 600 MHz band, we propose to apply section 27.53(g) of the Commission's rules, which includes OOBE attenuation of $43+10*\log_{10}(P)$ dB and the associated measurement procedure, to the 600 MHz band.[272] We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches. Below we discuss the effect of this proposal on the various interference scenarios that would exist under our proposed band plan.

189. *Interference to Adjacent Lower 700 MHz operations*. The upper end of the 600 MHz uplink band is adjacent to the lower portion of the lower 700 MHz band, which is also being used for mobile uplink operations.[273] As a result, the interference environment between these two bands will be nearly indistinguishable from interference within either band and we believe that our proposal to adopt the lower 700 MHz OOBE limits will protect adjacent lower 700 MHz operations.

190. *Interference to Adjacent DTV operations*. Under our proposed band plan, the 600 MHz band will be adjacent to DTV operations on the lower end of both the uplink and downlink bands. The interference environment is similar to what currently exists between the lower 700 MHz band and DTV stations. It is beneficial to maintain comparable emissions limits among commercial bands so as not to

[267] *See supra*, Section VI.B.5.a (Guard Bands).

[268] *See supra*, Section VI.B (600 MHz Band Plan).

[269] *See e.g.*, 47 C.F.R. §§ 24.238(a); 27.53(h).

[270] 47 C.F.R. § 27.53(g).

[271] *Id*.

[272] *See id*.

[273] Although both base and mobile operations are permitted in the lower 700 MHz band, the lower portion is predominately used for mobile uplink.

disadvantage one band over another. In the event that a specific incidence of harmful interference occurs, the Commission, under section 27.53(i) may impose higher emissions limits as a remedy.[274] By applying the same OOBE limits as currently exist between the lower 700 MHz band and DTV stations, 600 MHz licensees will provide similar protection as exists today.

191. *Interference to Channel 37 Operations*. Under the proposed band plan, downlink operations would be permitted adjacent to the lower edge of Channel 37. Depending on the amount of spectrum that broadcasters relinquish, uplink operations from mobiles could be permitted on the upper edge of Channel 37.[275] Currently, DTV stations operate adjacent to Channel 37 without any guard bands, which indicates that the OOBE and power limitations required of DTV stations are sufficient to protect Channel 37 services.[276] Both the emissions and power limits that are permitted by DTV operations under current regulations are higher than those proposed for the 600 MHz band.[277] Therefore, if we adopt the proposed 600 MHz OOBE and power limits, 600 MHz services should provide as much or more protection to Channel 37 than they currently receive from DTV operations.

2. Power Limits

192. We propose to generally apply power limits for the 600 MHz band that are consistent with the lower 700 MHz band.[278] However, we will need to modify the lower 700 MHz rules because the proposed band plan for the 600 MHz band has a predetermined uplink and downlink so different power limits are applied to each band.[279]

193. *600 MHz Downlink Operations*. We propose to limit fixed and base station power for downlink operations in non-rural areas to 1000 watts per MHz ERP for emission bandwidths less than 1 MHz and to 1000 watts per MHz ERP for emission bandwidths greater than 1 megahertz, and to double these limits (2000 watts ERP) in rural areas.[280] We will not apply the power flux density requirements of section 27.55(b) to the 600 MHz service.[281] That requirement is designed to protect base station receivers from other high powered (50 kW) base stations nearby. Because high powered base stations are not allowed in the 600 MHz band, this requirement is unnecessary. We seek comment on this proposal, including the costs and benefits of the proposal.

194. *600 MHz Uplink Operations*. The upper part of the 600 MHz band plan is designated for uplink operations and is directly adjacent to the lower 700 MHz uplink operations. We propose to adopt the same power limit of 3 watts ERP for both portables and mobiles that apply to the lower 700 MHz band and prohibit fixed and base station operations, which are allowed in the lower 700 MHz band.[282] In

[274] 47 C.F.R. § 27.53(i); *See also*, *Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, GN Docket No. 01-74, Report and Order, 17 FCC Rcd 1022, 1069-1070, para. 122 (2001) (*Lower 700 MHz Report and Order*).

[275] However, this scenario is unlikely because it would not provide the necessary bandwidth for the duplex gap. *See supra,* Section VI.B.5.c (Duplex Gap).

[276] 47 C.F.R. § 27.53(i); *See also*, *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1069-1070, para. 122.

[277] *See infra*, Section VI.C.2 (Power Limits).

[278] *See* 47 C.F.R. § 27.50(c).

[279] See *supra*, Section VI.B.2 (Block Configuration). The aggregation of all high power operations in the downlink band will reduce potential interference with adjacent operations, thus minimizing the need for guard bands and improving spectrum efficiency.

[280] *See* 47 C.F.R. § 27.50(c)(3), (4).

[281] *See* 47 C.F.R. § 27.55.

[282] *See* 47 C.F.R. § 27.50(c)(10).

addition, as this band is intended for delivery of commercial wireless broadband services, no provision will be made for high power control stations used by specialized public safety applications.[283] We seek comment on this approach, including the costs and benefits of the proposal.

3. Antenna Height Restrictions

195. We propose to apply the 700 MHz flexible antenna height rules, as set forth in 27.50(c), to the 600 MHz band.[284] Although the existing antenna rules do not set specific antenna height restrictions, ERP reductions will be required for base or fixed stations whose height above average terrain (HAAT) exceeds 305 meters.[285] In addition, other rules effectively limit antenna heights. For example, all Part 27 services are subject to section 27.56 of our rules, which prevents antenna heights that would be a hazard to air navigation.[286] Also, our proposed co-channel interference rules effectively limit antenna heights because of the limitation on field strength at the boundary of a licensee's service area.[287] We believe that the general antenna height restrictions are sufficient so we are not proposing any band-specific limitations. We seek comment on this approach, including the costs and benefits.

4. Co-Channel Interference Among 600 MHz Systems

196. Since we propose to license the 600 MHz bands using geographic service areas, we need to ensure that 600 MHz licensees do not cause interference to co-channel systems operating along common geographic borders.[288] The 700 MHz rules address the possibility of harmful co-channel interference between geographically adjacent licenses by setting a field strength limit of 40 dBμV/m at the edge of the license area.[289] Due to the similarities between the 700 MHz and 600 MHz spectrum, we propose that this same signal strength limit is appropriate for the 600 MHz band. Therefore, we propose to apply section 27.55(a)(2) to the 600 MHz spectrum.[290] We seek comment on this proposal, including the associated costs and benefits.

5. Canadian and Mexican Coordination

197. Section 27.57(b) of our rules indicates that 700 MHz operations are subject to international agreements with Mexico and Canada.[291] These arrangements establish 700 MHz wireless operations on a co-primary basis with foreign television operations. The arrangements do not however, establish criteria for the protection of wireless services from foreign television stations. Wireless services are essentially protected by default, given that the U.S. and Canada, and Mexico have agreed not to authorize new television services in the 700 MHz band. We note that modification of the 700 MHz band arrangements or the creation of new separate arrangements pertaining to the 600 MHz spectrum will be

[283] *See* 47 C.F.R. § 27.50(c)(9).

[284] *See* 47 C.F.R. § 27.50(c).

[285] The ERP limits that are required when the antenna height is above 305 meters are set forth in Tables 1 through 4 of Section 27.50 and are based on the bandwidth of the transmission and whether the base or fixed station is in a rural or non-rural area. 47 C.F.R § 27.50.

[286] *See* 47 C.F.R. § 27.56.

[287] *See infra*, SectionVI.C.4 (Co-Channel Interference Among 600 MHz Systems).

[288] If we authorize a single licensee in these bands, it will not be necessary to adopt co-channel interference protection criteria. Our co-channel protection rules would, however, apply to any partitioned portions of a nationwide license.

[289] *See* 47 C.F.R. § 27.55(a)(2).

[290] *See id*.

[291] 47 C.F.R. § 27.57(b).

necessary to implement 600 MHz operations in areas along the common border and to protect these 600 MHz operations from cross-border interference. In addition, modified domestic rules might be necessary in order to comply with any future agreements with Canada and Mexico regarding the use of the 600 MHz band. We seek comment on these issues, including alternative approaches, and the costs and benefits of any proposal to address these issues.

6. Other Technical Issues

198. There are several additional technical rules applicable to all Part 27 services, which are: equipment authorization, RF safety, frequency stability, antennas structures; air navigation safety, and disturbance of AM broadcast station antenna patterns.[292] Because the 600 MHz band will be licensed as a Part 27 service, we propose that these rules should also apply to 600 MHz licensees, including licensees who acquire their licenses through partitioning or disaggregation. We seek comment on this approach, including associated costs and benefits.

VII. OTHER SERVICES IN THE UHF BAND

A. Channel 37 Services

199. Channel 37 (608-614 MHz) is not allocated or used for television service, but is allocated for the Radio Astronomy Service (RAS) and the Land Mobile Service, and is used for receive-only radio astronomy observations and wireless medical telemetry systems (WMTS). As discussed in section VI above, there are several possible new band plans under consideration in this proceeding, including certain band plans that would allow existing channel 37 operations to remain. The Commission has discretion, however, to relocate channel 37 incumbent users in order to repurpose part of the UHF band for flexible use, including mobile broadband, subject to the requirements of the Spectrum Act.[293] Accordingly, we seek comment below on whether both the RAS and WMTS should be relocated.[294] We also seek comment on whether, based on the current use of the UHF band, it would be more appropriate to retain channel 37 for use by RAS and WMTS, but also enable greater use of the band by unlicensed services.[295]

1. Radio Astronomy

200. *Background.* The RAS is a receive-only service that uses highly sensitive receivers to examine and study radio waves of cosmic origin. The Commission first protected use of channel 37 for RAS in 1963 for a 10-year period.[296] Subsequent to that action, the Commission made the protection of the RAS on channel 37 permanent.[297]

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[292] 47 C.F.R. §§ 27.51, 27.52, 27.54, 27.56, 27.63.

[293] The Spectrum Act provides that "the Commission shall reimburse costs reasonably incurred by a channel 37 incumbent user, in order to relocate to other suitable spectrum, provided that all such users can be can be relocated and that the total relocation costs of such users do not exceed $300,000,000." Spectrum Act § 6403(b)(4)(A)(iii). *See id.* § 6403(i)(1) ("Nothing in subsection (b) shall be construed to—(1) expand or contract the authority of the Commission, except as otherwise expressly provided").

[294] We seek comment in Section VI on technical rules in the event that the Commission decides to relocate these services.

[295] We explore the use of channel 37 by unlicensed devices further in section IX below.

[296] *See Amendment of Parts 2 and 3 of the Commission's Rules to Provide Temporary Interference Protection to The University of Illinois Radio Astronomy Site on Frequencies Between 608 and 614 Mc/S, Television Channel No. 37*, Docket No. 15022, Report and Order, 39 FCC 844 (1963).

[297] *See Amendment of Sections 2.106 and 73.603(c) of The Commission's Rules and Regulations Concerning the Use of Television Channel 37 for Radio Astronomy Purposes*, Order, 53 FCC2d 627 (1975) (channel 37 reservation extended through WARC-79); Implementation of the Final Acts of the World Administrative Radio Conference, (continued….)

201. Channel 37 is used for a variety of radio astronomy observations. Most notably, it provides for continuum observations, as it lies approximately between the lower (72-76 MHz) and upper (1400-1427 MHz) radio astronomy bands.[298] In addition, channel 37 is used for studying the interstellar medium, pulsars, and the sun. Also, observations of the sun in this band allow for the prediction of failures in radio communications due to solar bursts.[299]

202. Moreover, channel 37 is used by radio astronomers for Very Long Baseline Interferometry (VLBI), which is a technique that processes simultaneous observations from radio telescopes across long distances. Scientists use VLBI to study continental drift, rotation of the Earth, earthquakes, and space navigation. The National Radio Astronomy Observatory (NRAO) operates the Very Long Baseline Array (VLBA), which consists of ten telescopes distributed throughout the United States and its territories.[300] To make VLBI continuum measurements, data from the antennas are combined to emulate a single telescope 5000 miles in diameter. Additionally, VLBI observation can be coordinated with other observatories to increase the sensitivity of the array.[301]

203. As stated above, RAS shares channel 37 with the WMTS. Commission rules protect the RAS from harmful WMTS interference by imposing field strength limits and by requiring coordination of WMTS use within certain distances to RAS observatories.[302] Additionally, several other services currently operate on nearby frequencies to the RAS in the UHF television band. Our rules protect RAS in three ways from harmful interference caused by these services. First, our rules prohibit transmission by unlicensed white space devices on channel 37.[303] Second, in addition to the general out-of-band emission (OOBE) limits for unlicensed white space devices, our rules prescribe stricter field strength limits in the 602-620 MHz band.[304] Third, unlicensed white space device operation is prohibited within 2.4 km of protected radio observatories.[305]

204. *Discussion*. In light of the band plan proposals in section VI above and other considerations raised in this proceeding about channel 37 operations, we seek comment on whether RAS in channel 37 should be relocated to other spectrum and, if so, to what spectrum. In order to properly analyze this issue, the Commission needs to be aware of all observers in channel 37. We understand that the ten VLBA sites, as well as the Green Bank and Arecibo telescopes, are the only radio telescopes

(Continued from previous page)
Geneva, 1979, Gen Dkt. No. 80-739, *Second Report and Order,* 49 FR 2358 (Jan. 19, 1984) (amending Footnote US 246 to the U.S. Table of Frequency Allocations to implement domestically the WARC–79 reallocation of channel 37 to the radio astronomy service); Order, Mimeo 4385 (released May 12, 1986) (amending § 73.603(c) to reflect this reallocation).

[298] ITU-R Recommendation R.A. 314 states that for continuum observations, the approximate spacing between bands throughout the spectrum should be no greater than a factor of two in frequency.

[299] *See* National Academy of Sciences' Committee on Radio Frequencies Comments, ET Dkt. No. 04-186 at 5.

[300] Detailed information on the VLBA, including the locations of the ten VLBA stations, is available at: http://www.vlba.nrao.edu/astro/obstatus/current/node5.html.

[301] The VLBA coordinates observations with telescopes around the world for VLBI. Most commonly, the VLBA forms an important component of a larger group of radio telescopes known as the High Sensitivity Array (HSA).

[302] *See* 47 C.F.R. § 95.1115(a)(1) (prescribing field strength limits specific to the 608-614 MHz band); § 95.1119 (requiring written concurrence by the director of the affected observatory before operating WMTS within the vicinity of radio astronomy observatories in the 608-614 MHz band); *see also* § 95.1107 (forbidding WMTS operations within mobile vehicles).

[303] *Id.* § 15.707(a).

[304] *Id.* § 15.709(c)(4).

[305] *Id.* § 15.712.

currently observing channel 37 within the United States at this time. Additionally, we note that the Expanded Very Large Array in New Mexico will resume observations in channel 37 in late 2012.[306] We seek comment as to whether any other sites within the United States currently perform or have plans to perform RAS observations in channel 37. In addition, we seek comment regarding whether any foreign telescopes located near the United States or its territories, such as the Dominion Radio Astrophysical Observatory in Penticton, British Columbia, currently perform or have plans to perform RAS observations in channel 37.[307] We note that because this band has only contained passive services and WMTS, which does not require individual licenses in the United States or Canada, channel 37 is not included in any cross-border agreements.

205. Because RAS applications involve observation of very low power radiation from space, a key requirement for RAS receivers is high sensitivity. However, this same property which enables reception of these low signals levels also makes the receivers susceptible to interference.[308] We ask that commenters consider this issue in addressing whether we should relocate RAS and where. We also ask commenters to consider the various band plan options discussed in section VI above.

206. We also invite comment on whether the RAS needs to keep a subset of the 500-700 MHz range available for RAS continuum observations.[309] In addition, we seek comment on the nature of the spectrum needed for such measurements. Because the VLBA relies on data from multiple receive sites, does it require a single interference-protected band throughout the entire United States? Further, as radio astronomy relies on extremely sensitive receivers, we seek comment on whether a single, contiguous band is needed or RAS requirements can be satisfied through the use of multiple small, noncontiguous bands?[310] In addition, we seek comment on the cost of relocating RAS users from channel 37 to elsewhere in the 500-700 MHz range.

207. Further, we seek comment on whether there is a particular band within the 500-700 MHz range that would be the most desirable for RAS use, both from a scientific and an economic viewpoint. One alternative to our lead band plan proposal in section VI would shift WMTS operations to the 578-584 MHz band (channel 32). Would this band also be desirable for RAS operations? Alternatively, what would the advantages and disadvantages be in relocating RAS to the lower (2-6)[311] or upper (7-13) channels of the VHF band? Would such a band be as useful for RAS observations? Would relocation costs be comparable? What are the advantages and disadvantages of reserving another 6 megahertz-wide band for RAS use, as compared to a narrower or wider band?

208. We also invite comment on any international implications of relocating the RAS band. How would relocating RAS from channel 37 affect foreign RAS operations, such as at the Penticton Observatory in British Columbia? Are there any foreign radio telescopes observing in channel 37 that would be subject to unwanted interference? We recognize that some RAS operations require coordinated

[306] *See supra* n. 301.

[307] We note that the Canadian Radio Standards Specification (RSS-210, Annex 4 - http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01320.html) prescribes that WMTS devices adhere to an 80km separation distance from the Penticton Observatory.

[308] *See* National Radio Astronomy Observatory Comments, ET Docket No. 10-235, (Jan. 7, 2011) at 2.

[309] *See supra* n. 298.

[310] Equipment sensitivity is directly related to the square root of the receiver bandwidth. *See* http://www.cv.nrao.edu/course/astr534/Radiometers.html.

[311] We believe that such an allocation would be useful for observing the very highly redshifted and broadened spectral lines and continuum associated with the Epoch of Reionization (EOR). *See* Epoch of Reionization, MIT Haystack Observatory, http://www.haystack.mit.edu/ast/science/epoch/index.html (last visited June 12, 2012).

observations with multiple telescopes in other countries. What would be the impact, if any, on these observations if we were to reallocate the RAS stations in channel 37? Finally, we observe that any new RAS band in the United States would require coordination to protect it from unwanted interference from foreign sources and, if such a step is necessary, we propose that United States stations be subject to the provisions of any negotiated cross-border agreement.

2. Wireless Medical Telemetry Service

209. *Background*. Prior to establishment of the WMTS, wireless medical telemetry devices were permitted to operate on an unlicensed basis in the 174-216 MHz band (corresponding to VHF-TV channels 7-13) and in the 470-668 MHz band (corresponding to UHF-TV channels 14-46, excluding channel 37).[312] Accordingly, no protection from interference from primary TV broadcasters was accorded to these life-critical devices.[313] The Commission established the WMTS on a protected basis in the 608-614 MHz, 1395-1400 MHz, and 1427-1432 MHz bands in 2001, after the United States began transitioning from analog to digital television.[314] In that same proceeding, the Commission determined that the 608-614 MHz band must be shared co-equally with the existing RAS, and that – to ensure that WMTS devices are deployed in such a way as to avoid causing interference to, and receiving interference from, other WMTS devices–health care institutions must coordinate the use of all three bands through a designated frequency coordinator prior to commencing operation.[315] That coordinator was identified as the American Society for Health Care Engineering (ASHE) of the American Hospital Association.[316]

210. After adoption of the WMTS rules, initial deployment of devices focused on channel 37. WMTS devices are now being more heavily deployed in the 1395-1400 MHz and 1427-1432 MHz bands according to data provided by ASHE which reflects that nearly 104,500 WMTS devices[317] are deployed at 2739 unique locations in channel 37 as of March 2012.[318] ASHE estimates that WMTS devices cost in the range of $5,000 - $10,000 on a system-wide basis,[319] resulting in an estimated investment in this band in the range of $0.7-$1.4 billion.

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[312] *See* 47 C.F.R. § 15.242.

[313] *See Amendment of Part 15 of the Commission's Rules to Permit Operation of Biomedical Telemetry Devices on VHF TV Channels 7-13 and on UHF TV Channels 14-46*, ET Docket 95-177, Report and Order, 12 FCC Rcd 17828 (1997). In general, wireless medical telemetry devices were able to co-exist with analog broadcast television stations. However, as the United States started transitioning to digital television in the late 1990s, stations began transmitting both analog and digital signals simultaneously, and interference between television stations and wireless medical devices began to arise. *See, e.g.,* "Digital signal for TV has ill effect on heart devices" at http://www.chron.com/CDA/archives/archive.mpl/1998_3045688/digital-signal-for-tv-has-ill-effect-on-heart-devi.html; http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/PublicHealthNotifications/ucm062298.htm; http://findarticles.com/p/articles/mi_m0DUD/is_7_22/ai_76548958/.

[314] *See Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, ET Docket 99-255, Report and Order *(WMTS R&O)*, 15 FCC Rcd 11206 (2000); 47 C.F.R. § 95 subpart H.

[315] *See WMTS R&O* and *Order*, ET Docket 99-255, 16 FCC Rcd 4543 (2001).

[316] *See Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, ET Docket 99-255, Order, 16 FCC Rcd 4543 (WTB PSPWD 2001).

[317] A WMTS device is a single transmitting unit located on or near a patient that relays vital information (*e.g.*, EKG, blood oxygen level, *etc*.) wirelessly to a central monitoring station.

[318] In addition, ASHE believes that there are a significant number of WMTS devices in this band that are not registered in its database.

[319] The cost of a specific deployment will be based on the size and layout of the health care institution, the amount of infrastructure needed (*e.g.*, antennas, cabling, etc.), as well as monitoring stations. Our understanding is that the estimated cost is an average per device of the entire system.

211. *Discussion*. In light of the band plan options set forth in section VI above, we seek comment on whether to relocate WMTS users from channel 37 and, if so, to what spectrum. Commenters should address their band plan preference and provide details on the relative costs and benefits of their preferred course of action. Is the ASHE estimate for sunk investment in WMTS systems correct and what would be the cost of relocation? To avoid unlimited increases in possible relocation costs, should we only consider relocating WMTS systems that were contained in the ASHE database by a date certain (*e.g.*, the effective date of this NPRM)? Would the funds available for reimbursement of relocation costs, which the Spectrum Act limits to $300 million for all channel 37 incumbents, be sufficient?

212. We also seek comment on spectrum that could support WMTS. Specifically, we seek comment on whether relocating WMTS to a nearby television channel, such as channel 32, may be less expensive than moving WMTS to more distant spectrum. We also seek comment on whether the WMTS systems could simply be retuned to a new spectrum band for WMTS or whether new equipment would be required. If retuning is possible, is it possible to retune outside of the UHF band and if so, what would be the costs of retuning? In addition, we seek comment on whether all WMTS operations could be accommodated in the WMTS bands at 1395-1400 MHz and 147-1432 MHz.

213. We also seek comment on the time frame and process for possible relocation of WMTS. First, should relocation occur for WMTS under comparable facilities,[320] as has been the Commission's past practice? If so, how would we verify that the facility is comparable? If not, what standard should the Commission utilize, and what would be the legal basis for that standard? What would be the appropriate time frame for relocation? We ask parties to provide estimates of the time required for equipment to be available to support any such relocation. Further, we seek comment on the impact of relocation on WMTS users if they were given a longer time frame for relocation, and if we were to freeze the issuance of new WMTS registrations. If WMTS users have a sufficiently long transition, would the cost of transition decrease because the WMTS equipment will have reached the end of its useful life?

214. Finally, we note, that the United States Department of Veterans Affairs makes extensive use of the WMTS service. The NTIA Manual specifies that federal users of this band must follow the same procedures as non-federal users.[321] We seek comment on whether, in the event that we decide to relocate channel 37 incumbents, federal users should be considered users for reimbursement purposes.

B. Television Fixed Broadcast Auxiliary Stations, Low Power Auxiliary Stations, and Unlicensed Wireless Microphones

1. Television Fixed Broadcast Auxiliary Stations

215. *Background.* The Commission's rules allow certain fixed broadcast auxiliary operations (BAS) on television channels 14-51 on a secondary basis.[322] Specifically, section 74.602(h) permits television studio transmitter links (STLs), television relay stations, and television translator relay stations to operate fixed point-to-point service on UHF channels 14-69 on a secondary basis.[323] Only licensees of a full power television station, a Class A station, a broadcast television network entity, a low power

[320] Comparable facilities are those that will provide the same level of service as the incumbent's existing facilities, with transition to the new facilities as transparent as possible to the end user. Specifically, (1) equivalent channel capacity; (2) equivalent signaling capability, baud rate and access time; (3) coextensive geographic coverage; and (4) operating costs. *See Improving Public Safety Communications in the 800 MHz Band*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969, 15077 ¶ 201 (2004).

[321] *See* NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management, Section 7.5.9.

[322] *See generally* 47 C.F.R. §§ 74.600 *et seq.* ("Subpart F – Television Broadcast Auxiliary Stations").

[323] *See* 47 C.F.R. § 74.602(h). These operations may be authorized "on a secondary basis and subject to the provisions of subpart G of [Part 74]." *Id*.; *see also id*., § 74.602(h)(3)-(4), for certain grandfathering provisions.

television station, or a television translator station may hold fixed BAS licenses on channels 14 to 51.[324] Because these stations are secondary, they must not interfere with, and must accept interference from, current and future full power television, low power television, and television translator stations.[325] In addition to operating in the UHF band, fixed BAS operates in several frequency bands on a primary basis.[326] We note that the number of fixed BAS in channels 14 to 51 is relatively low.[327]

216. *Discussion.* As a result of the repacking process, the amount of spectrum in the current VHF and UHF bands available for secondary licensing of fixed BAS operations is likely to diminish. We seek comment on whether and how we should address the availability of UHF band spectrum for secondary fixed BAS operations.

217. We propose to continue the licensing of fixed BAS on a secondary basis in the spectrum that remains available for television broadcast services nationwide. We recognize that coordinating and operating these point-to-point links, on a secondary basis, could be challenging in a more closely packed UHF band. Nevertheless, the number of fixed BAS licensees in the UHF band is relatively low, and we are unaware of any major interference problems to broadcast television service. Fixed BAS is directly tied to the provision of broadcast television service and competing broadcasters have successfully coordinated this service and other BAS operations, such as Electronic News Gathering (ENG) in the 2 GHz band, for many years. We recognize that the continued feasibility of secondary, fixed BAS—whether for new links or for existing links that need to change frequencies to protect a repacked television station—may depend on the outcome of the repacking process.[328] We invite comment on any relevant technical or operational implications of this proposal, including to television broadcasters and other post-auction users of the UHF band.

218. Consistent with past practice,[329] we propose that secondary fixed BAS stations operating in the UHF band continue to be required to cease operating and relocate, at their own expense, to other frequency bands or to the repacked television band when a new 600 MHz wireless broadband licensee intends to turn on a system within interference range of the incumbent.[330]

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[324] 47 C.F.R. §§ 74.600, 74.632(a). A separate application is required for each fixed station, and the application shall be specific with regard to the frequency requested. 47 C.F.R. §§ 74.632(a), 74.702(a). Fixed link stations will be authorized to operate on one channel only. 47 C.F.R. § 74.602(c).

[325] 47 C.F.R. § 74.602(h)(2). Fixed BAS in TV Channels 14-51 is also secondary to land mobile stations in areas where land mobile sharing is currently permitted. *Id.*

[326] Fixed BAS stations are also licensed in the non-TV UHF, 900 MHz, 2 GHz, 7 GHz, 13 GHz, and 18 GHz bands, though new stations are no longer licensed in certain subbands. *See* 47 C.F.R. §§ 74.602(g) (no new stations in the 18.3–18.58 GHz or 19.26-19.3 GHz subbands), 74.602(h)(3)-(4) (no new STL or relay stations in TV Channels 52-69).

[327] The Commission's Universal Licensing System (ULS) reflects 214 fixed BAS licensed in TV Channels 14 through 51 with 43 of these stations licensed in the T-band (TV Channels 14 through 20). The relatively low number of fixed BAS licensed in TV Channels 14 through 51 represents slightly more than two percent of all fixed BAS (approximately 20,000) licensed in all bands.

[328] In particular, we believe that most existing UHF TV fixed BAS equipment can be retuned within the UHF band via hardware modifications and new antennas, if needed, for much less than the cost of new BAS equipment in the microwave bands.

[329] *See, e.g.*, para. 220, *infra*.

[330] *Accord*, 47 C.F.R. § 101.79(a) (an Emerging Technology (ET) licensee may require the incumbent to cease operations, provided that the ET licensee intends to turn on a system within the interference range of the incumbent as determined by TIA TSB 10-F or any successor standard).

219. Also consistent with past practice, we propose to require broadcast television or new licensees to provide thirty days' notice to all incumbent fixed BAS operations within interference range prior to commencing operations in the vicinity.[331] By providing notice to existing secondary licensees that they must cease operations, this approach will provide an opportunity to make other arrangements for service if the licensee has not yet done so. With several other frequency bands available to BAS, as well as the repacked television band (under our above proposal), we anticipate that stations will be able to engineer in and successfully coordinate BAS stations to suit their needs. We seek comment on these proposals.

220. We do not propose to make available compensation to fixed BAS licensees for relocating to other frequencies. As described above, BAS stations operate on a secondary basis in the UHF band. Historically, the Commission has not required new stations to pay for secondary stations to relocate.[332] Rather, the FCC generally requires secondary stations to cease operations and relocate at their own expense when a new primary licensee begins operation if the secondary station will interfere with the primary licensee's operation.[333] We also note that the Spectrum Act does not provide for payment of any relocation costs incurred by these secondary stations as a result of the repacking.[334] We seek comment on our proposal.

2. Low Power Auxiliary Stations and Unlicensed Wireless Microphones

221. *Background.* The Commission's rules provide for licensed operations of low power auxiliary stations (LPAS) on unused frequencies allocated for television broadcasting on a secondary, non-exclusive basis.[335] Licensed LPAS operations are authorized for certain specified entities, including: licensees of radio and broadcast television stations, broadcast television network entities, certain cable operators, and motion picture and television program producers.[336] These LPAS operations are intended for uses such as wireless microphones, cue and control communications, and synchronization of TV

[331] *See, e.g.*, 47 C.F.R. § 101.103(d) (30-day coordination "notice and wait" requirement).

[332] For example, the Commission did not provide for the reimbursement of secondary fixed BAS from TV Channels 52-59 or from TV Channels 60-69. *Reallocation of Television Channels 60-69, the 746-806 MHz Band*, Report and Order, 12 FCC Rcd 22953 (1998).

[333] *See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, ET Docket No. 92-9, First Report and Order and Third Notice of Proposed Rule Making, 7 FCC Rcd 6886 (1992); *Second Report and Order*, 8 FCC Rcd 6495 (1993); *Third Report and Order and Memorandum Opinion and Order*, 8 FCC Rcd 6589 (1993); Memorandum Opinion and Order, 9 FCC Rcd 1943 (1994); Second Memorandum Opinion and Order, 9 FCC Rcd 7797 (1994); *aff'd Association of Public Safety Communications Officials-International, Inc. v. FCC*, 76 F.3d 395 (D.C. Cir. 1996).

[334] *See* Spectrum Act § 6403(b)(4).

[335] *See generally* 47 C.F.R. §§ 74.801 *et seq.* ("Subpart H – Low Power Auxiliary Stations"). Frequencies for which LPAS licenses may be assigned include both VHF channels (54-72 MHz; 174-216 MHz) and UHF channels (470-488 MHz; 488-494 MHz (except Hawaii); 494-608 MHz; and 614-698 MHz). 47 C.F.R. § 802(a). Section 802(d) provides that LPAS licensees will not be granted exclusive frequency assignments. 47 C.F.R. § 802(d). Section 803 provides that selection of frequencies for operations shall be guided by the need to avoid interference with TV broadcast reception, and that station usage is "secondary to TV broadcasting and land mobile stations" operating in the spectrum allocated for TV broadcasting and "must not cause harmful interference." 47 C.F.R. § 803(b).

[336] Specifically, LPAS licenses will be issued only to the following: (1) a licensee of an AM, FM, TV, or International broadcast station or low power TV station; (2) a broadcast network entity; (3) a cable television system operator who operates a cable system that produces program material for origination or access cablecasting; (4) motion picture producers; (5) television program producers; and (6) licensees of stations in certain Educational Broadcast Services and Broadband Radio Services. 47 C.F.R. § 74.832(a)(1)-(6).

camera signals.[337] As low power stations,[338] LPAS only operate over very short distances (approximately 100 meters).[339] The LPAS rules also authorize eligible entities to operate low power wireless video assist devices over longer distances (approximately 300 meters).[340]

222. In addition, the Commission currently permits certain unlicensed operations of wireless microphones (and related devices) in the broadcast television bands pursuant to a limited waiver.[341] The waiver permits unlicensed operations of wireless microphones under the Commission's Part 15 rules[342] and certain specified technical requirements and more restricted power limits,[343] until the Commission takes action on pending proposals in WT Docket No. 08-166.[344] In the television white spaces proceeding, the Commission excluded television white space devices from two of the unused channels in the UHF band near channel 37 so that if these channels became available, they could be used for wireless microphones.[345] Wireless microphones also are authorized to operate on other television channels that are not available for white space devices.[346] In addition, locations of licensed LPAS operations may be registered in the broadcast television bands database for use on available channels at specified times so that they may be protected from interference from unlicensed white space devices in the bands.[347] Further, certain qualifying unlicensed operators (*e.g.*, those operating at major events where microphone operations cannot be accommodated on the channels not available for white space devices) are permitted

[337] 47 C.F.R. § 74.801. We will use the generic term "wireless microphones" herein to refer to the realm of low power auxiliary devices including wireless intercoms, wireless in-ear monitors, cueing devices, etc.

[338] The maximum permitted output power for licensed LPAS in the UHF-TV band is 250 milliwatts (mW). *Id*. § 74.861(e)(1)(ii).

[339] 47 C.F.R. § 74.801.

[340] 47 C.F.R. § 74.870. These stations are for use as an aid in composing camera shots on motion picture and television sets. *Id.* § 74.801 ("Definitions").

[341] *See Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band*, WT Docket No. 08-166, WT Docket No. 08-167, ET Docket No. 10-24, Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 643 , 682-687 paras. 81-90 (2010) ("*Wireless Microphones Order and Further Notice*"). In that proceeding, the Commission took several actions to ensure that all wireless microphone operations in the 698-806 MHz band (the 700 MHz band) cease in order to make the 700 MHz band fully available for the mobile commercial and public safety services in that band. *See id.*

[342] Accordingly, any operations must not cause harmful interference and must accept any interference received. *See* 47 C.F.R. § 15.5; *Wireless Microphones Order and Further Notice*, 25 FCC Rcd at 683, para. 82. Under Part 15, persons operating unlicensed devices do not have any vested or recognizable right to continued use of any given frequency as a result of registration or certification of equipment. 47 C.F.R. § 15.5(a).

[343] The Commission required that the devices must be certificated under the rules applicable for LPAS devices, while only allowing unlicensed operations to use output power of up to 50 milliwatts (as opposed to 250 milliwatts permitted for licensed LPAS operations in the UHF TV Bands). *Wireless Microphones Order and Further Notice*, 25 FCC Rcd at 683-84, paras. 82, 84.

[344] *Wireless Microphones Order and Further Notice*, 25 FCC Rcd at 682-83, para. 81.

[345] *Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band,* ET Docket Nos. 04-186 and 02-380, Second Memorandum Opinion and Order, 25 FCC Rcd 18661, 18671-18677, paras. 25-36 (2010) ("*TV White Spaces Second MO&O*"); 47 C.F.R. §15.707(a) (prohibiting white space devices on the first channel above and the first channel below channel 37 that are available, or if a channel is not available above and below channel 37, prohibiting white space devices on the first two channels nearest to channel 37). *See also* 47 C.F.R. § 15.712(f)(2).

[346] *TV White Spaces Second MO&O*, 25 FCC Rcd at 18674-18675, paras. 31-32. *See generally* 47 C.F.R. § 15.707.

[347] *TV White Spaces Second MO&O*, 25 FCC Rcd at 18675-18676, para. 33; 47 C.F.R. § 15.712(f) and 713(h)(8).

to register with the Commission to have their unlicensed operations on available channels at specified times included within the broadcast television bands database to prevent interference from white space devices.[348]

223. Under our rules, licensed LPAS may operate on vacant channels allocated to television broadcasting. In the UHF band, co-channel LPAS operations must be separated by a distance of at least 113 kilometers (70 miles) from the television station.[349] Unlicensed wireless microphones are permitted similar types of operations on this unused spectrum. Wireless microphones operate in a relatively narrow bandwidth and often are technically capable of choosing different frequencies among multiple vacant channels available for operation.[350] Many wireless microphones are used regularly and predictably (*e.g.*, at television studios, movie studio lots, or major sporting events facilities), but at times the location of their operation changes (*e.g.*, covering news events in different places).[351] The nature of wireless microphones and their use is such that they operate for relatively short intervals at different times, and the specific frequencies they use for operation often change, even when used at one location.[352] Theatrical and sports productions and other major events often use more than 100 wireless microphones, which in certain locations could use most if not all of the UHF channels available to them in the television bands. In addition, we note that recent technological advances are enabling more efficient use of wireless microphones on these available channels.[353]

224. *Discussion.* The repacking of television stations may result in a reduced amount of spectrum being available in the core television bands for use on a secondary basis by licensed wireless microphones under the LPAS rules and for use by unlicensed wireless microphone operations. At the same time, as discussed in section VIII below, with the proposed creation of guard bands for new uses some spectrum may be newly available for unlicensed use, including wireless microphones that can use the technologies required for white space device operations in the guard bands. We seek comment on what steps we should take, if any, to best accommodate wireless microphone operations along with other uses, as well as to ensure that the available spectrum is used efficiently and effectively by wireless microphones. We seek comment with respect to both licensed LPAS and unlicensed operations.[354]

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[348] *TV White Spaces Second MO&O*, 25 FCC Rcd at 18675-18676, paras. 32-33; 47 C.F.R. § 15.713(h)(9). We note that wireless microphone use also is authorized on licensed and unlicensed bases in certain frequencies outside of the core TV bands. Specifically, licensed LPAS is permitted in frequencies including 26.100-26.480 MHz, 450-451 MHz, 455-456 MHz, and 944-952 MHz. Under Part 90, entities eligible for an Industrial/Business Pool license may operate low power wireless microphones on a licensed basis on certain frequencies between 169.445 and 171.905 MHz. Under Part 15, unlicensed operations by devices serving as wireless microphones are permitted in the 49 MHz, 902-928 MHz, and 2.4 GHz bands. Microphones operating under Part 15 in the ISM bands are generally unsuited to professional applications due to limitations on power and high interference levels.

[349] 47 C.F.R. § 74.802(b)(3). The applicable separation distances for VHF bands range from between 97 and 129 kilometers, depending on the zone. 47 C.F.R. § 74.802 (b)(1)-(2).

[350] *See, e.g., TV White Spaces Second MO&O*, 25 FCC Rcd at 16843, 16844, paras. 93, 95.

[351] *TV White Spaces Second MO&O*, 25 FCC Rcd at 16883, para. 220.

[352] *TV White Spaces Second MO&O*, 25 FCC Rcd at 16843-44, paras. 93, 95.

[353] For instance, Shure recently has launched digital wireless microphones that support up to 14 to 15 systems on a single 6 megahertz channel, whereas analog devices may only enable 8 microphones on a 6 megahertz channel. *See* http://www.tvtechnology.com/news/0086/wireless-mic-users-challenged-by-new-spectrum-limits/213016; *see also TV White Spaces Second MO&O*, 25 FCC Rcd at 18674, para. 31 n.58 (citing a 2004 filing by Shure that a 6 megahertz TV channel can support the operation of 6-8 wireless microphones).

[354] In the *Wireless Microphones Further Notice* (ET Docket No. 10-24), the Commission is considering what actions it should take generally with respect to revising rules applicable for wireless microphones. In particular, the (continued….)

225. In particular, we seek comment on the operations of wireless microphones in the repacked spectrum that continues to be used for broadcast television service. With less broadcast television spectrum available after the repacking, and the possibility that two channels may no longer be designated for wireless microphone use, are there additional steps that we should take to promote more efficient or effective operations of wireless microphones in this spectrum? For instance, to make more of this limited spectrum usable for wireless microphones, should the Commission revise the rules for operating these devices on a co-channel basis with television stations in the UHF band by reducing the separation distance of 113 kilometers, a requirement established prior to the transition to digital television?[355] Apart from reducing the separation distances generally, are there other, more precise methods that we should consider, such as permitting co-channel wireless microphone use even closer to television stations through use of a database that takes into account the particular interference conditions at that location?[356] If so, should we require that wireless microphone operations be registered in a database? Could this or other measures, such as coordination, enable more intensive use by wireless microphones of the broadcast television spectrum that is not available for white space devices?[357] Are there other means of promoting more intensive use by wireless microphones of available spectrum while protecting broadcasting service?

226. In addition to requesting comment on wireless microphone operations in the repacked spectrum that continues to be used for broadcasting, we seek comment on operation of wireless microphones in the spectrum that would be established for the guard bands under the proposals set forth in section VIII below. The band plan contemplates guard bands in which no high power operations would be permitted, and as discussed in more detail in section VIII we seek comment on the use of such guard bands for unlicensed white space devices under the operational rules for those devices. Here, we seek comment on wireless microphone operations in such guard band spectrum. We recognize that the various guard band proposals differ with respect to the location and amount of guard band spectrum created. To what extent could wireless microphone operations effectively be accommodated under any of these proposals? Have there been any technological advances that we should consider in this regard? We also request comment on how wireless microphone operations in the guard bands could co-exist with other users, including unlicensed white space devices. In particular, should wireless microphones be permitted to operate in the guard bands so long as they use the technologies required of white space device operations in these bands, including the ability to access a database (in order to identify the guard bands at

(Continued from previous page)
Commission sought comment on what rules should apply to unlicensed operations, whether to expand eligibility for certain entities to operate on a licensed basis under the Part 74 LPAS rules, and what steps over the longer term that the Commission should take to promote technological innovations that would enable more efficient use of spectrum by wireless microphones. *See generally Wireless Microphones Further Notice.* A public notice to be issued by the Wireless Telecommunications Bureau and Office of Engineering and Technology seeks to refresh that record on expanding eligibility for licensed operations to specified classes of users, and on improved efficiency standards.

[355] 47 C.F.R § 74.802(b). In this regard, we note that productions using these low power devices often take place indoors, where the attenuation by the building structure could make it less likely that there will be interference with TV reception. In addition, we note that our rules only require that personal portable white space devices to adhere to a minimum separation distance of 6 kilometers from co-channel TV broadcast contours. *See* 47 C.F.R. § 15.712-(a)(2).

[356] For instance, a database could be used to take account of the particular parameters of wireless microphone operations (e.g., indoor or outdoor use, power levels, etc.) at a specific location and permit operations that would not cause harmful interference.

[357] We note for instance that in response to the *Wireless Microphones Further Notice* one commenter proposed that the Commission allow co-channel operation of wireless microphones if the received signal strength is, on average, below -110 dBm, within the operating radius of the wireless microphone. *See* Michael J. Benonis Comments, WT Dkt. No. 10-24 (Feb. 21, 2010) at 4.

particular locations) and to comply with other technical requirements, such as whatever power and emissions limits that we establish for operations in these bands?[358] Should wireless microphone operations only be permitted on an unlicensed basis in the guard bands, such that they would have the same status as the other unlicensed operations in these bands? To what extent should wireless microphone operators that currently qualify for registration and database protection have such protection extended to the guard bands? We ask that commenters also discuss the costs and benefits associated with adoption of the proposals they discuss.

VIII. WHITE SPACE AND UNLICENSED OPERATIONS

227. We examine in this section how to best preserve and improve the use of the unused spectrum in the broadcast television bands for unlicensed operations, including the possibility of providing for additional spectrum, ideally on a nationwide basis, for unlicensed use in these bands.

228. *Background.* The Commission's Part 15 rules provide for operation of low power radio transmitters on an unlicensed basis in many different spectrum bands, including the bands allocated for broadcast television services.[359] These unlicensed radio transmitting devices (unlicensed devices) are an important part of this nation's communications capabilities, serving to augment the operations of licensed services and to meet the needs of a very wide range of wireless applications. Because of their low cost, ability to operate without a license and innovative applications that meet various market demands, unlicensed devices are increasing in both popularity and economic importance. They contribute to our economy not only through the sales of unlicensed products themselves, but also through collateral commercial activities that they facilitate. In recent years, unlicensed devices have become an essential component for providing short-range broadband connectivity[360] that supports business communications, research, education, online shopping and other communications that are driving economic growth.[361]

229. The Commission has taken a number of steps to make additional spectrum available for unlicensed devices in order to meet the burgeoning demand for wireless broadband access. For example, in 2002, the Commission amended the section 15.247 rules for spread spectrum devices in the 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz and 5725-5875 MHz Industrial, Science and Medical (ISM)

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[358] *See* Spectrum Act § 6407(d) (requiring unlicensed use in guard bands to "rely on a database or subsequent methodology as determined by the Commission.").

[359] 47 C.F.R. § 15. Under Part 15, unlicensed devices are allowed to operate on frequencies allocated to other services on the basis that unlicensed devices do not cause harmful interference and have no rights to protection from interference. The rules allow unlicensed operation across most frequency ranges, but specify radiated field strength and/or conducted power limits, as appropriate, at low levels in order to minimize the potential for interference. These limits provide substantial flexibility in the types of devices that can be operated, although they tend to limit the kinds of unlicensed applications that can be supported.

[360] A recent study by Strategy Analytics indicates that 61 percent of households in the United States and 25 percent of households world-wide now have installed Wi-Fi networks. This growth has followed the development of broadband unlicensed industry standards such as the IEEE 802.11 family (which includes Wi-Fi™), IEEE 802.15 Bluetooth®, and IEEE 802.15 ZigBee® that have greatly expanded the number and variety of devices that operate in the 2.4 GHz and 5 GHz industrial, scientific and medical equipment (ISM) bands. These standards have enabled the introduction of a host of new wireless Internet products as well as wireless computer peripherals such as printers, keyboards, wireless headsets and network connections for wireless mobile service devices.

[361] While the value of unlicensed devices to the economy is difficult to ascertain, a study by the Stanford Institute for Economic Policy Research and Perspective (Stanford) estimates the economic benefits of unlicensed devices overall to be in the tens of billions of dollars, if not more. Stanford also estimates the economic benefits generated by unlicensed broadband devices to be $16-37 billion per year and growing. Paul Milgrom, Jonathan Levin, and Assaf Eilat, *The Case for Unlicensed Spectrum*, Stanford Institute for Economic Policy Research (October 12, 2011) at 16. Available at http://siepr.stanford.edu/?q=/system/files/shared/pubs/papers/pdf/11-002_Paper_Milgrom.pdf.

bands to allow the operation of additional types of devices.[362] That rule change led to authorization of enhanced wireless LAN devices such as those built to the IEEE 802.11 family of standards and other voluntary digital connectivity standards. Demand for these and other services and applications continues to grow, however, already exceeding the capacity of existing spectrum in high-demand areas. Additional spectrum is required to support these important unlicensed uses.

230. More recently, the Commission completed rules authorizing unlicensed operation of white space devices on unused channels in the broadcast television bands.[363] The rules for white space devices employ a novel approach to spectrum access that uses cognitive radio techniques to identify television channels that are not used by licensed services at or near a device's location.[364] The rules require that a device report its geographic location to a database, which determines the channels that are unused at that location and therefore available for use.[365] The device is allowed to operate only on those channels indicated as available by the database. Currently, white space devices are allowed to operate on channels 2 and 4-51 (except channel 37), with some additional restrictions on channel use depending on whether the device is of a fixed or personal/portable design and whether other protected radio services preclude the use of certain channels. Thus, the number of broadcast television channels that are now available for use by devices varies by geographic location, depending on the number of channels that are used by television stations and other protected radio services that serve the location. This new approach is serving to make available spectrum that previously has laid fallow while also protecting the incumbent broadcast television and other services that use the VHF and UHF bands from interference.

231. The National Broadband Plan recognized the need for additional unlicensed spectrum and recommended that the Commission free up new contiguous spectrum for unlicensed use within the next 10 years.[366] Currently, some urban markets do not have channels available for white space use. To address this issue, the National Broadband Plan recommended that, as the FCC seeks to provide additional spectrum for broadband services, it make available for exclusive or predominant use by unlicensed devices sufficient spectrum to enable innovators to try new ideas for increasing broadband access and efficiency, and to enable new unlicensed broadband access providers to serve rural and unserved communities.

232. *Overview.* Taken together, our proposals will enable a substantial amount of spectrum use by unlicensed devices, a significant portion of which use will be available on a nationwide basis. In doing so, we believe that they will help to create certainty for the unlicensed industry and promote greater innovation in new services, including increased access for broadband services across the country. We seek comment on these proposals, including the technical and economic benefits and disadvantages on all relevant industries—the unlicensed industry, the wireless industry and broadcasters—and consumers. We also seek comment on how to balance making spectrum available for use by unlicensed devices with our

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[362] *See Amendment of Part 15 of the Commission's Rules Regarding Spread Spectrum Devices*, ET Docket No. 99-231, Second Report and Order, 17 FCC Rcd 10755 (2002).

[363] *See Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, Second Report and Order, 23 FCC Rcd 16807 (2008) (*TVWS Second Report and Order*); *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, Second Memorandum Opinion and Order, 25 FCC Rcd 18661 (2010); *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, Third Memorandum Opinion and Order, 27 FCC Rcd 3692,(2012).

[364] The rules for white space devices in broadcast television bands are located in Part 15, Subpart H. *See* 47 C.F.R. §§ 15.701-.717.

[365] 47 C.F.R. §§ 15.701-.717.

[366] *See* National Broadband Plan at p. 94.

central goals in this proceeding of repurposing the maximum amount of UHF band spectrum for flexible use while preserving a healthy, diverse broadcast television service.

233. *White Space Devices.* We begin by addressing operation of white space devices in the broadcast television band spectrum that is not repurposed for flexible use by new licensed services as a result of the broadcast television spectrum incentive auction.[367] We propose to continue to allow the operation of white space devices in the broadcast television spectrum on unused channels that are not repurposed for other uses under the current rules governing white space devices in the television bands. When spectrum is repurposed as a result of the incentive auction, the amount of broadcast television spectrum that will continue to be available for these white space devices may be reduced to some extent, in different markets, depending on the amount of spectrum that is recovered and other factors. Because unlicensed white space devices can adjust to whatever channels are available at any given location according to the white space database, however, the devices should be able to adapt to any reductions or changes in the available channels.[368] Given that there is considerable white space available now in many areas–more than 100 megahertz in some markets–we expect that there will still be a substantial amount of spectrum available for use by these devices in the remaining broadcast television channels after the incentive auction.[369] We also expect that there will continue to be more spectrum available in areas outside of the central urban areas of the largest markets than within those areas. We seek comment on these views. It is our intent to continue to allow both the use of white space devices and the development of devices for various applications that operate in the broadcast television bands after the incentive auction.

234. *Guard Band Availability for Unlicensed Use.* A significant benefit of the white space spectrum access technology is that it can allow existing unlicensed white space devices to use guard band frequencies in the 600 MHz spectrum as well as unused channels in the spectrum that will remain in use for broadcasting. As discussed above, the Spectrum Act constrains the FCC to guard bands "no larger than is technically reasonable to prevent harmful interference between licensed services outside the guard bands," and requires a forward auction in which "the Commission assigns licenses for the use of the spectrum that the Commission reallocates."[370] Under these provisions, we must license the spectrum we recover through the broadcast television spectrum reorganization, with the exception of guard bands. Our proposed 600 MHz band plan includes guard band spectrum. Specifically, we propose six megahertz guard bands between television operations and 600 MHz uplink operations and between television operations and 600 MHz downlink operations.[371] We also propose to add to the guard bands the 0 to 4 megahertz of "remainder" spectrum in any given market for each half of the duplex pairing under our proposed band plan because TV broadcast stations operate on 6 megahertz wide channels and the downlink and uplink 600 MHz bands will each be organized into 5 megahertz blocks.[372] As noted above,

[367] We focus in this section on unlicensed white space devices and related devices. Unlicensed wireless microphones, together with licensed wireless microphones, are discussed in section VIII above.

[368] In section VI, we are proposing to locate any spectrum remaining after broadband licenses are assigned and television stations are repacked adjacent to the guard bands. This proposal could provide for additional contiguous spectrum for unlicensed device use in the guard bands.

[369] For example, in Wilmington, NC there are currently altogether 34 channels/204 megahertz available for the three categories of white space devices (fixed devices, personal/portable not on channels adjacent to television service and personal/portable devices on channels to TV service). *See* http://whitespaces.spectrumbridge.com/Main.aspx or http://www.telcordia.com/services/interconnection/white-spaces.html.

[370] Spectrum Act §§ 6403(c), 6407(b).

[371] *See supra*, Section VI.B.5.a.

[372] *See supra*, Section VI.B.6.b. We note that we cannot avoid "remainder" spectrum by including it in the 6 megahertz guard bands that we propose (*i.e.*, adding whatever remainder spectrum we have in a given market to (continued….)

providing additional guard band protection beyond 6 megahertz would further improve any potential interference concerns, and therefore, we propose to add this remainder spectrum to the guard bands. We propose to make this guard band spectrum available for unlicensed white space device use on a non-interference basis. We believe that this proposal could increase the spectrum available for unlicensed use in the urbanized areas of major markets where there may be little or no white space spectrum available now, spurring deployment, use and a national market for unlicensed devices and applications.[373] We invite comment on this premise. We also seek comment on our proposal to make the guard bands available for unlicensed use, and any alternative approaches for the guard bands.

235. We also seek comment on whether our existing power and emission limits for white space devices in the television bands are appropriate for unlicensed operations in the guard band spectrum to protect licensed operations.[374] Those limits were developed to permit white space device operations in frequency bands adjacent to those used by broadcasting and radio astronomy/wireless medical telemetry service, with different operational requirements depending upon the type of devices being used and the separation from channels used by broadcasters.[375]

236. As stated above, our present rules for white space devices in the television bands utilize a database to inform devices in real time which television channels they may operate on. Should the same process be used to make guard band spectrum available for use by existing and/or future white space devices? What changes would be required to accommodate different amounts of guard band spectrum?

237. *Possible Use of Channel 37.* In addition, there may be an opportunity for unlicensed devices to operate in channel 37 (an additional 6 megahertz of spectrum), whether or not we relocate the WMTS and the Radio Astronomy Service now using channel 37. As discussed in section VII, the rules require that locations of WMTS operations be registered with the American Society for Healthcare Engineering (ASHE),[376] and there are relatively few radio astronomy operations, all at specified locations. Therefore, we may be able to protect these services by establishing appropriate protection areas in the white space database. We propose to make channel 37 available for unlicensed use, while protecting WMTS and the Radio Astronomy Service. This proposal would increase the efficiency of use of this spectrum while expanding the amount of spectrum available for innovative unlicensed operations. We seek comment on information regarding appropriate protection criteria for WMTS and the Radio Astronomy Service.

238. *Possible Availability of Channels Designated for Wireless Microphones.* The current rules for white space devices in the television bands designate two channels (when available) in all

(Continued from previous page)
between 2 and 6 megahertz of guard band spectrum to reach a total of exactly 6 megahertz of guard band spectrum) because we will not know in advance of the reverse auction and repacking how much, if any, remainder spectrum exists in a given market.

[373] As stated above, under this proposal there could be between 6 and 10 megahertz of spectrum between the television channels and the 600 MHz uplink band in a market, and another 6 to 10 megahertz of spectrum between the television channels and the 600 MHz downlink band in a market. *See supra*, Section VI.B.6.b.

[374] 47 C.F.R. § 15.709.

[375] For example, personal/portable unlicensed white space devices can operate on channels immediately adjacent to operating television stations within their noise-limited service areas, but such devices are limited to an EIRP of 40 milliwatts (40 mW). 47 C.F.R. § 15.709(a)(2). Fixed unlicensed white space devices are permitted to operate with an EIRP of up to 4 watts, but are restricted to channels removed by at least 6 megahertz (one television channel) from nearby operating television stations. 47 C.F.R. § 15.709(a)(1).

[376] ASHE is the Commission's designated frequency coordinator for WMTS and maintains the database of registered devices.

locations for use by wireless microphones.[377] White space devices are not permitted to operate on these channels, preventing them from using 12 megahertz of spectrum that could otherwise be available for their use. We invite comment as to whether the Commission should maintain the designation of two channels for wireless microphones following the broadcast television spectrum incentive auction or whether this spectrum should be made available for unlicensed use.

239. Taken together, our proposals will enable a substantial amount of spectrum use by unlicensed devices, a significant portion of which use will be available on a nationwide basis.[378] In doing so, we believe that they will help to create certainty for the unlicensed industry and promote greater innovation in new services, including increased access for broadband services across the country. We seek comment on these proposals, including the technical and economic benefits and disadvantages on all relevant industries—the unlicensed industry, the wireless industry and broadcasters—and consumers. We also seek comment on how to balance making spectrum available for use by unlicensed devices with our central goals in this proceeding of repurposing the maximum amount of UHF band spectrum for flexible use while preserving a healthy, diverse broadcast television service.

IX. AUCTION RULES

240. In this section, we propose competitive bidding rules to govern the reverse auction of broadcast television spectrum, and consider changes to the Commission's general competitive bidding rules that may be necessary or desirable to conduct the related forward auction for new spectrum licenses.

A. Competitive Bidding Process for Reverse Auction—Part 1 New Subpart

1. Purpose

241. In this subsection, we propose a general framework for the reverse auction of broadcast television spectrum.[379] These proposed rules ultimately will govern how the auction process unfolds for broadcasters, *i.e.*, what applicants need to do to participate and when; how bids are collected, winners and incentive payments determined, and broadcast stations repacked; and how the results of the reverse auction for broadcasters are implemented, including disbursement of incentive payments.[380] Consistent with the Commission's typical approach to spectrum license auctions, the proposed rules would provide a general framework to guide the development—through a series of public notices with opportunities for comment—of the detailed procedures and deadlines needed to conduct the auction. The public notice process would allow both the Commission and interested parties to focus and provide input on certain details of the auction design and the auction procedures after the rules have been established and the remaining procedural issues are better defined. Our experience with spectrum license auctions demonstrates the value of this approach, so we anticipate following a similar approach here.

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[377] *Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket Nos. 04-186 and 02-380, Second Memorandum Opinion and Order, 25 FCC Rcd at 18671-677, paras. 25-36 (2010) (*TV White Spaces Second MO&O*); 47 C.F.R. §15.707(a) (prohibiting white space device operations on the first channel above and the first channel below Channel 37 (608-614 MHz) that are available, or if a channel is not available above and below channel 37, operation is prohibited on the first two channels nearest to channel 37); *see also id.* § 15.712(f)(2).

[378] This calculation includes making available for unlicensed devices the proposed guard bands and channel 37. A similar amount of spectrum might be made available if we adopt the duplex gap approach discussed in section VI above, depending on the overall amount of spectrum that is recovered.

[379] Spectrum Act § 6403(a).

[380] In section X below, we address the UHF band transition following the incentive auction, including license modification procedures for broadcast television licensees that are assigned to new channels and reimbursement of relocation costs.

2. Pre-Auction Application Process

242. We propose to require submission of a pre-auction application by entities interested in participating in the reverse auction. Information provided on the pre-auction application would allow the Commission to evaluate whether the applicants are qualified to participate in accordance with the auction rules. We envision that the pre-auction application would be due on the dates specified by public notice and would be filed electronically in a process similar to that currently used for Commission spectrum license auctions. Below, we seek comment on proposed rules regarding the contents of the pre-auction application for the reverse auction. We also invite comment in subsection IX.A.4 below on measures that we should take to implement the statutory mandate to protect the confidentiality of Commission-held data of licensees that participate in the reverse auction.

243. *Eligibility Requirements*. As discussed in detail in section IV, we propose that in order to participate in the reverse auction, a broadcast television licensee must be a full power or a Class A television station. We propose that a broadcast television licensee operating on a noncommercial educational (NCE) reserved channel, as well as a licensee operating with NCE status on a non-reserved channel, may participate. In section IV we also propose that the relevant license must be valid and not expired, cancelled, or revoked.

244. *Applicant.* Since the broadcast television "licensee" holds the relevant spectrum usage rights that may be relinquished in the reverse auction, in order to promote accountability and transparency, we propose that the applicant identified on the pre-auction application for the reverse auction must be the licensee.[381] If we adopt this proposal, a corporate parent would not be able to file one application for licenses held by different licensee subsidiaries; however, a licensee holding multiple licenses would only be required to file one application for all such licenses for which it wishes to submit bids in the reverse auction. We seek comment on this proposal and specifically ask commenters to address whether we should permit other persons or entities, such as the licensee's parent company or persons or entities with control over the licensee, to be the applicant.

245. For broadcast television licensees agreeing to share a channel, we propose that only the "sharee(s)"—the station(s) that would relinquish their frequencies in order to move to the sharer's frequencies—must apply to participate in the reverse auction.[382] Since the "sharer" station would not move as a part of the channel sharing arrangement, we propose that the sharer need not submit an application to participate in the reverse auction unless it intends to bid to relinquish other spectrum usage rights—for instance, depending on the available bidding options, the sharer might bid to move from a UHF to a VHF channel, or it might submit a contingent bid to relinquish all of its spectrum usage rights.[383] We seek comment on this proposal. We also ask commenters to address any costs and benefits that would result for the auction and for the channel sharing relationship if, in the alternative, we were to require all parties to a channel sharing agreement (*i.e.*, the sharee(s) and the sharer) to file pre-auction applications. Are there any other issues that we should consider regarding channel sharing agreements that may affect who should apply to participate in the reverse auction?

[381] *See* Spectrum Act § 6403(a)(1) (directing the Commission to conduct a reverse auction to determine the amount of compensation that each "broadcast television licensee" would accept in return for voluntarily relinquishing some or all of its broadcast television spectrum usage rights).

[382] As discussed elsewhere in this Notice, more than two stations may share a channel. Thus, although there would be only one sharer in each channel sharing relationship, there could be multiple sharees.

[383] We note that below we propose to require the sharer to provide any necessary certifications with respect to the channel sharing agreement in addition to the sharee.

246. *Information and Certifications Required in Application to Participate in Competitive Bidding.* We seek comment on what information applicants should be required to provide and what certifications they should be required to make in the pre-auction application regarding their qualifications to participate in the reverse auction.

247. Based on our experience with spectrum license auctions, we propose that the pre-auction application request the following information from the applicant:

- The applicant's name and contact information;
- The license(s) (including station and channel information, full power or Class A status, and NCE status) and the associated spectrum usage rights that may be offered in the reverse auction (including whether the applicant intends to bid to relinquish all of its spectrum usage rights, to channel share, to move from UHF to VHF frequencies, and/or to offer any other permissible relinquishments);
- Any additional information required to assess the spectrum usage rights available for the reverse auction;
- The identity of the individuals authorized to bid on the applicant's behalf;
- The applicant's ownership information as set forth in section 1.2112(a) of our rules,[384] and, for NCE stations, information regarding the licensee's governing board and any educational institution or governmental entity with a controlling interest in the station, if applicable;
- For a channel sharing applicant, the channel the parties intend to share and any necessary information regarding the channel sharing agreement;
- An exhibit identifying any bidding agreements, bidding consortia, or other such arrangements to which the applicant is a party, if permitted;
- Any current delinquencies on any non-tax debt owed to any federal agency, but only if we determine in this proceeding that such information is necessary in order to assess the licensee's eligibility to participate in the reverse auction or if we adopt a rule, as discussed below, that would allow the Commission to offset incentive payments by the amount of the licensee's outstanding delinquencies; and
- Any additional information that the Commission may require.

We seek comment on this proposal. In particular, in lieu of requesting the ownership information set forth in section 1.2112(a) of our rules,[385] should we require reverse auction applicants to provide less detailed ownership information, and if so, what information should we require? Should we instead request the same ownership information that broadcast television licensees currently provide for the purposes of the multiple ownership rules, in which case attributable interests would need to be disclosed but non-attributable interests, such as certain insulated parties, would not need to be disclosed?[386] If so, should we merely require applicants to provide updated information to supplement existing disclosures on file with the Commission regarding media ownership, such as the information contained in the licensee's most recently filed Form 323 or Form 323-E Biennial Ownership Report Form?

[384] 47 C.F.R. § 1.2112; *see also* 47 C.F.R. § 1.2105(a)(2)(ii)(B).

[385] *Id.*

[386] *See* 47 C.F.R. § 73.3555 & nn.1-3.

248. Furthermore, we seek comment on what information regarding channel sharing agreements we should request in order to assess an applicant's eligibility to participate in the reverse auction. What information or documentation should we require as a part of the pre-auction application? Should we require submission of the channel sharing agreement with the pre-auction application?

249. We also propose and seek comment on rules that would require applicants to certify on the pre-auction application that:

- The applicant meets the statutory and regulatory requirements for participation in the reverse auction, including any requirements with respect to the applicant's licenses for the spectrum usage rights offered in the reverse auction;
- If the applicant is a Class A television station, that it is, and will remain during the pendency of its application(s), in compliance with the ongoing statutory eligibility requirements to remain a Class A station;
- For a channel sharing applicant, that the channel sharing agreement is consistent with all Commission rules and policies, and that the applicant accepts any risk that the implementation of the channel sharing agreement may not be feasible for any reason, including any conflict with requirements for operation on the shared channel;
- For a channel sharing applicant, that its shared channel facilities will continue to provide minimum coverage to its principal community of license as set forth in the Commission's rules;
- The applicant agrees that the bids it submits in the reverse auction are irrevocable, binding offers of the licensee;
- The applicant agrees that it has sole responsibility for investigating and evaluating all technical and marketplace factors that may have a bearing on the bids it submits in the reverse auction; and
- The individual submitting the application and providing the certifications is authorized to do so on behalf of the applicant.

If the person submitting the application and providing the certifications on behalf of the applicant is not an officer, director, board member, or a controlling interest holder, we propose to require the applicant to submit evidence that such person has the authority to bind the applicant.

250. We propose that all parties to any channel sharing agreement—*i.e.*, the sharer and the sharee(s)—be required to make any necessary certifications with respect to the channel sharing agreement. We seek comment on this proposal and whether requiring all channel sharing parties to make any necessary certifications will encourage or discourage stations from entering into a channel sharing agreement in connection with the auction. In addition, we seek comment on any other issues that we should consider regarding certifications by licensees agreeing to channel share.

251. In addition, the Spectrum Act specifies that "a person who has been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant" may not participate in a system of competitive bidding that is required to be conducted by Title VI of the Spectrum Act.[387] This national security restriction

[387] *See* Spectrum Act § 6004. We also discuss this provision of the Spectrum Act in Section X.C.2.b.ii below.

applies to the broadcast television spectrum reverse and forward auctions since Title VI requires the Commission to conduct both auctions.[388]

252. We propose that on the pre-auction application for the reverse auction, the applicant must certify, under penalty of perjury, that it and all of the related individuals and entities required to be disclosed on the pre-auction application are not "person[s] who [have] been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant."[389] We propose to include an identical certification requirement on the short-form application for participation in the forward auction. We request comment on this proposal. For the purposes of this certification, we propose to define "person" as an individual, partnership, association, joint-stock company, trust, or corporation.[390] We also propose to define "reasons of national security" to mean matters relating to the national defense and foreign relations of the United States.[391] We seek comment on these proposed definitions. What other issues, if any, should we consider regarding this national security restriction?

253. *Procedures for Processing Pre-Auction Applications.* We propose that, similar to other auctions, if an applicant fails to make the required certifications, the application would be rejected, *i.e.*, dismissed with prejudice. We also propose that after the Commission's initial review of the pre-auction applications, applicants would have an opportunity to cure defects identified by the Commission, but if not corrected before the resubmission deadline, such applications would be dismissed. With respect to licensees whose pre-auction applications are dismissed, we seek comment on whether we should consider such licensees to be "applicants" and/or "participants" for the purposes of applying our reverse auction rules. For instance, should such licensees be considered "applicants" under the proposed rule prohibiting certain communications and "participants" under the proposed rule protecting confidential Commission-held data of licensees participating in the reverse auction?

254. We propose that whenever the information furnished in a pending pre-auction application is no longer substantially accurate and complete in all significant respects, the applicant must amend or modify the application as promptly as possible and in any event within five business days. We propose that certain minor changes would be permitted subject to a deadline specified by public notice, but major changes to the pre-auction application would not be permitted. Major amendments would include, but are not limited to, changes in ownership of the applicant or the licensee that would constitute an assignment or transfer of control. Precluding such changes in ownership after the submission of the application would ensure that all of the relevant parties are clearly identified for the purposes of applying the reverse auction rules, including the rule prohibiting certain communications. In addition, major amendments would include changes to any of the required certifications and the addition or removal of licenses or authorizations identified on the pre-auction application for which the applicant intends to submit bids. Minor amendments would include any changes that are not major, such as correcting typographical errors and supplying or correcting information requested by the Commission to support the certifications made in the application.[392] We seek comment on these proposals.

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[388] *See* Spectrum Act § 6403(a), (c).

[389] *See id.* § 6004(c).

[390] *See, e.g.*, 47 U.S.C. § 153(39) ("The term 'person' includes an individual, partnership, association, joint-stock company, trust, or corporation.").

[391] *See, e.g.*, 18 U.S.C. app 3 § 1(b) (defining "national security" as "the national defense and foreign relations of the United States").

[392] *See* 47 C.F.R. § 1.2105(b).

255. In typical spectrum license auctions, we release a public notice identifying qualified and non-qualified applicants. To protect the confidentiality of the identities of all reverse auction participants as required by the Spectrum Act,[393] we propose to notify the applicants individually as to whether they are qualified bidders, *i.e.*, are qualified to participate in the reverse auction. We seek comment on this proposal. We seek comment below on additional issues that arise from our statutory obligation to protect the confidentiality of Commission-held data of a licensee participating in the reverse auction.

3. Two Competing Participants Required

256. The Commission will share with winning bidders in the reverse auction a portion of the proceeds of the forward auction assigning licenses for spectrum usage rights relinquished in the reverse auction pursuant to section 309(j)(8)(G) of the Communications Act, as added by section 6402.[394] Clause (ii) of subparagraph (G) requires that "[t]he Commission may not enter into an agreement for a licensee to relinquish spectrum usage rights in exchange for a share of auction proceeds . . . unless . . . at least two competing licensees participate in the reverse auction."[395] Accordingly, we propose a rule to incorporate this requirement into the competitive bidding rules for the broadcast television reverse auction and seek comment on the parameters of such a rule. In particular, we seek comment on what should constitute "participation" for these purposes. Should we consider a licensee to be a "participant" if it has submitted an application to participate in the reverse auction and after review of the application the Commission finds the applicant qualified to bid? Alternatively, should we require a licensee to become a qualified bidder and submit a bid to be considered a participant in the reverse auction? Similarly, we seek comment on what constitutes "competing" for purposes of this requirement. Is there any reason why multiple reverse auction participants bidding for payments from the same source of funds—*i.e.*, the proceeds of the forward auction—should not be considered to be "competing"?

4. Confidentiality and Prohibition of Certain Communications

257. *Confidentiality*. Section 6403(a)(3) of the Spectrum Act requires the Commission to "take all reasonable steps necessary to protect the confidentiality of Commission-held data of a licensee participating in the reverse auction . . . including withholding the identity of such licensee until the [spectrum] reassignments and reallocations (if any) . . . become effective, as described in subsection (f)(2)."[396] That subsection provides that these reassignments and reallocations may not become effective "until the completion" of both the reverse and forward auctions.[397] Unlike previous auctions for awarding spectrum licenses, which result in a winning bidder's initiation of new services or expansion of existing operations, licensees participating in the reverse auction will submit bids to exit an ongoing business, or to make significant changes to that business (*e.g.*, by sharing or changing the channels on which they operate). Section 6403(a)(3) recognizes the potential competitive sensitivities of the information that such existing licensee bidders provide to the Commission in this context.

258. We propose a rule to incorporate this confidentiality requirement into the competitive bidding rules for the broadcast television reverse auction and seek comment on the parameters of such a rule. For example, what types of information should the Commission withhold from public disclosure in order to protect the identities of licensees participating in the reverse auction? Should the Commission protect non-identifying information about licensees participating in the reverse auction, such as bid

[393] *See* Spectrum Act § 6403(a)(3).

[394] *See id.* § 6403(a)(1), (c)(1)(B).

[395] 47 U.S.C. § 309(j)(8)(G)(ii); Spectrum Act § 6402.

[396] Spectrum Act § 6403(a)(3).

[397] *Id.* § 6403(f)(2).

amounts? What interests would be served by protecting such additional licensee data? Alternatively, would disclosing such non-identifying information provide benefits for the auction process?

259. Moreover, what "reasonable steps" should the Commission take to protect confidentiality as required by the Spectrum Act? Specifically, what types of procedures should we implement to safeguard confidential Commission-held licensee data in order to satisfy section 6403(a)(3) of the Spectrum Act? Further, for how long should the Commission take such "reasonable steps"?

260. The statutory requirement extends until any reassignments and reallocations become "effective," and they may not become "effective" until the "completion" of both the reverse and forward auctions.[398] We propose that the reverse and forward auctions will each be "complete" when the Commission publicly announces that each auction, respectively, has ended. We propose that the reassignments and reallocations will be "effective" when the Commission publicly announces the results of the reverse auction, forward auction, and repacking. These announcements may be released sequentially or simultaneously. We seek comment on this proposal and on any alternatives.

261. In addition, we ask commenters to address the advantages and disadvantages of extending the Commission's obligation to take "reasonable steps" to protect confidential licensee data beyond the effectiveness of any reassignments and reallocations of broadcast television spectrum. After the statutory obligation in section 6403(a)(3) no longer applies, would the licensee data qualify for any exemptions from disclosure under the Freedom of Information Act (FOIA)?[399] Should the duration of the protection afforded to confidential licensee data be different for participants that successfully bid to relinquish spectrum usage rights in the reverse auction, as opposed to participants whose bids are not accepted? Are there any other issues we should consider regarding the "reasonable steps" we should take to protect confidentiality and the duration of such protection, such as the public policy interest in transparency?

262. We also request that commenters address whether the obligation to protect confidential Commission-held data should apply solely to the Commission, or extend to applicants in the reverse auction. Specifically, are there any legal or policy reasons to prohibit an applicant from announcing publicly or privately that it is participating in the reverse auction, or from releasing any of its identifiable information in connection with the auction?[400] Should applicants be entitled to note in the application that their information is not deemed by them to be "confidential" and that they waive any rights to protect it from disclosure? If a licensee, permissibly or impermissibly, publicly releases information regarding its participation in the reverse auction, we propose that such information would no longer be "confidential[ ] . . . Commission-held data" and, thus, the Commission would not be bound to protect the already released information. In addition, should applicants be prohibited from disclosing information regarding other licensees' participation in the reverse auction? We seek comment on these issues.

263. Auction participants may have legal obligations to disclose information that the Commission may be required to keep confidential pursuant to the Spectrum Act. For example, public companies must comply with the disclosure requirements of the Securities and Exchange Commission (SEC). More specifically, the SEC requires public companies to report on Form 8-K certain material, non-public events for purposes of shareholder disclosure.[401] Of relevance here, the SEC requires that a

[398] *Id.* § 6403(a)(3), (f)(2).

[399] 5 U.S.C. § 552(b).

[400] We note that if the Commission adopts a rule prohibiting communications among applicants concerning their bid contents or bidding strategies, a reverse auction applicant would not be able to disclose to other applicants any identifying or confidential information that would run afoul of the communications prohibition.

[401] *See* SEC, Form 8-K, http://www.sec.gov/about/forms/form8-k.pdf.

public company disclose on Form 8-K any "Material Definitive Agreement."[402] A material definitive agreement is defined as "an agreement that provides for obligations that are material to and enforceable against the registrant [*i.e.*, the filing party], or rights that are material to the registrant and enforceable by the registrant against one or more other parties to the agreement, in each case whether or not subject to conditions."[403] If a public company has entered into a material definitive agreement, it must disclose on Form 8-K both (1) the date on which the agreement was entered into or amended, the identity of the parties to the agreement or amendment, and a brief description of any material relationship between the filing party or its affiliates and any of the parties, and (2) a brief description of the terms and conditions of the agreement or amendment that are material to the filing party. [404] Does this reporting requirement apply in the context of a broadcast station participating in the reverse auction? Would this scenario create any conflict with the Commission's confidentiality obligations under the Spectrum Act?

264. *Prohibition of certain communications*. In the interests of fairness and maximizing competition in the reverse auction process, we propose to prohibit applicants in the reverse auction from communicating with one another directly or indirectly regarding the substance of their bids or bidding strategies during a time period commencing on or after the pre-auction application deadline and ending on a date specified by public notice.[405] This proposal is consistent with our approach in spectrum license auctions.[406] We seek comment on this proposal, particularly with respect to the scope of the prohibition. In particular, should we limit the prohibition to applicants within the same geographic region? If so, how should we define the relevant geographic region?

265. Also, for purposes of this prohibition, should the term "applicant" include all controlling interests in the entity submitting the pre-auction application, as well as all holders of partnership and other ownership interests and any stock interest amounting to ten percent or more of the entity, or outstanding stock, or outstanding voting stock of the entity submitting the pre-auction application, and all officers and directors of that entity?[407] For NCE stations, should the "applicant" also include, where relevant, all members of the licensee's governing board?

266. Should we adopt any specific exceptions to the communications prohibition for certain applicants in the reverse auction? In particular, recognizing that one party may have an attributable ownership interest in a number of different broadcast television licensees, should auction-related communications between applicants with attributable and/or controlling interests in one another be exempt from the communications prohibition? Are there any other issues regarding the ownership structure of broadcast television licensees that we should consider? Should we permit auction-related communications between applicants that have agreements or arrangements particular to the broadcast television industry, such as a local marketing agreement (LMA), a joint sales agreement (JSA), a shared services agreement (SSA), a network affiliation agreement, or another similar cooperative arrangement?

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[402] *Id*. at 4, Item 1.01.

[403] *Id.*

[404] *Id*.

[405] *See* 47 C.F.R. § 1.2105(c). Communications among applicants concerning matters wholly unrelated to the reverse auction, such as discussions between a broadcast affiliate and its network programming supplier on issues unrelated to the reverse auction in which they are competing bidders, would not fall within the communications prohibition.

[406] *See* 47 C.F.R. § 1.2105(c)(1). In typical spectrum license auctions, the prohibition of certain communications begins after the short-form application filing deadline and ends after the down payment deadline. *Id.*

[407] *See, e.g.*, 47 C.F.R. § 1.2105(c)(7)(i).

267. Instead of adopting specific exemptions for particular types of relationships, consistent with our approach in spectrum license auctions, should we provide a more general exception to the proposed rule prohibiting certain communications that would allow parties to communicate with one another so long as they have entered into a partnership, joint venture, consortium, or other agreement, arrangement, or understanding relating to the spectrum usage rights being offered in the reverse auction if they have disclosed the existence of those relationships to the Commission?[408] Would disclosure of such agreements to the Commission sufficiently alleviate anticompetitive concerns, even if we do not disclose the existence of such agreements publicly or to other participants in the reverse auction? We note that even if our competitive bidding rules permit communications among certain reverse auction participants during the auction, participants must also adhere to any applicable antitrust laws. We seek comment on whether and how any applicable antitrust laws should affect a general exception to the prohibition of certain communications in the reverse auction.

268. In addition, how should our prohibited communications rule address channel sharing? To alleviate collusion and antitrust concerns related to channel sharing, should we prohibit communications among parties to a channel sharing agreement concerning bids or bidding strategies during the time period specified for all prohibited communications regardless of whether such parties are "applicants" in the reverse auction? Should we expand or contract the applicable time period for channel sharing stations and begin the application of the prohibition at an identified point in time before or after the pre-auction application deadline? In the alternative, recognizing that parties to a channel sharing agreement may prefer to share information with one another regarding their participation in the reverse auction, should we grant an exception to the communications prohibition for communications among licensees agreeing to share a channel? Should channel sharing agreements fall under a general exception for agreements relating to spectrum usage rights offered in the reverse auction, so long as the agreements are disclosed to the Commission? In addition, even if we determine in this proceeding that the sharer need not file a pre-auction application, given the sharer's indirect participation in the reverse auction through the sharee(s)' channel sharing bids, is there any reason why we should not apply the rule prohibiting certain communications to the sharer and the sharee(s) so that the sharer would be prohibited from communicating with other reverse auction applicants? Should any exception for communications among licensees agreeing to share a channel extend to a contingent offer by the sharer to relinquish all of its spectrum usage rights, as discussed in paragraph 245 above? We seek comment on these issues. We also seek comment on antitrust laws that may impact channel sharing stations' participation in the reverse auction, and we ask commenters to address whether and how such laws should affect our proposed rule prohibiting certain communications.

269. We also request comment on whether to prohibit reverse auction applicants from communicating with applicants in the forward auction regarding the substance of their bids or bidding strategies. If we adopt this approach, what would be the appropriate duration of the prohibition? Should the prohibition begin on or after the pre-auction application deadline for either the reverse or the forward auction—whichever is first—and end after both the reverse and forward auctions are complete? Would the benefits and/or the feasibility of prohibiting certain communications among applicants in both the reverse and forward auctions change depending on whether they are conducted simultaneously or sequentially? Also, to enforce this prohibition, should we require applicants in the reverse auction to identify in their pre-auction applications any relationships with wireless companies (for example, ownership by the same parent company or cross-marketing agreements) since those companies may participate in the forward auction? Should we also require applicants in the forward auction to identify in their short-form applications any relationships with broadcast television licensees?

[408] *See* 47 C.F.R. § 1.2105(a)(2)(viii)-(ix), (c)(1). Any such agreement would need to be executed prior to the pre-auction application deadline so that the existence of the agreement could be disclosed on the application.

270. We further ask commenters to consider the potential impact that the Commission's obligation to withhold reverse auction participants' identities may have on our proposed communications prohibition. In prior auctions in which the Commission sought to limit the disclosure of certain bidding-related information, the Commission provided each applicant a list of the other applicants with which they were not permitted to cooperate, collaborate, or communicate—including discussing bids, bidding strategies, or post-auction market structure.[409] Since section 6403(a)(3) of the Spectrum Act requires us to take reasonable steps to keep the identities of broadcast television licensees participating in the reverse auction confidential, how can we notify an applicant of the other applicants with which it may not communicate without releasing the names or other identifying information about the other applicants? To apply a prohibition against communications while complying with the confidentiality requirements of the statute, should we prohibit all applicants in the reverse auction process from discussing their bids and bidding strategies with *any* broadcast television licensee, regardless of whether the licensee is participating in the auction? Would it be possible to limit such a "blanket" prohibition to broadcast television licensees within the same geographic region, and if so, how should we define the relevant geographic region? We welcome any insights commenters may have on ways we can provide applicants the information they need to comply with the communications prohibition without releasing any confidential Commission-held data concerning licensees participating in the auction.

5. Bidding Process Options

271. In section III, we outlined the goals of the reverse auction and design options that might be utilized in pursuit of those goals. Here we propose rules that would enable the Commission to select among those procedural options when finalizing the auction design and related processes.

272. *Reverse Auction Design Options*. We propose a rule that provides for the establishment of specific auction procedures governing bid collection, assignment of winning bids, and the determination of incentive payment amounts in the reverse auction. The reverse auction may use one or more rounds of bidding and/or contingent stages of bidding. The procedures may incorporate bids or offers that simply specify a price for an item, that indicate demand for an item at a specified price, or that are more complex. The Commission may determine the assignment of winning bids in the reverse auction based on bid amounts and a variety of other factors, including but not limited to the feasibility of assigning broadcast television channels to licensees retaining spectrum usage rights, as well as the bids submitted in and/or the results of the forward auction. Below we also propose a rule regarding procedures to determine the incentive payments that winning bidders would receive. These proposed rules would enable the development of procedures for a specific auction design that is consistent with the various technical and policy requirements of the reverse auction as well as sound economic principles and practice and the needs of the Commission and the bidders. We propose that the Commission may use real time bidding in all electronic auction designs. We seek comment on these proposals. Are there any additional auction design considerations that we should take into account for the reverse auction?

273. *Sequencing*. The Spectrum Act does not require the reverse and forward auctions to occur in any particular order, and section 6403 expressly allows (but does not require) the broadcast television reverse and forward auctions to occur simultaneously.[410] We propose a rule that enables the sequence of the reverse and forward auctions to be determined closer in time to the actual bidding. We seek comment on this proposal.

274. *Reserve Price*. The competitive bidding rules applicable to typical spectrum license auctions specify that the Commission may establish a reserve price or prices, either disclosed or

[409] *See* 47 C.F.R. § 1.2105(c).

[410] *See* 47 U.S.C. § 309(j)(8)(G); Spectrum Act §§ 6402, 6403(f)(1).

undisclosed, below which a license or licenses subject to auction will not be awarded.[411] The forward auction, as a spectrum license auction, would be subject to this rule. Similarly, we propose that the Commission may establish a reserve price or prices for the reverse auction, either disclosed or undisclosed, above which bids to relinquish spectrum usage rights would not win in the reverse auction. We propose that the reserve price or prices for the reverse auction may be established for spectrum usage rights and/or licenses individually, in combination, or in the aggregate. We seek comment on the reserve price rule proposed for the reverse auction, and we request input on the factors that we should consider when setting a reserve price or prices for the reverse and forward auctions.

275. One factor that we would consider when setting a reserve price or prices for the reverse and forward auctions would be the statutory minimum proceeds requirement. The Spectrum Act requires that the forward auction must yield proceeds greater than the sum of the following: (1) the total amount of compensation that the Commission must pay successful bidders in the reverse auction under section 6403(a)(1); (2) the cost of administering the broadcast television spectrum incentive auction, an amount which the Commission is required to retain under section 6403(c)(2)(C) and 47 U.S.C. § 309(j)(8)(B); and (3) the estimated amount of the relocation cost reimbursements that the Commission is required to pay to broadcast television licensees and MVPDs under section 6403(b)(4)(A).[412] In addition, section 6413 anticipates that proceeds from the forward auction will be available for distribution into the Public Safety Trust Fund.[413] Are there any other factors that we should consider when setting a reserve price or prices for the reverse and forward auctions?

276. *Opening Bids and Bidding Increments.* We propose a rule providing for the use of maximum or minimum bid increments in dollar or percentage terms to be established before or during the reverse auction, as well as maximum or minimum opening bids. We request comment on these proposals and specifically ask commenters to address what factors should influence any maximum or minimum opening bids and bid increments.

277. *Stopping Rules.* We propose a rule providing for stopping procedures to be established before or during the reverse auction in order to terminate the auction within a reasonable time and in accordance with the goals, statutory requirements, and rules for the auction, including the reserve price or prices. The stopping rule would thereby permit the Commission to adopt criteria to determine, prior to terminating the auction, whether such requirements have been met. We seek comment on this proposal.

278. *Activity Requirement.* In the event the Commission uses a multiple round competitive bidding design, we propose a rule providing for activity procedures that would require a minimum amount of bidding activity during the reverse auction. We request input on issues that may affect the use of activity rules in the reverse auction context.

279. *Auction Delay, Suspension, or Cancellation.* We propose that, by public notice or by announcement during the auction, the Commission may delay, suspend, or cancel the reverse auction in the event of natural disaster, technical obstacle, network disruption, administrative or weather necessity, evidence of an auction security breach or unlawful bidding activity, or for any other reason that affects the fair and efficient conduct of competitive bidding. We further propose that the Commission, in its sole discretion, could elect to resume the auction starting from the beginning of the current or some previous round, or cancel the auction in its entirety. Network interruption could cause the Commission to delay or suspend the auction. We request comment on this proposal.

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[411] 47 C.F.R. § 1.2104(c).

[412] Spectrum Act § 6403(c)(2).

[413] *See id.* § 6413.

6. Post-Auction Processing

280. We seek comment here on each step of the post-auction process described below. To the extent commenters disagree with a particular aspect of the proposed process, we ask them to identify that with specificity, propose an alternative, and address any associated costs and benefits.

281. *Commission Notices*. Upon the conclusion of spectrum license auctions, the Commission typically issues a public notice declaring the bidding closed and identifying the winning bidders. We propose to do so for the reverse auction, as well; however, we note that the timing and the permissible contents of such public notice may depend on the conduct of the forward auction and how we apply the statutory confidentiality restriction discussed above.[414] We invite comment on this proposal and ask commenters to address whether there are any other issues we should consider with respect to notifying auction participants and the public of the reverse auction results.

282. *Binding Obligations*. We propose that all bids submitted in the reverse auction are irrevocable, binding offers to relinquish spectrum usage rights. As a result, if a participant's bid is accepted in the reverse auction, the spectrum usage rights offered in the bid would be relinquished by a Commission-imposed deadline. We seek comment on this proposal.

283. *Post-Auction Information Submittals*. We propose to require all winning bidders to submit additional information to facilitate incentive payments, such as wiring instructions or other bank account information necessary to disburse funds to winning bidders. We envision that the information would be submitted on standardized incentive payment forms. We seek comment on this proposal.

284. We further ask that commenters address the appropriate deadlines for filing post-auction submittals. We also seek comment on the procedures that we should apply to a winning bidder that fails to submit the required post-auction information by the established deadlines.[415]

285. *Incentive Payments/Portion of Proceeds Shared with Incumbent Volunteers*. In accordance with section 309(j)(8)(G)(i) of the Communications Act, the Commission will share with successful bidders that voluntarily relinquish licensed spectrum usage rights a portion of the forward auction proceeds "based on the value of their relinquished rights as determined in [a] reverse auction."[416] Section 6403(c) of the Spectrum Act provides that the amount of the proceeds that the Commission will share with a broadcast television licensee will not be less than the amount of the licensee's winning bid in the reverse auction.[417] We propose to incorporate these statutory requirements into the competitive bidding rules for the reverse auction. We seek comment on this proposal.

286. We propose that generally, incentive payments would be distributed directly to the applicant. Elsewhere we propose that the applicant must be the licensee. We seek comment as to whether, even if we determine in this proceeding that the applicant may be an entity other than the licensee, the incentive payment should be distributed only to the licensee. In addition, elsewhere we propose that for channel sharing bids, the applicant would be the sharee since the sharee would relinquish its frequencies in order to share a channel with the sharer. We propose that, even if we determine in this proceeding that both sharers and sharees should file applications and/or certain certifications prior to the reverse auction, the incentive payment would be distributed directly to the sharees. We anticipate that the

[414] *See id* § 6403(a)(3).

[415] We note that section X below discusses the post-auction licensing process for winning bidders that relinquish only a portion of their spectrum usage rights by agreeing to channel share, to move from UHF to VHF frequencies, or to make another permissible relinquishment.

[416] 47 U.S.C. § 309(j)(8)(G)(i); Spectrum Act § 6402.

[417] *See* Spectrum Act § 6403(c)(1)(B).

sharee(s) may choose to share the proceeds with the sharer based upon the contractual arrangements in their channel sharing agreement. Would this proposal affect a sharer's decision to participate in the reverse auction? Are there any other issues that we should consider regarding the appropriate recipients of incentive payments for winning bids?

287. We also seek comment on the timing of the incentive payments. The only deadline in the Spectrum Act concerning payments to broadcast television licensees is the requirement in section 6403(b)(4)(D) that the Commission pay relocation costs within three years of the completion of the forward auction.[418] This statutory deadline does not apply to incentive payments made to winning bidders in the reverse auction. Should we identify a date by which the Commission should make all reasonable efforts to complete all incentive payments? If so, what would be an appropriate goal? Should incentive payments be distributed before, on, or after the date upon which the licensee relinquishes its spectrum usage rights? What impact, if any, would the timing of the incentive payments have on a broadcast television licensee's decision to participate in the reverse auction?

288. Typically, entities that are currently delinquent on any non-tax debt owed to any federal agency are not permitted to participate in spectrum license auctions.[419] In addition, the Commission's red light procedures require that action on an application be withheld until full payment is made on any non-tax delinquent debt owed to the Commission.[420] Given that one of our goals is to encourage widespread participation in the reverse auction by broadcast television licensees, we seek comment on whether we should add an exception to our red light procedures that would allow entities currently owing non-tax delinquent debt to the FCC or other federal agencies to participate in the reverse auction. If we adopt this exception, we request comment as to whether we should deduct the amount of any such delinquent debts from the entities' incentive payments and hold such funds in escrow pending the outcome of any such delinquency proceedings and/or forward those funds to the appropriate agencies for collection.

B. Competitive Bidding Process for Forward Auction—Modifications to Part 1 Subpart Q

289. We consider here changes to the Commission's general competitive bidding rules that may be necessary or desirable to conduct a forward auction for new licenses to use broadcast television spectrum made available for flexible use through the incentive auction process. We propose that those general competitive bidding rules would apply to resolve any mutually exclusive applications received for such licenses. The Commission's competitive bidding rules provide a framework from which the Commission develops final procedures for the particular competitive bidding processes that it conducts. Accordingly, we consider here changes that might be necessary with respect to particular licenses likely to be made available through the broadcast television spectrum incentive auction process. We note that any changes made to the Commission's general competitive bidding rules in other Commission proceedings would apply to the forward auction for new licenses made available through the incentive auction process.

[418] *Id.* § 6403(b)(4)(D).

[419] *See* 47 C.F.R. §§ 1.2105(a)(2)(x), (b)(1).

[420] *See* 47 C.F.R. § 1.1910(b)(2).

1. Purpose

290. The Commission has been authorized to conduct competitive bidding to resolve mutually exclusive applications for certain types of licenses since 1993.[421] Accordingly, the Commission has developed a framework of rules to facilitate the auctions that it has held to date.[422] Our new statutory authority to conduct incentive auctions introduces a new dimension to the competitive bidding process. As discussed below, we propose revisions to the existing competitive bidding rules to take into account that the spectrum covered by the licenses is the subject of the broadcast television spectrum incentive auction process. In addition, we seek comment on whether further rule changes may be required.

2. Applications Subject to Competitive Bidding

291. The Communications Act, as amended, mandates that the Commission use competitive bidding to resolve mutually exclusive applications for licenses, subject to exceptions specified in the statute.[423] To date, the Commission has considered two or more parties seeking to bid for a particular license to present mutually exclusive applications for the license, irrespective of whether each party subsequently bids for the license. Where only one party seeks a particular license offered in competitive bidding, that license will be removed from the competitive bidding process and the Commission will consider that party's non-mutually exclusive application for the license through a process separate from the competitive bidding.[424] This has worked well with respect to defined licenses that have parameters such as frequency and geography defined apart from and in advance of competitive bidding.

292. We seek comment on how to apply the requirement of mutual exclusivity in the context of the broadcast television spectrum forward auction. Specifically, if the spectrum to be offered in the forward auction consists of generic (non-frequency-specific) blocks, how should we determine whether mutual exclusivity exists? In addition, we ask commenters to address whether applications to participate in the reverse and forward auctions are "mutually exclusive applications" for "initial license[s]" since the reverse and forward auction applicants will submit bids relating to mutually exclusive spectrum usage rights (*i.e.*, the spectrum currently used by broadcast television licensees).[425]

3. Bidding Credits

293. Section 309(j)(4) of the Communications Act requires that when the Commission prescribes regulations to establish a competitive bidding methodology for the grant of licenses through the use of competitive bidding, it must "ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services."[426] In addition, section 309(j)(3)(B) of the Act provides that in establishing eligibility criteria and bidding methodologies, the Commission shall promote "economic opportunity and competition . . . by avoiding excessive concentration of licenses and by disseminating

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[421] *See* Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, August 10, 1993, 107 Stat 312; 47 U.S.C. § 309(j).

[422] *See* 47 C.F.R. §§ 1.2101-1.2114.

[423] We note that the Commission's rules currently include an outdated provision adopted under an earlier version of 47 U.S.C. § 309(j). *See* 47 C.F.R. § 1.2102(c) (listing certain services and classes of services, including UHF, VHF, and LPTV broadcast television, as not subject to competitive bidding). We take this opportunity to delete 47 C.F.R. § 1.2102(c) to reflect that the services listed in that section are subject to competitive bidding under current law.

[424] 47 C.F.R. § 1.2102(a); *see Implementation of Section 309(j) of the Communications Act - Competitive Bidding*, PP Docket No. 93-253, Second Report and Order, 9 FCC Rcd 2348, 2376 para. 165 (1994).

[425] *See* 47 U.S.C. § 309(j)(1).

[426] 47 U.S.C. § 309(j)(4)(D).

licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women."[427]

294. In 1995 the Supreme Court decided *Adarand Constructors, Inc. v. Peña*, in which it held that any federal program wherein the "government treats any person unequally because of his or her race" must satisfy the "strict scrutiny" constitutional standard of review.[428] In response to the Court's holding, the Commission decided to refrain from providing bidding credits to women- and/or minority-owned businesses until it developed a record that would provide the evidentiary support necessary to withstand these elevated standards of review.[429] The Commission has noted that minority- and women-owned businesses that qualify as small businesses may take advantage of the provisions the Commission has adopted for small businesses.[430]

295. The Commission defines eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements and other characteristics of each particular service in establishing the appropriate threshold.[431] In light of the similarities with wireless licenses already assigned in the 700 MHz band, we propose to adopt here the same small business size standards the FCC adopted for 700 MHz.[432] Accordingly, we propose to define a small business as an entity with average annual gross revenues for the preceding three years not exceeding $40 million, and a very small business as an entity with average annual gross revenues for the preceding three years not exceeding $15 million.[433] We also propose to provide small businesses with a bidding credit of 15 percent and very small businesses with a bidding credit of 25 percent. The bidding credits we propose here are those set forth in the standardized schedule in Part 1 of our Rules.[434] We seek comment on the use of these standards and associated bidding credits for applicants to be licensed in the forward auction for new flexible use licenses in the reallocated broadcast television spectrum, with particular focus on the appropriate definitions of small and very small businesses as they relate to the size of the geographic area to be covered and the spectrum allocated to each license. We request that commenters address the expected capital requirements for services in these bands and other characteristics of the service. We invite commenters to use comparisons with other services for which the FCC has already established auction procedures as a basis for their comments regarding the appropriate small business size standards.

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[427] 47 U.S.C. § 309(j)(3)(B).

[428] *Adarand Constructors, Inc. v. Peña*, 515 U.S. 200, 227-30 (1995). The Court subsequently held in *VMI* that a state program that makes distinctions on the basis of gender must be supported by an "exceedingly persuasive justification" in order to withstand constitutional scrutiny. *United States v. Virginia*, 518 U.S. 515, 531-34 (1996) (*VMI*).

[429] *Implementation of Section 309(j) of the Communications Act—Competitive Bidding,* PP Docket No. 93-253, Tenth Report and Order, 11 FCC Rcd 19,974, 19,975-77, paras. 1-3 (1996).

[430] *Amendment of Part 1 of the Commission's Rules—Competitive Bidding Procedures*, WT Docket No. 97-82, Order on Reconsideration of the Third Report and Order, Fifth Report and Order, and Fourth Further Notice of Proposed Rule Making, 15 FCC Rcd 15293, 15319 para. 48 (2000), citing *Adarand Constructors*, 515 U.S. at 227.

[431] Implementation of Section 309(j) of the Communications Act—Competitive Bidding, PP Docket No. 93-253, *Second Memorandum Opinion and Order*, 9 FCC Rcd 7245, 7269 para. 145 (1994); 47 C.F.R. § 1.2110(c)(1). *See also Third Report and Order and Second Further Notice of Proposed Rule Making*, 13 FCC Rcd 374, 388 para. 18 (1997); 47 C.F.R. § 1.2110(c)(1).

[432] 47 C.F.R. § 27.502. We note that these same sizes are also used with respect to the Advanced Wireless Services at 1710-1755 and 2110-2155 MHz. *See* 47 C.F.R. § 27.1102.

[433] We will coordinate these proposed small business size standards with the U.S. Small Business Administration.

[434] *See* 47 C.F.R. § 1.2110(f)(2).

296. We also seek comment on whether the small business provisions we propose today are sufficient to promote participation by businesses owned by minorities and women, as well as rural telephone companies. To the extent that commenters propose additional provisions to ensure participation by minority-owned or women-owned businesses, they should address how such provisions should be crafted to meet the relevant standards of judicial review.[435]

297. In addition, we note that under our Part 1 rules, a winning bidder for a market will be eligible to receive a bidding credit for serving a qualifying tribal land within that market, provided that it complies with the applicable competitive bidding rules.[436] The Commission currently has under consideration various provisions and policies intended to promote greater use of spectrum over tribal lands.[437] We propose to extend any rules and policies adopted in that proceeding to any licenses that may be issued through competitive bidding in the forward auction. We seek comment on this proposal.

4. Competitive Bidding Design Options

298. The Commission's current rules list types of auction designs from which the Commission may choose when conducting competitive bidding for spectrum licenses.[438] These options include sequential and simultaneous auctions, single and multiple round auctions, and auctions with combinatorial bidding.[439] Since the Commission's Part 1 competitive bidding rules were originally adopted, auction design has evolved and continues to evolve in new directions, sometimes combining several of these listed auction design elements and sometimes utilizing different elements.

299. We propose to revise the current list of auction design options set forth in section 1.2103 of the rules.[440] In particular, we propose a rule that provides for the establishment of specific auction procedures governing bid collection, assignment of winning bids, and the determination of payment amounts in spectrum license auctions. Such auctions may use one or more rounds of bidding and/or contingent stages of bidding; and may incorporate bids or offers that simply specify a price for an item, that indicate demand for an item at a specified price, or that are more complex. The Commission may determine the assignment of winning bids based on bid amounts and a variety of other factors, including but not limited to bids submitted in and/or the results of a separate competitive bidding process, such as an auction to establish incentive payments for relinquishment of spectrum usage rights. We anticipate that procedures established to implement these broad auction design elements would take into account sound economic principles and practice and the needs of the Commission and the bidders. We seek comment on this proposal to amend section 1.2103. In light of our authority to conduct the broadcast television spectrum incentive auction,[441] are there any additional auction design considerations that we should take into account for the forward auction?

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[435] *Adarand Constructors*, 515 U.S. 200 (requiring a strict scrutiny standard of review for Congressionally mandated race-conscious measures); *VMI*, 518 U.S. 515 (applying an intermediate standard of review to a state program based on gender classification).

[436] 47 C.F.R. § 1.2110(f)(3).

[437] *Improving Communications Services for Native Nations by Promoting Greater Utilization of Spectrum over Tribal Lands*, WT Docket 11-40, Notice of Proposed Rulemaking, 26 FCC Rcd 2623 (2011).

[438] *See* 47 C.F.R. § 1.2103.

[439] 47 C.F.R. § 1.2103(a).

[440] *See* 47 C.F.R. § 1.2103.

[441] *See* Spectrum Act § 6403.

5. Competitive Bidding Mechanisms

300. Section 1.2104 of the Commission's rules sets forth various mechanisms that can be used in connection with any system of competitive bidding for Commission licenses.[442] For example, the rules enable the Commission to determine how to sequence or group the licenses offered;[443] whether to utilize reserve prices,[444] minimum opening bids and minimum or maximum bid increments;[445] whether to establish stopping or activity rules;[446] and how to determine payments required in the event of bid withdrawal, default, or disqualification.[447] We note, however, that section 1.2104 does not attempt to list exhaustively all potential aspects of the Commission's procedures for competitive bidding.

301. We propose to amend the Commission's current stopping rule contained in section 1.2104 so that it would permit the Commission to establish stopping rules before or during multiple round auctions in order to terminate the auctions not only within a reasonable time, but also in accordance with the goals, statutory requirements, and rules for the auction, including the reserve price or prices.[448] The stopping rule would thereby allow us to adopt criteria to determine, prior to terminating the auction, whether such requirements have been met. We seek comment on this proposal and on any alternatives.

302. We also seek comment on whether we should make any other revisions to the competitive bidding mechanisms listed in section 1.2104 of the rules in order to ensure compatibility with the requirements for the broadcast television spectrum forward auction. We also ask commenters whether we should add any new mechanisms to the rule to facilitate the conduct of the forward auction.

6. Revisions to Other Part 1 Competitive Bidding Rules

303. Our existing competitive bidding rules also establish additional procedures regarding the competitive bidding process. More specifically, our existing rules address applications to participate in competitive bidding,[449] communications among applicants to participate,[450] upfront payments from competitive bidding participants,[451] down and final payments by winning bidders,[452] and applications for licenses by winning bidders,[453] as well as the processing of such applications and default by and disqualification of winning bidders.[454] We seek comment on whether these existing rules require any revisions in connection with the conduct of the broadcast television spectrum forward auction.

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[442] 47 C.F.R. § 1.2104.

[443] 47 C.F.R. § 1.2104(a)-(b).

[444] 47 C.F.R. § 1.2104(c).

[445] 47 C.F.R. § 1.2104(d).

[446] 47 C.F.R. § 1.2104(e)-(f).

[447] 47 C.F.R. § 1.2104(g). A bidder assumes a binding obligation to pay its full bid amount upon acceptance of the winning bid at the close of an auction. 47 C.F.R. § 1.2104(g)(2).

[448] *See* 47 C.F.R. § 1.2104(e).

[449] *See* 47 C.F.R. § 1.2105.

[450] *See* 47 C.F.R. § 1.2105(c).

[451] *See* 47 C.F.R. § 1.2106.

[452] *See* 47 C.F.R. § 1.2107.

[453] *See id*.

[454] *See* 47 C.F.R. § 1.2109.

304. The Commission's existing rules prohibit applicants for licenses in any of the same geographic areas from cooperating or communicating with one another regarding the substance of their bids or bidding strategies during the competitive bidding process unless they have notified us that they are members of a bidding consortium or other joint bidding arrangement.[455] This rule seeks to prevent competing parties from reaching agreements that could reduce the competition in the auction. We seek comment on how to determine which parties are "competing" in the forward auction for the purpose of enforcing the communications prohibition, particularly if the spectrum licenses offered in the forward auction are generic blocks.[456]

305. Our existing rules also include various certifications that a party must make in any application to participate in competitive bidding.[457] As discussed above, we propose that on the short-form application for the forward auction, the applicant must certify, under penalty of perjury, that it and all of the related individuals and entities required to be disclosed on the short-form application are not "person[s] who [have] been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant."[458] As with other required certifications, failure to include the required certification by the applicable filing deadline would render the application unacceptable for filing, and the application would be dismissed with prejudice.[459] We seek comment on this proposal.

306. Finally, we invite commenters to address the potential regulatory impact of the rules proposed in this section. In light of Congress's mandate to conduct a broadcast television spectrum incentive auction, we ask that commenters address the cost effectiveness of our proposals and their own, both in relative and absolute terms. We also ask that commenters be as detailed as possible with respect to claims based on any costs resulting from a proposal, and take into account any costs relative to the entire effect of the incentive auction, both on the party incurring the cost and as a whole.

X. POST-AUCTION ISSUES

307. Once the reverse and forward auctions are complete and the repacking process becomes effective, the Commission will need to reauthorize and relicense the facilities of those television stations that receive new channel assignments, and to clear the repurposed spectrum for new users. In this section, we seek comment on how to carry out this process as expeditiously as possible while minimizing disruption to broadcast television stations and their viewers. In particular, we propose broadcast license modification procedures and a methodology for reimbursing relocation costs. We also seek comment on a number of post-auction broadcast regulatory issues raised by the broadcast television spectrum incentive auction, as well as on licensing and operating rules for new licensees in the repurposed spectrum.

A. UHF Band Transition From Broadcast to Wireless Use

1. Background

308. We recognize that implementing the results of the broadcast television spectrum incentive auction will be a complex and challenging undertaking for broadcasters. On June 12, 2009, full power stations largely completed the statutorily-required transition from analog to digital television, a process which required each full power station to construct at least one new digital facility and resulted in

[455] *See* 47 C.F.R. § 1.2105(c).

[456] As discussed earlier in this section, we also seek comment on whether to prohibit reverse auction applicants from communicating with applicants in the forward auction regarding the substance of their bids or bidding strategies.

[457] *See* 47 C.F.R. § 1.2105(a).

[458] *See* Spectrum Act § 6004(c).

[459] *See* 47 C.F.R. § 1.2105(b)(1).

the recovery of 108 megahertz of spectrum in the 700 MHz band (channels 52-69) for other uses. We believe that the rules, procedures and deadlines the Commission adopted to facilitate the digital transition may serve as a useful guide in considering how to implement the repacking in a timely and efficient manner.

309. Currently, all channel allotments for full power television stations are contained in section 73.622(i) of our rules.[460] Under the existing rules, changing a station's channel assignment is a two-step process. First, a station seeking a substitute channel is required to file a petition for rulemaking to amend the DTV Post-Transition Table of Allotments (Table), leading to the initiation of a rulemaking proceeding concerning the proposed amendment.[461] If that proceeding results in the adoption of a Report and Order amending the Table, then the station must file a minor change application for a construction permit for the new channel, typically within 30 days of the effective date of the rule change.

310. The Commission adopted the current, post-digital transition Table through a rulemaking proceeding in which all eligible full power television licensees elected their post-transition channels inside the core television spectrum (channels 2-51) in three separate rounds.[462] All but a handful of eligible licensees were allotted a channel that they requested during the channel election process. Once the Table and the *Third DTV Periodic Report and Order*[463] became effective, most of the 640 stations with new post-transition channels were required to file minor change applications for construction permits by June 19, 2008, to ensure that they met their construction deadlines prior to the statutory DTV transition deadline.[464] After processing of the applications received by June 19, 2008 was substantially completed, the Commission lifted its freeze on the filing of rulemaking petitions to allow stations to request the substitution of different channels for post-transition use.[465]

311. For the digital construction process, the Commission assigned existing stations a temporary, pre-transition paired digital channel.[466] In the early stages of the digital transition, stations could seek an extension of time to complete construction of their digital facilities.[467] Later, as more

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[460] *See* 47 C.F.R. §73.622(i) (DTV Post-Transition Table of Allotments).

[461] The Commission's rulemaking procedures for channel changes are set forth in section 1.420 of the Rules. *See* 47 C.F.R. § 1.420.

[462] *Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, MB Docket No. 87-268, Seventh Further Notice of Proposed Rulemaking, 21 FCC Rcd 12100 (2006); Seventh Report and Order and Eighth Further Notice of Proposed Rulemaking, 22 FCC Rcd 15581 (2007); Memorandum Opinion and Order on Reconsideration of the Seventh Report and Order and Eighth Report and Order, 23 FCC Rcd 4220 (2008). The FCC's procedures applicable to rulemaking proceedings pursuant to section 553 of the Administrative Procedures Act, 5 U.S.C. § 553, are set forth at 47 C.F.R. Ch. 1, Subpart C – Rulemaking Proceedings.

[463] In the *Third DTV Periodic Report and Order*, the Commission adopted the rules, forms and procedures for stations to obtain an authorization and license for their post-transition facilities.

[464] *See Third DTV Periodic Report and Order Published in Federal Register Today*, Public Notice, 23 FCC Rcd 906 (MB 2008); *Memorandum Opinion and Order on Reconsideration of the Seventh Report and Order* And *Eighth Report and Order* Published in Federal Register Today, Public Notice, 23 FCC Rcd 4798 (MB 2008).

[465] *See* Commission Lifts the Freeze on the Filing of Maximization Applications and Petitions for Digital Channel Substitutions, Effective Immediately, Public Notice, 23 FCC Rcd 8330 (MB 2008) (*Freeze PN*).

[466] *Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, MM Docket No. 87-268, Fourth Further Notice of Proposed Rulemaking and Third Notice of Inquiry, 10 FCC Rcd 10540, 10543, para. 20 (1995).

[467] *See Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, MM Docket No. 87-268, Fifth Report and Order, 12 FCC Rcd 12809, 12840-42, paras. 76-77 (1997); 47 C.F.R. §73.624(d) (1997 version). To obtain an extension, stations had to show that, despite their best efforts, financial hardship or (continued….)

stations began building their digital facilities, the Commission granted "use or lose" waiver requests for stations to build smaller, less expensive transitional digital facilities while completing construction of their final, post-transition facilities.[468] The FCC also allowed some stations facing unique technical challenges to operate with temporary, "side-mounted" facilities until they could complete their final, "top-mounted" facilities.[469] Towards the end of the transition, the Commission also adopted two "phased transition" procedures to assist broadcasters in meeting their post-transition construction deadlines, whereby stations could either temporarily remain on their pre-transition channels or build less than their full, authorized post-transition facilities by their construction deadlines.[470] Ultimately, the Commission adopted stricter criteria for stations seeking extensions of their construction deadlines,[471] granting extensions only where stations met strict "tolling" criteria.[472] Under the current rules, full power television stations have a period of three years to construct a new station or implement a channel change, and may obtain extensions only if they meet a strict tolling standard.[473]

312. Stations changing channels as a result of the broadcast television spectrum incentive auction are likely to face a range of technical challenges similar to those experienced by stations during the digital transition. As in the earlier transition, moving to a new channel may be relatively simple for some stations,[474] and more complicated for others.[475] Some stations will be able to replace equipment on their existing tower structure, while others (*e.g.*, stations moving from UHF to VHF channels) may have to strengthen their existing tower structures in order to support larger, heavier antennas. Some stations may be able to implement the required technical modifications with a limited amount of time off the air. Other stations that face greater downtime may be permitted to use temporary facilities while their final facilities are being completed, as was the case during the digital television transition. The number of companies with tower crews qualified to implement these changes may be limited, potentially magnifying the technical challenges faced by transitioning stations.

313. There are also important differences between the digital transition and this one from the perspective of broadcasters. In the digital transition, most stations chose their post-transition channels. Stations also had a number of years to make their digital transitions,[476] during which time they could

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circumstances that were unforeseeable or beyond their control (such as zoning issues or the need to obtain international coordination) resulted in their inability to construct their facilities.

[468] *See Second DTV Periodic Report and Order* 19 FCC Rcd at 18311-19, para. 72-87.

[469] *See In the Matter of DTV Build-Out; Applications Requesting Extension of the Digital Television Construction Deadline*, Order, 22 FCC Rcd 9789, 9805-06, paras. 82-87 (2007) *(Construction Deadline Extension Order*).

[470] *See Third DTV Periodic Report and Order*, 23 FCC Rcd at 3036, para. 88.

[471] *Id.* at 3027-32, paras. 61-78. Specifically, the Commission eliminated both equipment shortages and its existing financial hardship test as reasons justifying construction delays. The Commission opted instead to allow additional time only when a station was the subject of a bankruptcy or receivership proceeding. .

[472] *Id.* at 3034-35, paras. 81-84. The tolling criteria are codified at 47 C.F.R. § 73.3598(b).

[473] *See* 47 C.F.R. § 73.3598.

[474] *E.g.*, simply requiring a station to retune its existing transmitter to the new channel, replace the output mask filter and conduct proof of performance testing prior to beginning operation on the new channel.

[475] *E.g.*, requiring a station to install a temporary antenna and transmission line, modify its building and electrical system to accommodate an additional transmitter, install a new transmitter and channel mask filter, remove its original antenna and transmission line, install a new transmission line and antenna, conduct system proof tests, flash-cut to the new channel, and then remove the temporary antenna, transmission line and original transmitter.

[476] In some cases, stations had as long as eleven years from the initial announcement of the digital transition in 1998 until its completion in June 2009.

operate both analog and digital channels, thereby avoiding disruption to viewers. Stations were typically given three years to complete construction, and extensions were frequently granted. In contrast, stations will not be able to choose their new channels during the upcoming transition. The time available for the upcoming transition will be limited, and stations modifying facilities at their existing sites may have to "flash cut" to operation on their new channels, without the benefit of an additional channel for use during the transition. On the other hand, whereas commercial stations had to bear all of their own construction costs during the digital transition,[477] stations in the upcoming transition will share in the proceeds of the incentive auction or have access to reimbursements from the TV Broadcaster Relocation Fund, as discussed further below.

2. License Modification Procedures

a. Application Filing Requirements and Channel Substitution Opportunity

314. Section 316 of the Communications Act authorizes the Commission to modify any broadcast television station license in order to promote the public interest, convenience and necessity,[478] and the Spectrum Act makes the right of a licensee to protest a proposed order of modification of its license under section 316 inapplicable in the case of a modification under section 6403.[479] Pursuant to these provisions, we propose to modify the licenses of television stations that are reassigned to new channels under our section 6403 authority. Once the reverse and forward auctions are complete and the repacking becomes effective, all stations that are reassigned to new channels would be required to file minor change applications for construction permits using FCC Forms 301-DTV, 301-CA or 340-DTV, with the exception of winning channel sharing bidders, who would be required to file only if their "sharer" channel—the channel to which they propose to move once they relinquish their spectrum usage rights—is reassigned in the repacking process.[480] We seek comment on this proposal.

315. We do not propose to use the current two-step process for changing a station's channel assignment in implementing the results of the broadcast television spectrum incentive auction. We believe that doing so would create undue administrative burdens and delays. The comments and counterproposals that the two-step process allows would be inappropriate in this context. Consideration of any such comments or counterproposals in the repacking process would be inconsistent with the goal of a timely and successful broadcast television spectrum incentive auction, nor could the Commission modify or change the results of the incentive auction once the reverse and forward auctions are complete and the repacking is effective.[481] Moreover, the Commission's rationale for using an engineered Table for the television service does not apply in this context,[482] particularly given the Spectrum Act mandate to

[477] Many noncommercial stations received federal and state government funding to construct their digital facilities.

[478] 47 U.S.C. § 316.

[479] *See* Spectrum Act § 6403(h).

[480] We propose in section IX above that channel sharing bidders be required to identify the channel they intend to share prior to the reverse auction. Our proposal for modifying the licenses of winning channel sharing bidders whose post-auction channels do not change as a result of the repacking process is discussed below.

[481] We note that, after lifting the filing freeze to allow stations to request the substitution of different channels for post-digital transition use in 2008, the Media Bureau issued over 100 notices of proposed rulemaking and did not receive a single counterproposal in response. Although competing broadcasters did file opposing comments in a small number of proceedings, those comments generally addressed issues, such as the validity of the reasons advanced by the proponent for the proposed channel substitution, that are not applicable to the repacking process.

[482] *See Sixth Report and Order*, 41 F.C.C. 148 (1952). The Commission found three compelling reasons why the establishment of an engineered television Table of Allotments was in the public interest. Specifically, it concluded that a Table: (1) would result in a more efficient technical use of the limited number of channels; (2) protect the (continued….)

"make all reasonable efforts to preserve . . . the coverage area and population served of each broadcast television licensee,"[483] as well as the fact that we will not be authorizing new stations or changes in existing stations' service areas or communities of license.[484] Following the transition, we will resume using the current two-step process to make new channel allotments, "as these procedures allow for efficient consideration of all proposals and counterproposals in keeping with our section 307(b) obligations."[485] We will seek comment on post-auction procedures for new channel allotments in a future proceeding.[486]

316. We seek comment on an appropriate minor change application filing deadline under our proposed approach. As indicated above, under the current two-step process, a station typically is required to file a minor change application within 30 days of the effective date of the rule change that must precede such filing. In those circumstances, however, a station's application is based on its original request, which specified a channel and technical parameters, whereas here a station assigned to a new channel would have had no prior input into the choice of its channel, and may need more time to engineer the facility to be proposed in its application. For example, stations may have to retain technical consultants, determine whether to construct a modified facility at their existing site or a new one, negotiate a tower lease if they choose a new site, consider various height, power and antenna combinations, and research equipment options. We invite comment on this issue, including the tasks involved for stations changing channels, the time reasonably required for these tasks, and any circumstances under which we should consider granting extensions of whatever deadline we adopt.

317. To encourage stations to file applications as promptly as possible under our proposed approach, we also propose to provide expedited processing (generally within 10 days) for applications that are filed by an "early deadline" and comply with certain technical requirements. During the digital transition, the Commission established expedited processing for applications that: (1) did not seek to expand the station's facilities beyond its final post-transition facilities; (2) specified facilities that matched or closely approximated the facilities set forth in the final post-transition Table (*i.e.*, facilities no more than five percent smaller than the facility in the Table); and (3) were filed within 45 days of the effective date of the *Third DTV Periodic Report and Order*.[487] As a result, the Media Bureau's Video Division was able to process a large percentage of the post-transition construction permit applications that it received in an expedited fashion, on average within four days from the date of receipt.[488] We seek comment on

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interests of the public residing in smaller cities and rural areas which could not presently support a television station, and educational organizations wishing to provide an educational television service, which typically needed more time than commercial entities to finalize plans to apply for a station, by assigning channels to smaller communities and making a fixed reservation for educational television stations; and (3) eliminate certain procedural problems in connection with processing new station applications. *Id*. at 151-53, paras. 12-18.

[483] Spectrum Act § 6403(b)(2).

[484] Under longstanding FCC policies, community of license changes require a section 307(b) analysis that normally occurs in the context of the two-step process for modifying the Table. *See* 47 U.S.C. § 307(b) ("the Commission shall make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same.").

[485] *Revision of Procedures Governing Amendments to FM Table of Allotments and Changes of Community of License in the Radio Broadcast Services*, MB Docket No. 05-210, Report and Order, 21 FCC Rcd 14212, 14222, para. 15 (2006).

[486] We note that the two-step process discussed above does not apply to Class A stations, which were originally authorized as low power television stations and are not included in the Table.

[487] *Third DTV Periodic Report and Order*, 23 FCC Rcd at 3060, para. 140.

[488] *See Freeze PN*, 23 FCC Rcd at 8330-31.

whether to adopt a similar expedited processing option here. Should we do so, we propose to apply the same technical requirements that the Commission adopted in the *Third DTV Periodic Report and Order* for applications that can be accorded expedited processing.[489] We seek comment on this proposal.

318. *Channel Substitution Opportunity.* We anticipate that some stations receiving new channel assignments may wish to change their channels. Consistent with our approach in the digital transition, we propose that as soon as the staff has substantially completed its processing of the minor change applications required under the proposal above the FCC will announce an opportunity for stations to request a substitute channel by filing an application to modify their construction permits, provided that they are able to identify an available channel.[490] Stations proposing a substitute channel would be required to demonstrate that their proposals meet all existing technical requirements, including interference protection to full power and Class A television stations and other licensees entitled to such protection, and that the proposals would serve the public interest. Consistent with our existing rules, grant of a channel substitution application would not extend the construction deadline in the station's original construction permit for its repacked channel.[491] We seek comment on these proposals, including whether to treat such applications as major change applications subject to local public notice requirements under our rules.[492]

319. We also seek comment on which licensees should be eligible for the proposed channel substitution opportunity. We do not propose to make winning UHF to VHF bidders eligible to request substitution of a UHF channel for their newly assigned VHF channel. Should we allow such stations to request substitution of another VHF channel? Should we allow winning channel sharing bidders to request substitution of a different channel together with their channel sharing partners? We also seek comment on appropriate procedures for the proposed channel substitution opportunity, including whether to provide "cut-off" protection from subsequently-filed applications and means to avoid mutual exclusivity in channel substitution applications.

320. *Channel Sharing Stations.* Because implementation of a channel sharing arrangement does not involve construction of a new facility, we propose that channel sharing stations simply be required to file license applications (FCC Forms 302-DTV or 302-CA) for the shared facility upon commencement of shared operations.[493] Upon grant of these applications, the staff would issue each sharing station a new license indicating the station as having "shared" status through the use of a symbol such as an "S," and designating the shared channel as the operating frequency for each station. Each license would continue to indicate the station's class of service, *i.e.*, commercial full power, NCE or Class A television station. If a station that has agreed to share its channel with a winning channel sharing bidder is reassigned to a new channel, we propose to require the sharing stations to file license

[489] Under our proposed approach, when the Commission announces the results of the repacking process, it would include the same type of information defining stations' technical facilities, such as channel, height, ERP and reference coordinates, that was included in Appendix B to the Post-Transition DTV Table of Allotments.

[490] Currently there is a freeze on the filing of rulemaking petitions by licensed full power television stations requesting channel substitutions to the Post-Transition Table of DTV Allotments. *See* Freeze on the Filing of Petitions for Digital Channel Substitutions, Effective Immediately, Public Notice, 26 FCC Rcd 7721 (MB 2011). In addition, a Class A television licensee seeking to change channel for purposes other than displacement relief is required to file a major change application, which may only be filed after the Commission issues a Public Notice specifying a period for the filing of major modification applications. 47 C.F.R. § 73.3572(e).

[491] *See* 47 C.F.R. § 73.3533(b).

[492] *See* 47 C.F.R. §§ 73.3572(a), 73.3580.

[493] Under this proposal, we would need to amend FCC Forms 302-DTV and 302-CA to add a separate category for the licensing of shared channels.

applications to share the original, pre-auction channel until their new channel facility is constructed.[494] We seek comment on these proposed procedures.

b. Construction Deadline

321. We seek comment on reasonable deadlines for implementation of the broadcast television spectrum incentive auction, including deadlines for winning license termination bidders to cease broadcasting and for stations that remain on the air to transition to any new channel assignments. Our goal is to carry out the transition as expeditiously as possible while minimizing disruption to broadcasters and their viewers. We also are mindful of the fact that the new spectrum rights holders, having competed in the forward auction, will be subject to performance requirements and deadlines to begin using their newly-acquired spectrum.[495] We recognize that the transition will be complicated logistically, and needs to be carried out promptly in order to get the reclaimed spectrum into the hands of the new licensees to address spectrum needs and allow them to serve their customers. The Commission has handled complex band transitions before, and as discussed below, we intend to solicit input from all stakeholders to ensure the process is carried out efficiently. We also welcome suggestions as to approaches that have worked well in the past either at the Commission or at other agencies.

322. We invite comment on whether to establish a single deadline for the completion of the transition. Under this proposal, winning license termination bidders would be required to cease broadcasting, and stations that remain on the air would be required to transition to any new channel assignments by a date certain after the completion of the reverse and forward auctions and the effective date of the repacking.[496] As stated above, stations constructing new or modified facilities ordinarily have a period of three years to complete the construction process.[497] We do not think that three years would be required here, however. Licensees will not be constructing new stations, but rather modifying their facilities as necessary to operate on their reassigned channels. In that regard, Commission records indicate that, of the more than 100 licensees whose requests to substitute channels were granted towards the end of the digital transition, most completed construction within 12 months of receiving a construction permit.[498] As indicated above, we recognize that there are differences, as well as similarities, between this transition and the digital transition. Unlike stations in the digital transition, stations assigned to new channels as a result of the reorganization authorized by the Spectrum Act will not have the benefit of years of preparation and experimentation, nor will they have the ability to operate both pre- and post-transition channels. On the other hand, stations will be able to offset the costs of the transition: some will have access to auction proceeds, and others will be reimbursed for relocation costs. Every station will not be required to make a transition, although many stations may be required to make changes to their facilities during the same time period, making coordination among stations important. In light of these and any other relevant considerations, would 18 months be a reasonable transition deadline? Should the

[494] For example, if a bid proposing that Station A on channel 50 share Station B's channel 30 facility is accepted, and Station B is reassigned channel 20 as part of the repacking process, Station A would be required to vacate channel 50 within the time frame we adopt for implementation of channel sharing agreements and commence sharing channel 30 with Station B. In addition to filing license modification applications, Stations A and B would be required to file a minor change application for a construction permit for channel 20 and separate applications for a license to cover when construction of that facility is completed. Under our proposed approach, we will need to amend FCC Forms 301-DTV, 301-CA and 340-DTV to add a separate category for shared construction permits.

[495] *See infra*, Section X.C.2.d.

[496] Construction permits would contain a corresponding expiration date.

[497] *See* 47 C.F.R. § 73.3598.

[498] In some instances, the station asked to remain on its constructed pre-transition channel, so no additional construction was necessary.

deadline instead be tied to individual stations' authorized construction periods?[499] Should we factor in the three-year deadline for reimbursement of relocation costs imposed by the Spectrum Act[500] and, if so, how? Commenters should explain the basis for their proposed deadlines, and address the potential costs and benefits associated with them.

323. We also seek comment on creative approaches to the logistical challenges presented by the transition. Should we adopt a phased transition timetable, establishing different transition deadlines according to region (in light of weather/seasonal issues), individual station circumstances (*e.g.*, the nature of the station modification involved), and/or other factors? Some transitioning stations will have access to proceeds of the forward auction to help cover their transition costs; we propose below to allow stations to request advance payment of relocation costs from the TV Broadcaster Relocation Fund based on their estimated costs in order to help facilitate the transition. Are there other means of expanding the resources available to transitioning stations that we should consider?

324. Establishing earlier deadlines for some stations might facilitate the overall transition by clearing the way for subsequent channel modifications. During the digital transition, many station modifications had to be coordinated, and we anticipate that the same will be true of this transition. For example, a station may relinquish spectrum usage rights with regard to a channel that is subsequently assigned to a different station, which cannot complete its transition until the relinquishing station clears the channel. Further, requiring some stations to transition earlier may make it easier for others to modify their transmission facilities. One station may not be able to install its modified facilities on a particular position on a tower until another has ceased operations and removed its facilities. Therefore, we seek comment on whether to adopt a phased transition timetable. We ask commenters advocating such an approach to suggest specific deadlines and explain the basis for their positions.

325. In particular, we invite comment on whether to establish earlier deadlines for winning license termination bidders, winning UHF to VHF bidders, and winning channel sharing licensees. Would it be reasonable to establish an earlier deadline for winning license termination bidders because they need not modify technical facilities in order to continue broadcasting? We recognize that transitioning may not be as simple as flipping off a switch for some stations in this category. For example, some winning license termination bidders may be shifting programming to another station that they own, or transitioning to cable-only or internet-only operations, and thus may require time to carry out such a transition and notify their viewers.

326. Similarly, would it be reasonable to establish earlier deadlines for other winning reverse auction bidders because they will have access to shared auction proceeds to help fund any necessary technical modifications and, with regard to winning channel sharing bidders, may have to make less complicated technical changes? Would such stations be in a meaningfully different position from stations that elect to request advance payment of their estimated relocation costs, as proposed below, for purposes of completing their transitions?

327. We also seek comment on appropriate measures to provide regulatory flexibility for broadcasters to complete the transition. Should we adopt liberal or strict "tolling" criteria for extension of construction deadlines? Should we adopt a relatively long construction period in conjunction with the use of strict tolling criteria, or the reverse? Regardless of the criteria we adopt for considering requests for

[499] Under this alternative approach, instead of a single deadline for all stations to complete the post-auction transition, each repacked station would have 18 months from the grant of the construction permit for its new channel assignment to complete its transition.

[500] *See* Spectrum Act § 6403(b)(4)(D). The three-year deadline is discussed in more detail below. *See infra*, Section X.B.

additional time to construct, we seek comment on whether to limit all extensions to a period of not more than six months from grant of the extension.[501]

328. In addition, we seek comment on whether to provide regulatory flexibility by allowing stations to operate with temporary facilities while they complete construction. For example, should we permit a licensee facing more complicated technical constraints in transitioning to its new channel to temporarily operate for a short period of time on a channel relinquished by a winning license termination bidder? Should we permit a station to operate a temporary facility side-mounted on a tower structure while it makes changes to its final top-mounted facilities, as the Commission did during the digital transition? We also invite comment on appropriate criteria for considering such requests and the maximum amount of time that we should allow for any such temporary operations.

329. As stated above, we recognize the complexity of this particular transition for all parties involved. We are mindful that broadcasters and other industries gained valuable experience during the DTV Transition that should inform our rules and policies for the UHF band transition. We seek input from all stakeholders and intend to provide a forum for discussion of transition-related issues among broadcasters, wireless companies, equipment manufacturers, installation firms and other stakeholders.

3. Consumer Education

330. Whatever schedule we ultimately adopt for the UHF band transition, we seek comment on what kind of Commission outreach is needed to those communities affected by the transition. We have the experience of the full power digital transition completed on June 12, 2009, as well as the out-of-core low power television transition that occurred on December 31, 2011, to guide us. We do not anticipate that this transition will involve the same level of complexity, or require the same amount of consumer education, as the digital transition, which involved more than 1,700 full power stations and use of a new transmission method, and required viewers without digital receivers to install analog converters. Nevertheless, we believe that some consumer education may be appropriate to ensure an orderly transition and minimize disruptions in service. For example, consumers may need to be informed that the stations they view will be changing channels, encouraged to rescan their receivers for the new channel assignments, and educated on steps to take to resolve potential reception issues. We seek comment on the form that such outreach should take.

331. We seek comment on whether to expand and update the FCC's existing call center to provide consumer assistance over the phone on such matters as "rescanning" or to help resolve broader reception issues. Further, we seek comment on whether this call center should be expanded, as it was for the full power digital transition, with new or retrained staff and longer hours of operation. Alternatively, we seek comment on what the Commission might do to encourage the development of third-party call centers, such as might be provided by a group of transitioning licensees working jointly. We also seek comment on whether and how to provide guidance to consumers on how to prepare for the transition through the Commission's website (www.fcc.gov). For example, to help consumers, the Commission staff could prepare maps that would be available online to inform consumers what station signals will be affected by the transition, as it did for the digital transition. We also seek comment on other potential types of Commission outreach.

332. Further, we seek comment on whether to require stations that are going to cease broadcasting or transition to new channels as a result of the broadcast television spectrum incentive auction to air viewer notifications, as well as the form any such notifications should be required to take

[501] Under this proposal, licensees would have to cease operations on that date, and would face automatic cancellation of their licenses if they could not complete construction and resume broadcast operations within a year. *See* 47 U.S.C. § 312(g).

and when they should be aired.[502] During the DTV transition, stations also were required to periodically air information about the digital transition and file FCC Form 388 reporting on their education efforts.[503] Given the less complex nature of this transition, is such an intensive program of viewer notifications and Commission reporting necessary? We invite commenters to address the costs and benefits of any consumer education requirements.

4. Notice to MVPDs

333. Finally, we seek comment on whether to require stations that receive new channel assignments or cease broadcasting as a result of the broadcast television spectrum incentive auction to provide notice to affected multichannel video programming distributors (MVPDs) of channel changes and other technical changes that could affect carriage. In the *Channel Sharing Report and Order*, satellite service providers Dish Network and DIRECTV emphasized the importance of keeping "MVPDs apprised of any potential disruption to current operations, allowing MVPDs to properly alert their subscribers,"[504] and the Commission recognized "the importance of informing all relevant constituencies of the implementation of channel sharing, as well as repacking."[505] We now seek comment on whether to require such notice, what information should be provided, and what form it should take. Would a simple letter notification to the affected MVPDs be sufficient? We also seek comment on a time frame for any such notice in order to provide MVPDs with a reasonable opportunity to prepare for any necessary carriage or technical changes and, should they chose to do so, to provide notice to their subscribers. Alternatively, would the announcement by the Commission of the reverse auction winners and newly repacked channel assignments provide sufficient notice to MVPDs? We ask that commenters address the relative costs and benefits of any such notice requirements.

B. Payment of Relocation Costs

334. As set forth in section X.II.C., the Spectrum Act requires that the Commission "reimburse costs reasonably incurred by" broadcast television licensees that are reassigned to new channels, as well as MVPDs that incur costs in order to carry the signals of such reassigned licensees.[506] In this subsection, we propose a methodology for reimbursing broadcasters and MVPDs based on the estimated costs of relocating to a new channel assignment. Broadcasters and MVPDs that elect this proposed option in lieu of reimbursement based on actual costs would be eligible for payment in advance of expenditures. We also seek comment on measures to prevent waste, fraud and abuse.

335. At the outset, we emphasize two important aspects of the statutory reimbursement mandate that impact our proposals below. First, we have a limited time period within which to complete the reimbursement process. The Spectrum Act does not provide for payment of relocation costs until any reassignments or reallocations pursuant to section 6403(b) become effective, which in turn requires completion of the forward auction.[507] The Spectrum Act also requires the Commission to make all such

[502] Viewer notifications were a key element of the Commission's consumer education efforts during the DTV transition. *See DTV Consumer Education Initiative*, MB Docket No. 07-148, Report and Order,23 FCC Rcd 4134 (2008); *see also Implementation of the DTV Delay Act,* MB Docket No. 09-17, Second Report and Order and Notice of Proposed Rulemaking, 24 FCC Rcd 2526 (2009); Third Report and Order and Order on Reconsideration, 24 FCC Rcd 3399 (2009).

[503] *Id.*

[504] *Channel Sharing Report and Order,* 27 FCC Rcd at 4633, para. 34, *citing* Dish Network Comments, ET Docket 10-235 at 3; *see also* DIRECTV Comments, ET Docket 10-235 at 2.

[505] *Id.*

[506] Spectrum Act § 6403(b)(4)(A)(i), (ii).

[507] *See* Spectrum Act § 6403(d)(3)(A), (f)(2).

payments within three years of completion of the reverse and forward auctions.[508] The three-year deadline makes speed and efficiency important goals of any reimbursement methodology.

336. Second, the maximum amount that may be available for payment of relocation costs is limited to $1.75 billion. In that regard, the statute directs the FCC to make reimbursements from amounts made available under section 6403(d),[509] which establishes a "TV Broadcaster Relocation Fund."[510] The Commission is authorized to borrow up to $1 billion from the United States Treasury to use toward the reimbursement of relocation costs pursuant to section 6403(b), but must reimburse the Treasury for any amounts borrowed as funds are deposited into the TV Broadcaster Relocation Fund.[511] The statute provides for deposits into the TV Broadcaster Relocation Fund in new Communications Act section 309(j)(8)(G)(iii), which mandates that, from the forward auction proceeds that are not shared with winning bidders in the reverse auction and that are not retained by the Commission to cover its administrative costs, $1.75 billion shall be deposited into the Fund.[512]

1. Payment of Eligible Broadcaster Costs

337. *Eligibility.* We interpret the reimbursement mandate to apply only to full power and Class A television licensees that are involuntarily assigned to new channels in the repacking process; we do not interpret it to require reimbursement of winning reverse auction bidders.[513] We believe that this interpretation is consistent with the statutory language. We also believe that it is reasonable, in that successful reverse auction bidders that remain on the air may be expected to cover any relocation costs that they incur out of shared auction proceeds. Under our interpretation, "sharer" stations that participate in a channel sharing arrangement but do not submit winning bids in the reverse auction would be eligible for reimbursement of relocation costs in the event of a new channel assignment for the shared facility. We invite comment on this interpretation.

338. *Election of Estimated or Actual Cost Approach.* We propose to allow broadcasters to elect reimbursement of their eligible relocation costs based on either their estimated costs or their actual, out-of-pocket expenditures. Stations choosing to receive reimbursement based on the estimated cost approach would receive their reimbursement through an advance payment, while stations choosing reimbursement based on actual costs would receive reimbursement only after paying and documenting their costs. We do not believe the Spectrum Act mandate to "reimburse costs reasonably incurred" requires reimbursement based on actual expenditures, or disallows advance payments based on estimated costs. The statute does not define the words in the phrase "reimburse costs reasonably incurred."[514] Courts have recognized that, in common usage, "reimburse" does not necessarily mean repayment on an actual-cost basis,[515] and that "incurred" pertains to liability rather than to expenditure.[516] Although words

[508] *Id.* § 6403(b)(4)(D). We discuss our interpretation of when the reverse and forward auctions will be "complete" within the meaning of the Spectrum Act in section X above.

[509] *Id.* § 6403(b)(4)(A).

[510] *Id.* § 6403(d)(1).

[511] *Id.* § 6403(d)(3).

[512] 47 U.S.C. § 309(j)(8)(G)(iii)(I), (II).

[513] Section 6403(b)(4)(i) mandates reimbursement of a broadcast television licensee "that was reassigned under paragraph (1)(B)(i)," which in turn authorizes the Commission to "make such reassignments of television channels as the Commission considers appropriate." *Id.* § 6403(b)(1)(i).

[514] *Id.* § 6403(b)(4)(A).

[515] *A.T. Massey Coal Co. v. Holland*, 472 F.3d 148, 160 (4th Cir. 2006) (emphasis in original). *See also Holland v. Nat'l Mining Ass'n*, 309 F.3d 808, 816 (D.C.Cir. 2002) (relying exclusively on dictionary definitions to hold that "reimbursements" as used in the Coal Industry Retiree Health Benefit Act of 1992 is ambiguous and could mean (continued….)

can take on non-ordinary meanings within the context of a statute,[517] nothing in the context or history of the Spectrum Act appears to preclude this interpretation of the statutory terms at issue here.

339. On the contrary, the statute as a whole strongly supports our interpretation. In that regard, we think that providing stations with an opportunity to seek advance reimbursement based on their estimated relocation costs would help to ensure that all reimbursements can be made within the three-year period mandated by the Spectrum Act. Were we to mandate that stations be reimbursed only after they actually pay their relocation costs, stations that experience construction delays or unexpected, last-minute expenses may not be eligible for reimbursement. Allowing stations to seek advance payments based on estimated costs shortly after the conclusion of the incentive auction process will increase the likelihood that stations have the opportunity to be reimbursed for their eligible relocation costs. We seek comment on this interpretation.

340. Under our proposed approach, eligible television licensees that are involuntarily assigned to new channels in the repacking process could elect to request an advance payment based upon a predetermined amount to cover their relocation expenses. We seek comment on how to estimate relocation costs under the proposed approach. Should the estimated relocation costs be the same for all eligible stations, or should we establish tiers of fixed rates based on specified criteria such as the rank of the market to which the reassigned station is licensed, the type of channel change (*e.g.*, within the UHF band, within the high VHF band, or within the low VHF band), and/or the extent of the technical modifications involved? We also seek comment on whether, under an estimated cost approach, the reimbursement amounts should differ depending on whether the broadcast licensee is a full power station operating under the Part 73 technical rules or a Class A station operating under the Part 74 technical rules. Finally, we seek comment on whether to require a station receiving an advance payment to report on whether they spent all of their reimbursement funds and to promptly return any unused funds.

341. Under our proposed approach, stations also could elect to be reimbursed based upon their actual costs instead of their estimated costs. For stations that elect to be reimbursed based on actual costs, we propose to require documentation of all expenses.[518] Specifically, we propose to require submission

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either reimbursements made on an actual-cost basis or on a prospective basis); *Nat'l Coal Ass'n v. Chater*, 81 F.3d 1077, 1082 (11th Cir. 1996) ("The ordinary meaning of the term "reimbursement" is not restricted by any requirement that such payments be dollar-for-dollar what the reimbursed party paid out."). *Cf. Bowen v. Massachusetts*, 487 U.S. 879, 883-84 (1988) ("Although the federal contribution to a State's Medicaid program is referred to as a 'reimbursement,' the stream of revenue is actually a series of huge quarterly advance payments that are based on the State's estimate of its anticipated future expenditures."). Although the term at issue in the Coal Act cases cited above was "reimbursements," not "reimburse," courts and dictionaries treat the two words as equivalent. *See Massey*, 472 F.3d at 160; *Dictionary.com Unabridged* (accessed: Apr. 25, 2012).

[516] *Trimble v. Asarco, Inc.*, 232 F.3d 946, 958 (8th Cir. 2000), *rev'd on other grounds*, *Exxon Mobil Corp. v. Allapattah Services, Inc.*, 545 U.S. 546 (2005); *Quarles Petroleum Co. v. United States*, 551 F.2d 1201, 1205 (Fed.Cl. 1977) ("To incur means to become liable for or subject to; it does not mean to actually pay for."); *Waltuch v. ContiCommodity Services, Inc.*, 833 F.Supp. 302, 314 (S.D.N.Y. 1993) ("The word 'incurred' means 'to become liable for' "), *aff'd in part, rev'd in part on other grounds,* 88 F.3d 87 (2d Cir. 1996).

[517] *A.T. Massey Coal Co.*, 472 F.3d at 160 (concluding that "reimbursements" in the Coal Industry Retiree Health Benefit Act of 1992 "is an unambiguous historical term of art used by Congress" to refer to reimbursements that Medicare actually made based on prospectively assessed risks).

[518] We note that this was the approach adopted by the Commission for reimbursement of costs incurred in relocating fixed microwave facilities. *See Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, First Report and Order and Further Notice of Proposed Rule Making, 11 FCC Rcd 8825 (1996); Second Report and Order, 12 FCC Rcd 2705 (1997); *Redevelopment of Spectrum to Encourage Innovation in the Use of New Technologies*, ET Docket No. 92-9, Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd 6589 (1993). The National Telecommunications and Information (continued….)

of a showing, including appropriate documentation, detailing the eligible relocation costs, as well as a demonstration that all such costs are reasonable, prior to reimbursement. We invite comment on this proposed approach, including the potential costs and benefits associated with it.

342. Alternatively, we invite comment on whether to require all broadcasters to demonstrate their relocation costs before receiving reimbursement. Would such an approach necessarily result in a more efficient use of the TV Broadcaster Relocation Fund? Would any such benefits be offset by the administrative burdens associated with preparation and review of such showings? How would the Commission meet the statutory three-year deadline under such an approach? If we adopt such an approach, should we also cap reimbursements and, if so, how should we determine the appropriate caps?[519] Should we provide reimbursement in excess of the cap upon an appropriate showing? We seek comment on these issues, as well as the appropriate procedures to use for documenting costs.

343. *Determination of Eligible Broadcaster Costs.* Regardless of the reimbursement approach we adopt, we invite comment on the types of relocation costs that stations are likely to incur, and how to determine whether costs are "reasonable" for purposes of the reimbursement mandate. What types of "hard"[520] and "soft"[521] costs are stations likely to incur to effectuate channel changes, and to what extent should such costs be eligible for reimbursement? What types of relocation costs did stations incur in the digital television transition? Is it reasonable to expect that stations assigned to new channels in the repacking process would incur similar expenses? In the 800 MHz rebanding program, the Commission adopted a "Minimum Necessary Costs Standard," and limited reimbursement to the "minimum cost necessary to accomplish rebanding in a reasonable, prudent, and timely manner" in order to provide facilities comparable to those presently in use, clarifying that this did not mean the absolute lowest cost under any circumstances.[522] We seek comment on whether to adopt a similar standard in this proceeding.

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Administration (NTIA) also adopted this approach for reimbursing equipment purchased by low power television stations converting to digital facilities. Details on the LPTV reimbursement program are available on the NTIA website: http://www.ntia.doc.gov/legacy/lptv/index.html.

[519] Reimbursements provided through both the microwave relocation and low power television digital conversion programs are capped. *Id. See also Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, Memorandum Opinion and Order, 11 FCC Rcd 9394 (1996).

[520] In the microwave relocation rules, *see* 47 C.F.R. § 27.1238, "hard" costs eligible for reimbursement include the following: radio terminal equipment, antennas, towers and/or modifications, back-up power equipment, monitoring or control equipment, engineering costs *(i.e.*, path design and survey), installation, system testing, application filing costs, site acquisition and civil works, zoning costs, training, disposal of old equipment, test equipment (vendor required), spare equipment, project management, site lease renegotiation, power plant upgrade, if necessary, electrical grounding systems, heating ventilation and air conditioning (HVAC) if necessary, alternate transport equipment and leased facilities. Similarly, in the low power television digital conversion program, NTIA permitted reimbursement for certain pre-defined types of equipment, including: translator with modulator/processor, simple mask filter and GPS filter; translator modulator/ encoder/multiplexer; extra cost for stringent filter (when required); transmit antenna (Panel or Slot); transmission line with connectors, hangers, etc.; receive antenna and preamplifier; the cost for installation of antennas; and surge suppressor. *See* http://www.ntia.doc.gov/legacy/lptv/index.html.

[521] In the microwave relocation program, the Commission found that reimbursable "soft" costs may include the cost of an independent third-party appraisal conducted pursuant to the Commission's rules, as well as transaction expenses directly attributable to the relocation of incumbents. *See Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, First Report and Order and Further Notice of Proposed Rule Making, 11 FCC 8825 (1996); *Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation,* Second Report and Order, 12 FCC 2705 (1997).

[522] *Improving Public Safety Communications in the 800 MHz Band*, WT Docket 02-55, Memorandum Opinion and Order, 22 FCC Rcd 9818, 9820, para. 6 (2007); *see also Improving Public Safety Communications in the 800 MHz Band*, WT Docket No. 02-55, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, (continued….)

Under such a standard, licensees would be able to recover only costs that are reasonable, prudent and the minimum necessary to provide facilities and services comparable to those presently in use. We also seek comment on whether to permit licensees to request reimbursement for facility upgrades made while effectuating the channel changes. Some stations may not be able to replace older, legacy equipment and may be required to obtain upgraded or more expensive equipment in order to move to their new channels. Would permitting reimbursement of such equipment costs comport with the Spectrum Act mandate to reimburse only "reasonable" costs? We seek comment on the point at which an upgrade would exceed the Spectrum Act mandate of "reasonable" and thus not be eligible for reimbursement.

344. The Spectrum Act prohibits reimbursements for "lost revenues."[523] We invite comment on how to interpret "lost revenues" for purposes of the reimbursement mandate. For example, does it encompass lost advertising revenues while a station is off the air implementing changes to its facilities in order to implement repacking? Does it encompass any refunds that a station is required to make of payments by purchasers of airtime as a result of being off the air implementing a channel change?

345. We also seek comment on whether and how to prioritize requests for reimbursement in the event that the total eligible relocation costs exceed the statutory limit of $1.75 billion. Should we consider reimbursement requests on a first-come, first-served basis? Should we prioritize requests on some other basis? We invite commenters to address the potential costs and benefits associated with any prioritization methods that they advocate.

346. Further, we seek comment on whether to explore bulk purchasing opportunities or bulk services arrangements that could reduce the relocation costs incurred by individual television licensees as a result of the repacking. In addition, during the digital television transition, some stations were able to repurpose their own analog and pre-transition digital equipment, or that of another station, for post-transition use. We seek comment on methods to encourage broadcasters to make use of equipment that is no longer needed by a repacked or channel sharing licensee.

347. *Service Rule Waiver in Lieu of Reimbursement.* Pursuant to the Spectrum Act, instead of reimbursement for repacking costs, a television licensee may accept a waiver of the Commission's service rules to permit it to make flexible use of its spectrum to provide non-broadcast services, so long as it "provides at least 1 broadcast television program stream on such spectrum at no charge to the public."[524] We invite comment on the meaning and scope of this provision.[525] In particular, which of our rules should be eligible for waiver under this provision? What types of flexible uses by broadcasters should we consider appropriate in this context, and what factors should go into this analysis? How can we assess whether flexible use operations by broadcasters would cause interference problems? Should waivers be

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and Order, 19 FCC Rcd 14969, 15074, para. 198 (2004); Supplemental Order and Order on Reconsideration, 19 FCC Rcd 25120, 25152, para. 71 (2004).

[523] Spectrum Act § 6403(b)(5).

[524] Spectrum Act § 6403(b)(4)(B). Section 6403(b)(4)(B) provides in full that "[i]n lieu or reimbursement for relocation costs under subparagraph (A), a broadcast television licensee may accept, and the Commission may grant as it considers appropriate, a waiver of the service rules of the Commission to permit the licensee, subject to interference protections, to make flexible use of the spectrum assigned to the licensee to provide services other than broadcast television services. Such waiver shall only remain in effect while the licensee provides at least 1 broadcast television program stream on such spectrum at no charge to the public." *Id.*

[525] We note that only stations eligible for reimbursement under section 6403(b)(4)(A)—that is, full power and Class A stations that are reassigned to new channels as part of the repacking process—are eligible to seek waivers under this provision. Consistent with our interpretation above, stations with channel sharing arrangements that are reassigned to new channels could seek waivers, but we propose to interpret section 6403(b)(4)(B) to require each channel sharing licensee to meet the one broadcast stream requirement under such circumstances.

granted on a permanent or temporary basis? If the latter, for how long should the waiver last?[526] How should we interpret the requirement of a "broadcast television program stream" provided "at no charge to the public"? Would use of a technology other than the ATSC digital television standard satisfy this requirement?[527] If so, what steps would a licensee need to take to ensure the ability of "the public" to view the broadcast television program stream at no charge?

348. In addition, we seek comment on appropriate procedures for the filing and review of any such waiver requests. At what point should any such requests be entertained, and how should they be submitted? Should they be subject to public notice and an opportunity for comment? Should we require submission of any waiver requests at the same time and using the same procedures as for reimbursement requests? How can we ensure that a licensee whose waiver request is not granted has an opportunity to obtain reimbursement for its eligible relocation costs?

349. *Channel 51.* We note that because the lower 700 MHz A block is adjacent to television broadcast channel 51, there have been some arrangements between wireless licensees and channel 51 broadcasters to relocate stations that are currently on channel 51, in order to avoid interference. Channel 51 stations that relocate pursuant to a private arrangement may or may not need to relocate again as a result of the repacking process following the reverse and forward auctions. To the extent that stations formerly on channel 51 must relocate a second time because its channel assignment is changed in the repacking process, they will be eligible for payment of costs and will not be disadvantaged in their ability to claim reimbursement.

2. Payment of Eligible MVPD Costs

350. As stated above, the Spectrum Act also requires the Commission to reimburse, from the TV Broadcaster Relocation Fund, costs reasonably incurred by an MVPD in order to continue to carry the signal of a broadcast television licensee that has its channel changed as part of the repacking process or that relinquishes its spectrum usage rights through a winning UHF to VHF or channel sharing bid in the reverse auction.[528] We seek comment on how to implement this provision. Should we allow MVPDs to elect to be reimbursed by an advance payment based on estimated costs, as proposed above for broadcasters? If so, how should we estimate costs? Should all MVPDs be eligible for reimbursement based upon the same estimated amount per station change? If so, should there be one estimated rate or rate tiers? On what basis should we choose different tiers? As with the broadcaster reimbursements, we seek comment on whether to require an MVPD receiving an advance payment to report on whether they spent all of their reimbursement funds and to promptly return any unused funds. We invite comment on these and any other issues raised by an estimated-cost reimbursement approach.

351. Regardless of whether we decide to allow MVPDs to elect to be reimbursed by an advance payment based on estimated costs, we invite comment on reimbursing MVPDs based on actual costs. We propose to require documentation of all expenses under an actual-cost approach. MVPDs would be required to submit a showing, including appropriate documentation, detailing their costs, as well as a demonstration that all such costs are reasonable, prior to reimbursement. As with broadcaster reimbursement, we seek comment on whether to cap actual cost-based payments. If we set such caps,

[526] Regardless of the duration of the waiver, we propose that the repacked broadcaster not qualify for reimbursement later should the waiver no longer be in effect.

[527] *See* 47 C.F.R. § 73.682.

[528] *Id.* § 6403(b)(4)(ii). The Spectrum Act states that "MVPD" has "the meaning given such term in section 602 of the Communications Act." *Id.* § 6403(d)(4). The Communications Act defines MVPD "as a person such as, but not limited to, a cable operator, a multichannel multipoint distribution service, a direct broadcast satellite service, or a television receive-only satellite program distributor, who makes available for purchase, by subscribers or customers, multiple channels of video programming." 47 U.S.C. § 522(13).

how should we determine the appropriate limits? Should we provide reimbursement in excess of any caps upon an appropriate showing? We seek comment on these issues, as well as the appropriate procedures to use for documentation of costs.

352. Further, we seek comment on the types of costs that MVPDs are likely to incur, and how to determine whether such costs are "reasonable" for purposes of the reimbursement mandate. For example, MVPDs incurred costs during the digital television transition in fulfilling the mandate that they "ensure that the transition went smoothly for their customers."[529] Are such costs different than those likely to be incurred by MVPDs to continue carrying the signal of a station that voluntarily changes from a UHF to a VHF channel or agrees to share a channel through the reverse auction? Similarly, what costs will MVPDs likely incur to carry stations involuntarily assigned to new channels in the repacking process? Should we interpret the statute to provide for reimbursement of costs incurred in carrying a channel sharing station from the shared location if the station previously did not qualify for carriage on the MVPD system?

3. Measures to Prevent Waste, Fraud and Abuse

353. We also seek comment on potential waste, fraud and abuse of the TV Broadcaster Relocation Fund, and how to prevent it. Abuse could occur in a number of ways, including where a broadcaster or MVPD accepts reimbursement but diverts the funds for other purposes or defaults on its relocation cost payment obligations (for example, because it goes bankrupt). What steps might be taken to prevent such abuse? If we permit broadcasters and MVPDs to seek reimbursement based upon the estimated cost approach proposed above, we seek comment on whether to require the receiving entity to report on whether they spent all of their reimbursement funds and to return any unused or misused funds. Would such requirements help to fulfill the Spectrum Act mandate that we reimburse only the "costs reasonably incurred"? We invite comment on the potential costs and benefits associated with such requirements, as well as on other potential means to prevent waste, fraud, and abuse of relocation cost payments.

354. Finally, though we do not anticipate fraudulent attempts to obtain reimbursement funds, this remains a theoretical possibility. For previous programs involving the disbursement of funds, such as the Universal Service Fund, the Commission chose to appoint a third-party auditor to oversee compliance of the program.[530] We seek comment on whether appointment of a third-party auditor to over see the Relocation Fund would help further our goals to prevent waste, fraud and abuse.

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[529] *See* Comments of National Cable Television Association, ET Docket No. 10-235, at p. 8. According to one MVPD entity, in addition to undertaking informational efforts "to ensure that consumers understood how they would and would not be affected by the transition and what they did or did not need to do to continue to receive over the air stations, operators often needed to purchase new receive antennas and to establish the necessary infrastructure to receive broadcast signals from new digital channel assignments." *Id.*

[530] *See*, *e.g.*, 47 C.F.R. § 54.420(a). Pursuant to the Telecommunications Act of 1996, the Commission established four Universal Service programs to (1) promote the availability of quality services at just, reasonable and affordable rates for all consumers; (2) increase nationwide access to advanced telecommunications services; (3) advance the availability of such services to all consumers, including those in low income, rural, insular, and high cost areas at rates that are reasonably comparable to those charged in urban areas; (4) increase access to telecommunications and advanced services in schools, libraries and rural health care facilities; and (5) provide equitable and non-discriminatory contributions from all providers of telecommunications services to the fund supporting universal service programs. The four programs are: the High-Cost program, the Lifeline (low income) program, including initiatives for Native Americans, the Schools and Libraries program, commonly referred to as E-rate, and the Rural Health Care program. These programs are funded by the Universal Service Fund. Telecommunications providers must contribute to the fund through an assessment on their interstate and international revenues. The Universal Service Administrative Company administers the four programs and the Universal Service Fund. *See* http://transition.fcc.gov/wcb/tapd/universal_service.

C. Regulatory Issues; Licensing and Operating Rules

1. Broadcast Issues

355. We address below the potential impact of the reorganization of broadcast television spectrum on our multiple ownership rules and the low power television service, and invite comment on a number of issues associated with channel sharing.[531]

a. Multiple Ownership Rules and Diversity

356. The broadcast television spectrum incentive auction may impact broadcasters' ongoing compliance with the Commission's multiple ownership rules by, for example, reducing the number of stations in a given area or changing the coverage areas of television stations that agree to relinquish their spectrum usage rights to a channel in order to channel share with another station.[532] We propose to grandfather any station combinations that would no longer comply with our multiple ownership rules as a result of the broadcast television spectrum incentive auction. We believe that this proposal is consistent with the Commission's current policy of allowing the owner of a station combination approved by the Commission to continue holding that combination if the market composition subsequently changes such that the combination no longer complies with the multiple ownership rules.[533] We also believe that this approach is necessary to avoid discouraging reverse auction participation. We seek comment on this proposal as well as the costs and benefits of this approach. We intend to address any other implications that the broadcast television spectrum incentive auction may have for our multiple ownership rules in future quadrennial regulatory reviews of those rules.[534]

357. We also invite comment on measures that the Commission might take outside of the context of the multiple ownership rules to address any impact on diversity that may result from the incentive auction.[535] We envision that such measures might include ways to encourage multicasting

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[531] *See* National Broadband Plan at 89 ("Changes to the TV broadcast spectrum need to be carefully considered to weigh the impact on consumers, the public interest and the various services that share this spectrum, including low-power TV.").

[532] Signal coverage or contour overlap triggers the television duopoly, radio-television cross-ownership, and newspaper-broadcast cross-ownership rules. *See* 47 C.F.R. §§ 73.3555(b), (c), (d). *See also 2010 Quadrennial Regulatory Review-Review of the Commission's Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996, Promoting Diversification of Ownership in the Broadcast Services*, Notice of Proposed Rulemaking, 26 FCC Rcd 17489 (2011) (*2010 Quadrennial ReviewNPRM*). A broadcaster seeking consent to hold a television duopoly or radio-television station combination that will result from a proposed assignment, transfer or modification, must demonstrate the existence of a specified number of stations or media "voices" in the affected market.

[533] *See Review of the Commission's Regulations Governing Television Broadcasting*, MM Docket No. 91-221, Report and Order, 14 FCC Rcd 12903, 12932-33, para. 64 (1999). However, we do not allow the transfer or assignment of such combinations intact. *Id.*

[534] *See 2010 Quadrennial Review NPRM.*

[535] *See Review of the Commission's Broadcast Ownership Rules,* 17 FCC Rcd 18503, 18516 para. 34 (2002) ("The Commission has considered four aspects of diversity: viewpoint diversity, outlet diversity, source diversity, and program diversity. Viewpoint diversity ensures that the public has access to a wide range of diverse and antagonistic opinions and interpretations. It attempts to increase the diversity of viewpoints ultimately received by the public by providing opportunities for varied groups, entities and individuals to participate in the different phases of the broadcast industry. Outlet diversity is the control of media outlets by a variety of independent owners. Source diversity ensures that the public has access to information and programming from multiple content providers, while program diversity refers to a variety of programming formats and content.") (internal quotes, citations and subsequent history omitted).

opportunities or other alternative means of program delivery that could help to ensure that consumers will continue to have access to specialized or minority-oriented programming post-auction.

b. Displacement of Low Power Television and Television Translator Stations

358. Low power television stations are a source of diverse and local television programming, and television translator stations are an important free, over-the-air television resource in rural and remote locations.[536] We recognize that low power television and translator stations will be impacted by the broadcast television spectrum incentive auction. Because low power television and translator facilities have only secondary interference protection,[537] we propose in section V that full power and Class A television stations will be assigned new channels in the broadcast television spectrum reorganization without regard to whether such channel assignments, or the modified facilities required to implement service on them, would interfere with existing low power television and translator facilities. Where such interference exists, or where an existing low power television or translator station would cause interference to a repacked "primary" status station, the low power television or translator station will be "displaced" and will either have to relocate to a new channel that does not cause interference or else discontinue operations altogether.[538] Only a limited number of available channels may exist following the repacking process, limiting the relocation options available to displaced low power television and translator stations.

359. We invite comment on measures to help ensure that important programming provided by low power television and television translator stations continues to reach viewers. For example, should we authorize voluntary channel sharing among low power television stations and among translator stations? What role should the Commission play in, and what resources should the Commission dedicate to, providing access to spectrum for non-primary users of the broadcast bands after the incentive auction? Should we consider measures to promote use of available digital capacity on full power and Class A broadcast television stations, MVPD systems, and/or the Internet to distribute low power television programming? We also invite comment on whether and how to modify the Commission's rules for low power television and translator stations that are displaced to seek new channels on which to operate.

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[536] For purposes of this discussion, the term "low power television stations" excludes Class A television stations. Although licensed pursuant to the Part 74 rules, Class A television stations have primary interference protection rights, and are treated differently for purposes of the Spectrum Act. *See, e.g.,* Spectrum Act §§ 6001(6), 6403(b)(5).

[537] *See, e.g.,* 47 C.F.R. § 74.703(b) (requiring a low power television station "to correct at its expense any condition of interference to the direct reception of the signal of any other TV broadcast analog station, and DTV station operating on the same channel … or an adjacent channel which occurs as a result of the operation of the" low power television station, and providing that "[i]f the interference cannot be promptly eliminated by the application of suitable techniques, operation of the offending low power TV, TV translator, or TV booster station shall be suspended and shall not be resumed until the interference has been eliminated."); *Unlicensed Operation in the TV Broadcast Bands*, , ET Docket No. 84-186, Second Memorandum Opinion and Order, 25 FCC Rcd 18661, 18665, para 7. (2010) ("Low power TV, TV translator and TV booster stations are permitted to operate under Part 74 of the rules on a secondary basis to full service TV stations"), citing 47 C.F.R. Part 74 Subpart G; *Low Power Television and Television Translator Service*, MM Docket No. 86-286, Report and Order, 2 FCC Rcd 1278, 1279, paras. 8, 11 (1987) (*LPTV Service*) ("the low power television and television translator service is fundamentally of a 'fill-in' nature;" because of their "secondary spectrum status," low power television and television translator stations "must correct any interference which they cause to other primary services, and may have to file applications for major or minor modifications to their authorized facilities"). *See also* 47 U.S.C. § 336(f) (granting qualifying low power television stations "primary status" as long as the station continues to meet the requirements for a qualifying low power station).

[538] *Id.*

Under the current rules, a "displacement application" for a new channel must demonstrate interference caused to or received from a primary station, and may be submitted only after the primary station obtains a construction permit or license.[539] During the digital transition, the Commission allowed low power television and translator stations to submit displacement applications without satisfying these requirements,[540] and prioritized the processing of such applications over that of previously-filed new station and modification applications filed by low power television and translator stations.[541] Should we adopt measures similar to those the Commission used during the digital transition to address the potential impact on low power television and translator stations of the broadcast television spectrum reorganization?

360. More specifically, after the repacking becomes effective and full power and Class A television stations have an early opportunity to file for a substitute channel as proposed above, we invite comment on whether to open an initial filing window for low power television and television translator stations to submit displacement applications. Such applications would not have to satisfy the current rule requirements for displacement applications identified above. They would be considered "cut-off" from competing applications as of the last day of the filing window. Following the end of that initial filing window, we would allow the filing of additional displacement applications on a first-come, first-served basis. This approach would permit low power television and translator stations at risk of displacement to avoid having to wait until interference from a full power or Class A television station actually occurs. We seek comment.

361. We also seek comment on whether and how to avoid mutual exclusivity for displacement applications filed by low power television and translator stations within the proposed window. Would the public interest be served by establishing a set of "selection priorities" to choose among applications when necessary?[542] Under such an approach, low power television and translator stations filing during the initial window would be required to submit a showing that they qualify for particular selection priorities, and the Commission would rank the displacement applications in order to determine which application to grant when necessary. Should we adopt such a procedure, we also seek comment on the types of selection priorities to adopt. For example, should we establish preservation of the only local, over-the-air television service as our first priority, and grant a priority to applicants that provide the only network service to their communities? We also welcome suggestions on alternative criteria or procedures for allocating available channels among low power television and translator stations at risk of displacement following the incentive auction.

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[539] *See* 47 C.F.R. § 73.3572(a)(4).

[540] *Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, MM No. 87-268, Sixth Report and Order, 12 FCC Rcd 14588, 14652, para. 141 (1997) (" . . . in providing all full service TV stations with a second DTV channel, it will be necessary to displace a number of LPTV and TV translator operations, especially in the major markets").

[541] *See* 47 C.F.R. §§ 73.3572(a)(4), 74.787(a)(4). Many low power television stations filed their displacement applications on June 1, 1998, their first opportunity to do so. *See* "Commission Postpones Initial Date for Filing TV Translator and Low Power TV Applications for Displacement Channels," *Public Notice*, Mimeo No. 82914 (rel. April 16, 1998). As a result, a number of displacement applications became "mutually exclusive" and, pursuant to the Commission's rules, were resolved in Auction No. 25, the first broadcast auction.

[542] Consistent with the requirements of section 309(j) of the Communications Act, our rules require resolution of mutual exclusivity through competitive bidding. *See* 47 C.F.R. § 73.5000, *et seq.* The Act, however, provides that the Commission shall use threshold qualifications and other means to avoid mutual exclusivity where the Commission determines that doing so would serve the public interest. *See* 47 U.S.C. § 309(j)(6)(E).

c. Channel Sharing

362. In the *Channel Sharing Report and Order*, we adopted a general framework for channel sharing in connection with the incentive auction process, while identifying additional issues that would need to be addressed in a future proceeding.[543] We now seek comment on these issues to provide additional clarity to parties considering participation in the reverse auction through a channel sharing bid.

363. *Channel Sharing Agreements (CSAs)*. Channel sharing creates a unique relationship between two or more licensees that must share a single channel and transmission facility. Given the complex nature of the channel sharing relationship, we seek comment on whether we should impose certain requirements on CSAs, such as that they include key provisions delineating each station's rights and responsibilities. Ordinarily, the Commission does not involve itself in private contractual agreements among stations.[544] We also wish to avoid discouraging broadcasters from taking advantage of the channel sharing bid option in the reverse auction. Nevertheless, public interest considerations may demand that we impose certain basic requirements on the terms and conditions of CSAs. In particular, we seek comment on whether to require that CSAs contain provisions outlining each shared licensee's rights and responsibilities in the following areas: (1) access to facilities, (2) operation, maintenance and repair of facilities, (3) modification of facilities and (4) transfer of rights to the shared license. We invite comment on whether such requirements are necessary and appropriate to avoid service disruptions to the public by ensuring each channel sharing licensee's unfettered ability to broadcast at least one standard definition programming stream at all times and to maintain control of its license.

364. We seek comment on whether to require that CSAs guarantee certain access rights for each licensee to the shared transmission facilities. Should each licensee have unrestrained access to the shared transmission facilities, or should we permit the inclusion of contractual provisions that allow one licensee to limit, deny, or preempt access by another channel sharing station to the shared facilities? If we do not require unrestrained access, should we prohibit limitation, denial or preemptions of access under certain circumstances? We also seek comment on whether to require that CSAs specify each party's rights and responsibilities, as well as financial obligations, with respect to maintenance of the shared facilities. Should we require that contractual provisions with respect to the modification of shared transmission facilities be included in all CSAs? Should CSAs be required to contain provisions ensuring notice to all sharing licensees regarding operational, maintenance, and repair issues and activities? Further, we seek comment on whether to require that all CSAs specifically list all equipment that would fall under the operational, maintenance and repair provisions. We also solicit comments regarding other contractual provisions that may be necessary and appropriate to require in order to reduce the possibility of disruption or diminution of service.

365. Further, we seek comment on whether to require that CSAs grant approval rights or rights of first refusal to channel sharing stations in the event of a proposed assignment or transfer of the license held by the other station or stations. Alternatively, should we mandate that CSAs require future buyers to assume the exiting party's rights and obligations under the CSA? Instead of compelling specific contract terms, should we simply require that all CSAs explicitly address this matter? Lastly, we seek comment on whether to require that all licensee parties to a CSA demonstrate assent to a proposed transaction in the assignment or transfer application related to that deal.

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[543] *Channel Sharing Report and Order,*, 27 FCC Rcd at 4621-24 paras. 11-18 (establishing general framework for channel sharing and stating that "we will establish in a future proceeding additional rules governing channel sharing arrangements").

[544] *See Horizon Communications Corp*., R.R.2d (P&F) (1976) (If the licensee has not violated any Commission rule or policy [the Commission] will not interfere with contractual negotiations between the licensee and a prospective buyer).

366. *Termination of Channel Sharing License.* We recognize that situations may arise that will lead to the voluntary or involuntary need for a station to terminate its involvement in the channel sharing relationship. For example, a station could decide to turn in its license for cancellation, or the Commission could fail to renew or revoke a sharing station's license. Under such circumstances, we seek comment on how to address the spectrum usage rights represented by the terminated license. Ordinarily, the rights of a station that fails to renew its license, or whose license is cancelled or revoked, return to the Commission and may be licensed for use by another broadcaster. In channel sharing situations, however, where only one station's license is terminated, the remaining channel sharing stations would continue to have rights to the channel. We seek comment on how to relicense the spectrum usage rights represented by the terminated license.

367. In that regard, we note the unique problems that would exist if the terminated licensee were a Class A television station.[545] We do not have authority to authorize additional Class A television stations.[546] Moreover, a Class A television licensee that fails to meet the ongoing statutory eligibility requirements to maintain its Class A status is subject to modification of its license to low power television status.[547] A Class A station whose rights are so modified would no longer be entitled to channel share.[548] We invite comment on how to address such situations. Should channel sharing Class A stations whose licenses are modified to low power television status be permitted to file displacement applications to move to another channel as a low power television station, if a channel can be identified? How should we treat the spectrum usage rights that the licensee previously held to the shared channel?

368. *Joint Responsibility for Compliance with Certain Technical Rules.* Under the current rules, each channel sharing station is independently subject to all of the Commission's rules and policies, including "technical, operational, and programming obligations."[549] The Commission recognized, however, that a different policy might be necessary "[w]ith respect to certain technical requirements that will be shared, such as RF compliance…," and stated that it would "address any need for additional rules and procedures in a future proceeding."[550] We now seek comment on whether to adopt a different policy with respect to certain shared technical requirements to reduce the possibility of disputes between channel sharing stations that might result in disruption or diminution of service to the public.

369. In particular, we invite comment on whether channel sharing stations should be held jointly responsible for compliance with certain of the technical obligations pertaining to the shared facilities, including maintenance of station logs, [551] transmission facilities,[552] monitoring equipment,[553]

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[545] We address additional issues unique to full power-Class A channel sharing situations below.

[546] *See* 47 U.S.C. § 336(f)(1)(C); *Class A R&O*, 15 FCC Rcd at 6361-62, paras. 10-12; *Class A Recon*., 16 FCC Rcd at 8250-51, paras. 12-18.

[547] *See*, *e.g.*, *Reclassification of License of Class A Television Station WGSA-CA, Savannah, Georgia*, Order to Show Cause, 27 FCC Rcd 2544 (MB 2012) (station silent almost continuously for the past three years subject to potential loss of Class A status for failing to meet ongoing Class A eligibility obligations).

[548] *Channel Sharing Report and Order,* 27 FCC Rcd 4626-27, paras. 19-20.

[549] *Id.* at 4624, para. 16 ("despite sharing a single channel and transmission facility . . . each licensee will separately be subject to all of the Commission's obligations, rules, and policies."). *See id.* ("a channel sharing licensee will not be held responsible for the programming content or rules violations of any other licensee sharing its channel.")

[550] *Id.*

[551] *See* 47 C.F.R. §§ 73.1800–73.1840.

[552] *See*, *e.g.*, 47 C.F.R. §§ 73.687, 73.1560.

[553] *See*, *e.g.*, 47 C.F.R. § 73.691.

and compliance with the Commission's radio frequency emission limitations[554] and Emergency Alert System.[555] Alternatively, should we follow the policy adopted in the *Channel Sharing Report and Order* and leave each channel sharing station independently responsible for compliance with all Commission rules? If we continue with the current policy, we seek comment on how to address violations of technical rules. Should a violation of a technical rule by a shared transmission facility be treated as a single violation, even if multiple licensees are responsible? Should we consider all licensees sharing a channel jointly liable for any violations of the rules pertaining to these requirements? We seek comment on these matters.

370. *Channel Sharing on Reserved Channels.* Channel sharing by noncommercial educational (NCE) stations operating on reserved channels also raises special concerns. The existence of reserved channels in the Table ensures a nationwide distribution of NCE stations,[556] and in order to preserve this distribution, commercial stations may not operate on the reserved channels.[557] In the *Channel Sharing Report and Order*, the Commission recognized that operation by a commercial broadcaster on a reserved channel via a channel sharing arrangement could result in a *de facto* "dereservation" of the reserved channel.[558] In light of our proposal not to use a Table to authorize new channel assignments as a result of the broadcast television spectrum incentive auction, we propose a new method for allocating and licensing NCE stations on reserved channels in order to prevent loss of a reserved NCE channel when an NCE station operating on such a channel enters into a channel sharing arrangement.[559] Specifically, we propose an NCE licensee, whether it relinquishes its reserved channel in order to share a non-reserved channel, or agrees to share its reserved channel with a commercial station, retain its NCE status on its license and be required to continue to comply with the rules and policies applicable to NCE licensees. In this way, a portion of the shared channel (which, at a minimum must allow for the broadcast of one standard definition programming stream) would continue to be reserved for NCE-only use. Should the NCE-licensed channel sharing station seek to assign its license, consistent with our current rules regarding the assignment of a reserved-channel NCE station, we would require it to assign its license to a qualified-NCE entity.[560] Similarly, should the NCE-licensed channel sharing station lose its license through expiration, non-renewal or revocation, only another entity meeting the NCE eligibility criteria

[554] *See* 47 C.F.R. § 1.1300 *et seq*.

[555] *See* 47 C.F.R. §§ 11.1–62.

[556] *Sixth Report and Order*, 41 F.C.C. at 158-164, paras. 33-49.

[557] The Commission maintains a policy disfavoring dereservation of NCE channels. *See Amendment of the Television Table of Allotments to Delete Noncommercial Reservation on Channel *16, Pittsburgh, Pennsylvania,* Report and Order, 17 FCC Rcd 14038 (2002).

[558] *Channel Sharing Report and Order*, 27 FCC Rcd at 4628-29, para. 24.

[559] Currently, NCE stations have two options for NCE operation. They can either broadcast on a channel reserved in our Table exclusively for NCE use, or operate on a non-reserved channel providing a noncommercial educational service. *See* 47 U.S.C. § 399B; *Reexamination of Comparative Standards for Noncommercial Educational Applicants*, MM Docket No. 95-31, Further Notice of Proposed Rulemaking, 13 FCC Rcd 21167-68, para. 2 (1998). In either case, in order to maintain NCE status, the NCE licensee must remain a nonprofit educational organization or municipality, and comply with NCE requirements, including that the station "be used primarily to serve the educational needs of the community; for the advancement of educational programs; and to furnish a nonprofit and noncommercial television broadcast service." 47 C.F.R. §73.621(a), (b). We do not believe we need special rules related to channel sharing between a non-reserved channel NCE station and a commercial station given our requirement that each station must continue to abide by the terms of its separate license after implementation of the channel sharing arrangement. *Channel Sharing Report and Order,* 27 FCC Rcd at 4628-29, para. 24.

[560] *See* 47 C.F.R. § 73.621.

would be qualified to take its place on the shared channel. By this policy, we aim to preserve NCE stations and reserved channels. We seek comment on this proposal, as well as alternative approaches.

371. *Class A-Full Power Sharing Agreements.* Channel sharing between full power and Class A stations raises additional issues concerning operation of the shared station.[561] The Part 73 rules that govern full power stations authorize operation at higher maximum power levels than those allowed for Class A facilities under the Part 74 rules governing those stations.[562] Channel sharing stations must share a single transmission facility and therefore broadcast at the same power level. We propose that a Class A licensee channel sharee be allowed to operate under the Part 73 technical rules if it shares a channel with a full power licensee sharer. We believe that a full power licensee sharing a Class A facility with a Class A licensee sharer, however, must operate with the lower Part 74 power levels. Allowing a shared Class A facility to increase its power to that allowed by Part 73 for full power stations could result in interference to surrounding full power and Class A stations, as well as to low power television stations which Class A stations must protect when proposing facilities modifications.[563] Under our proposed approach, any future proposed modifications to a Class A facility shared with a full power station would be required to protect authorized and previously proposed low power television stations pursuant to our existing Class A rules.[564] We seek comment on this proposal.

372. With respect to cable and satellite carriage, section 6403(a)(1) of the Spectrum Act requires that a channel sharing station have the same cable and satellite carriage rights at its shared location that it would have at that same location were it not channel sharing.[565] The cable and satellite carriage rules, however, provide Class A and other low power television stations fewer carriage rights than those afforded to full power television stations.[566] We interpret section 6403(a)(1) to provide that a Class A licensee sharee that channel shares with a full power licensee sharer possesses only those carriage rights to which a Class A station at the channel sharing location would be entitled were it not channel sharing. Conversely, we interpret the statute to provide that a full power sharee that channel shares with a Class A licensee sharer will have the same carriage rights at the channel sharing location as would a non-channel sharing full power station at the same location. We note, however, that operating with the reduced power levels of a Class A station, a full power station would risk not being able to provide the requisite signal quality to a cable operator. We seek comment on these interpretations.

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[561] *See Channel Sharing Report and Order*, 27 FCC Rcd at 4626, para. 19, n. 62.

[562] Digital Class A stations may radiate up to 3 kilowatts of power for stations operating on channels 2 through 13 and up to 15 kilowatts of power for stations operating on channels 14-51. *See* 47 C.F.R. § 74.735. By comparison, digital full power stations on channels 2-6 may radiate up to 10 kilowatts (Zone I) and 45 kilowatts (Zones II and III), those on channels 7-13 may radiate up to 30 kilowatts (Zone I) and 160 kilowatts (Zones II and III), and those on channels 14-51 may radiate up to 1000 kilowatts of power. *See* 47 C.F.R. § 73.622(f).

[563] *See* 47 C.F.R. §§ 73.6012, 73.6019.

[564] *See* Section V (Repacking). .

[565] *See* Spectrum Act § 6403(a)(1).

[566] Generally, cable operators must carry local commercial full power television stations, up to one-third of the aggregate number of usable activated channels of such system. With respect to low power and Class A stations, however, a cable system with more than 35 channels must carry two low power stations only if there are not enough local commercial television stations to fill the full power channels set asides. *See* 47 U.S.C. § 534(c)(1) and 47 C.F.R. § 76.56(b)(3). Low power television stations and Class A stations are not entitled to carriage on satellite systems. *See* 47 U.S.C. § 338(a)(3).

2. Wireless Issues

373. We propose to adopt service rules for a terrestrial wireless broadband service (600 MHz band) that will be created as a result of the broadcast television spectrum incentive auction. These service rules specify the terms on which spectrum usage rights are licensed, and how licensees can use these rights. Below, we propose service rules that are consistent with the proposed fixed and mobile allocation.[567]

a. Flexible Use, Regulatory Framework, and Regulatory Status

374. We propose to provide 600 MHz licensees with the flexibility to provide any service that is consistent with the allocations that are adopted for this spectrum.[568] We also propose to license this spectrum under our market-oriented Part 27 rules. We seek comment on these proposals. In addition, we seek comment on the appropriate regulatory status for 600 MHz licenses, the license term, performance requirements, criteria for renewal, and other licensing and operating rules pertaining to this spectrum. We also seek comment on the potential impact of all of our proposals on competition. Commenters should comment on how any proposal they support enhances competition and results in rapid provisioning of competitive mobile broadband services to consumers. Commenters should also discuss the costs and benefits of these proposals and any alternative proposals.

(i) Flexible Use

375. We are proposing service rules for the 600 MHz band that permit a licensee to employ the spectrum for any use permitted by the United States Table of Frequency Allocations contained in Part 2 of our rules, subject to our service rules.[569] Congress recognized the potential benefits of flexibility in allocations of the electromagnetic spectrum and amended the Communications Act in 1999 to add section 303(y).[570] In addition, the Spectrum Act provides that any initial licenses for use of spectrum made available for assignment by the voluntary relinquishment of broadcast television licensees shall be subject to flexible-use service rules.[571]

376. Thus, we propose that the 600 MHz band may be used for any fixed or mobile service that is consistent with the allocations for the band. If commenters think any restrictions are warranted, they should describe why such restrictions are needed, quantify the costs and benefits of any such restrictions, and describe how such restrictions would comport with the statutory mandates of section 303(y) of the Communications Act and sections 6402 and 6403 of the Spectrum Act.

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[567] *See infra*, Section VI.A (Allocations).

[568] *See* Spectrum Act § 6403(a)(1), referencing § 6402. *See also infra*, Section VI.A (Allocations).

[569] *See supra*, para. 374.

[570] Section 303(y) provides the Commission with authority to provide for flexibility of use if: "(1) such use is consistent with international agreements to which the United States is a party; and (2) the Commission finds, after notice and an opportunity for public comment, that (A) such an allocation would be in the public interest; (B) such use would not deter investment in communications services and systems, or technology development; and (C) such use would not result in harmful interference among users." Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251, 268-69; 47 U.S.C. § 303(y).

[571] *See* Spectrum Act § 6403(a)(1), referencing § 6402.

(ii) Regulatory Framework

377. Consistent with flexible use of these bands,[572] we also propose licensing the spectrum under the flexible regulatory framework of Part 27 of our rules.[573] Unlike other rule parts applicable to specific services, Part 27 does not prescribe a comprehensive set of licensing and operating rules for the spectrum to which it applies. Rather, for each frequency band under its umbrella, Part 27 defines permissible uses and any limitations thereon, and specifies basic licensing requirements. We seek comment on our proposal to license the 600 MHz band under Part 27 service and licensing rules, and any associated costs or benefits of doing so.

(iii) Regulatory Status

378. We propose to apply the regulatory status provisions of section 27.10 of the Commission's Rules to 600 MHz licensees. Under this rule, applicants who may wish to provide both common carrier and non-common carrier services (or switch between them) can request status as both a common carrier and a non-common carrier under a single license, and are able to provide all allowable services anywhere within their licensed area at any time, consistent with their regulatory status designated on their license application.[574] Apart from this designation, applicants do not need to describe the services they seek to provide. We seek comment on this approach and the attendant costs and benefits.

379. We also propose that a licensee must notify the Commission of any change in regulatory status, as described in section 27.10.[575] Consistent with this rule, we propose to require that a licensee notify the Commission within 30 days of a change made without the need for prior Commission approval, except that a different time period may apply where the change results in the discontinuance, reduction, or impairment of the existing service.[576] We seek comment on this proposal, including the costs and benefits of this proposal.

b. License Restrictions

(i) Foreign Ownership

380. We propose to apply the provisions of section 27.12 of the Commission's rules to applicants for licenses in the 600 MHz band.[577] Section 27.12 implements section 310 of the Communications Act, including foreign ownership and citizenship requirements that restrict the issuance of licenses to certain applicants.[578] An applicant requesting authorization to provide services in this band other than broadcast, common carrier, aeronautical en route, and aeronautical fixed services would be subject to the restrictions in section 310(a), but not to the additional restrictions in section 310(b). An

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[572] *See id*.

[573] Part 27 licensees must also comply with other Commission rules of general applicability. *See* 47 C.F.R. § 27.3.

[574] For instance, we note that to the extent a licensee provides a Commercial Mobile Radio Service, such service would be subject to the provisions of Part 20 of the Commission's rules, 47 C.F.R. Part 20. *See* 47 C.F.R. § 27.10; *Part 27 Report and Order*, 12 FCC Rcd at 10846-48 paras. 119-22.

[575] *See* 47 C.F.R. § 27.10(d); *see also* 47 C.F.R. § 27.66. A change in a licensee's regulatory status would not require prior Commission authorization, provided the licensee was in compliance with the foreign ownership requirements of Section 310(b) of the Communications Act that would apply as a result of the change. 47 U.S.C. § 310(b); *see infra*, Section X.C.2.b(i) (Foreign Ownership).

[576] *See* 47 C.F.R. § 27.66.

[577] 47 C.F.R. § 27.12 (except as provided in §§ 27.604, 27.1201, and 27.1202, any entity other than those precluded by § 310 of the Communications Act is eligible to hold a license under Part 27).

[578] 47 U.S.C. §§ 310(a), (b).

applicant requesting authorization for broadcast, common carrier, aeronautical en route, or aeronautical fixed services would be subject to both sections 310(a) and 310(b). We do not believe that applicants for this band should be subject to different obligations in reporting their foreign ownership based on the type of service authorization requested in the application. Consequently, we propose to require all applicants to provide the same foreign ownership information, which covers both sections 310(a) and 310(b), regardless of which service they propose to provide in the band. We note, however, that we would be unlikely to deny a license to an applicant requesting to provide exclusively services that are not subject to section 310(b), solely because its foreign ownership would disqualify it from receiving a license if the applicant had applied for authority to provide such services. However, if any such licensee later desires to provide any services that are subject to the restrictions in section 310(b) we would require the licensee to apply to the Commission for an amended license, and we would consider issues related to foreign ownership at that time. We request comment on this proposal, including any costs and benefits of this proposal.

(ii) Eligibility and Mobile Spectrum Holding Policies

381. We propose to adopt an open eligibility standard for the 600 MHz band. We believe that opening the 600 MHz band to as wide a range of licensees as possible will encourage efforts to develop new technologies, products and services, while helping to ensure efficient use of this spectrum.[579] An open eligibility standard is consistent with the Commission's past practice for mobile wireless spectrum allocations,[580] as well as with section 6404 of the recently adopted Spectrum Act, which provides that the Commission may not prevent a person from participating in a system of competitive bidding, provided that the person complies with all procedures and other requirements established to protect the auction process, and meets specified technical, financial, character, and citizenship qualifications or would do so prior to the grant of a license by means approved by the Commission.[581] We seek comment on our open eligibility approach.

382. We note that an open eligibility approach would not affect citizenship, character, or other generally applicable qualifications that may apply under our rules. As discussed above, we propose to implement section 6004 of the Spectrum Act, which restricts auction participation for reasons of national security, by requiring applicants participating in the broadcast incentive auction to certify, under the penalty of perjury, that they are not "person[s] who [have] been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant."[582] Section 6004 does not address eligibility to acquire licenses from holders thereof in auctioned (or any other) services. We seek comment on whether section 6004 permits or requires the Commission to restrict eligibility of the persons described therein to acquire licenses in the secondary market, and whether and to what extent the provisions of the Communications Act permit such restrictions.[583] If such restrictions should be implemented, should we do so by requiring certifications in applications similar to those required under our rules for enforcement of the Anti-Drug Abuse Act of 1988?[584] Would it be permissible and appropriate, as we do under our character policy, to address such

[579] *See* 47 U.S.C. §§ 309(j)(3)(A), (B) & (D).

[580] *See, e.g., AWS-4 NPRM*, 27 FCC Rcd at 3596, paras. 108-09; *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT Docket No. 06-150, Second Report and Order, 22 FCC Rcd 15289, 15381-84, paras. 253, 256 & n.573 (2007).

[581] Spectrum Act § 6404 (adopting 47 U.S.C. § 309(j)(17)(A)).

[582] *See* Spectrum Act § 6004(c).

[583] *See, e.g.,* 47 U.S.C. §§ 308(b), 310(d).

[584] *See* 47 C.F.R. § 1.2001.

situations on a case-by-case basis in light of the specific facts and circumstances?[585] Should we apply the same attribution rules in doing so, where the relevant person is not the sole owner of the proposed licensee?

383. Section 309(j)(3)(B) of the Communications Act provides that in designing systems of competitive bidding, the Commission shall "promot[e] economic opportunity and competition and ensur[e] that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses."[586] More recently, section 6404 of the Spectrum Act recognizes the Commission's authority "to adopt and enforce rules of general applicability, including rules concerning spectrum aggregation that promote competition."[587]

384. We note that we have today initiated a complementary proceeding to revisit the mobile spectrum holdings policies that apply to both transactions and auctions.[588] In the past, the Commission has sought comment on spectrum aggregation issues with respect to particular spectrum bands prior to auctioning spectrum licenses.[589] We seek comment on what, if anything, the Commission should do to meet the statutory requirements of section 309(j)(3)(B) and promote the goals of the broadcast television spectrum incentive auction. For instance, we note that under current spectrum aggregation policies, the Commission would apply its spectrum screen and undertake its competitive analysis only after the auction. As discussed above, however,[590] it is of particular importance to have certainty for bidders in this auction. As another example, section 309(j)(3)(B)'s direction to avoid excessive concentration of licenses might militate in favor of a rule that permits any single participant in the auction to acquire no more than one-third of all 600 MHz spectrum being auctioned in a given licensed area.[591] Commenters may also discuss variations of that approach, including whether we should adopt thresholds that differ in urban and rural areas,[592] whether we should adopt a threshold that recognizes the different characteristics of different spectrum bands,[593] and/or whether we should adopt a threshold that would allow a licensee to acquire additional 600 MHz spectrum above that threshold so long as the licensee agrees to comply with certain conditions such as spectrum sharing through roaming and/or resale obligations, infrastructure sharing, or accelerated buildout requirements. We seek comment on the best means to achieve the goals established by Congress.

[585] *See* 47 C.F.R. § 73.4280.

[586] 47 U.S.C. § 309(j)(3)(B).

[587] Spectrum Act § 6404.

[588] *See Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, Notice of Proposed Rulemaking, FCC 12-119, (Sept. 28, 2012).

[589] *See, e.g., AWS-4 NPRM,* 27 FCC Rcd at 3596-97, paras. 110-11; *AWS-3 NPRM*, 22 FCC Rcd at 17079, paras. 101-02.

[590] *See supra,* Section VI.B (600 MHz Band Plan).

[591] *See* 47 U.S.C. § 309(j)(3)(B).

[592] *See 1998 Biennial Regulatory Review, Spectrum Aggregation Limits for Wireless Telecommunications Carriers*, WT Docket No. 98-205, Report and Order, 15 FCC Rcd 9219, 9253-57, paras. 77-85 (1999).

[593] *See Application of AT&T Inc and Qualcomm Incorporated for Consent to Assign Licenses and Authorizations*, WT Docket No. 11-18, Order, 26 FCC Rcd 17589, 17602, para. 31 (2011).

c. Secondary Markets

(i) Partitioning and Disaggregation

385. The Commission's Part 27 rules generally allow for geographic partitioning and spectrum disaggregation.[594] Geographic partitioning refers to the assignment of geographic portions of a license to another licensee along geopolitical or other boundaries. Spectrum disaggregation refers to the assignment of a discrete amount of spectrum under the license to another entity. Disaggregation allows for multiple transmitters in the same geographic area operated by different companies on adjacent frequencies in the same band. As the Commission noted when first establishing partitioning and disaggregation rules, allowing such flexibility could facilitate the efficient use of spectrum by providing licensees with the flexibility to make offerings directly responsive to market demands for particular types of services, increase competition by allowing market entry by new entrants, and expedite provision of services to areas that might not otherwise receive service in the near term.[595]

386. Part 27 rules for terrestrial wireless service provide that licensees may apply to partition their licensed geographic service areas or disaggregate their licensed spectrum at any time following the grant of their licenses.[596] The rules also set forth the general requirements that apply with regard to approving applications for partitioning or disaggregation, as well as other specific requirements (*e.g.*, performance requirements) that would apply to licensees that hold licenses created through partitioning or disaggregation.

387. We propose to permit partitioning and disaggregation by licensees in the 600 MHz band. To ensure that the public interest would be served if partitioning or disaggregation is allowed, we also propose requiring each 600 MHz licensee who is a party to a partitioning, disaggregation, or combination of both, to independently meet the applicable performance and renewal requirements.[597] We believe this approach would facilitate efficient spectrum use, while enabling service providers to configure geographic area licenses and spectrum blocks to meet their operational needs. We seek comment on these proposals. Commenters should discuss and quantify the costs and benefits of these proposals on competition, innovation, and investment.

388. We also seek comment on whether the Commission should adopt additional or different mechanisms to encourage licensees to partition and/or disaggregate 600 MHz spectrum that they are not utilizing and the extent to which such policies would promote additional wireless broadband service, especially in rural areas. Commenters should discuss and quantify the costs and benefits of promoting partitioning and disaggregation in the 600 MHz band, including the effects of the proposal on competition, innovation, and investment.

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[594] *See* 47 CFR § 27.15.

[595] *Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Service Licensees*, WT Docket No. 96-148 Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 21831, 21833, para. 1 (1996).

[596] *See Part 27 Report and Order*, 12 FCC Rcd at 10836-39, paras.96-103.

[597] Under the current rules, one party has the option to certify that it has met or will meet the performance requirements for the entire service area. *See* 47 C.F.R. § 27.15. *See generally Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, WT Docket No. 10-112, Notice of Proposed Rulemaking and Order, 25 FCC Rcd 6996, 6998-99, 7029-33, paras. 5, 91-97 (2010) (*WRS Renewals NPRM and Order*).

(ii) Spectrum Leasing

389. In 2003, in order to promote more efficient use of terrestrial wireless spectrum through secondary market transactions, while also eliminating regulatory uncertainty, the Commission adopted a comprehensive set of policies and rules to govern spectrum leasing arrangements between terrestrial licensees and spectrum lessees.[598] These policies and rules enabled terrestrially-based Wireless Radio Service licensees holding "exclusive use" spectrum rights to lease some or all of these rights to third party spectrum lessees, which then would be permitted to provide wireless services consistent with the underlying license authorization.[599] For example, a licensee could enter into a leasing arrangement in which it transfers *de facto* control[600] or it could enter into a spectrum manager leasing arrangement.[601]

390. Through these actions, the Commission sought to promote more efficient, innovative, and dynamic use of the terrestrial spectrum, expand the scope of available wireless services and devices, enhance economic opportunities for accessing spectrum, and promote competition among terrestrial wireless service providers.[602] In 2004, the Commission built upon this spectrum leasing framework by establishing immediate approval procedures for certain categories of terrestrial spectrum leasing arrangements and extending the spectrum leasing policies to additional Wireless Radio Services.[603]

391. We propose that the spectrum leasing policies established in those proceedings be applied to the 600 MHz band in the same manner that those policies apply to other Part 27 services.[604] We seek comment on this proposal. Commenters should discuss the effects on competition, innovation and investment, and on extending our secondary spectrum leasing policies and rules to 600 MHz spectrum.

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[598] *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, WT Docket No. 00-230, Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 20604 (2003) (*Secondary Markets First Report and Order*), *Erratum*, 18 FCC Rcd 24817 (2003).

[599] *Secondary Markets First Report and Order*, 18 FCC Rcd at 20609-13, 20648-49, paras. 8-9, 12-13, 91-92. Wireless Radio Services do not include satellite services. 47 C.F.R. § 1.907. Under these secondary market policies and rules, the service rules and policies applicable to the licensee under its license authorization – including all technical, interference, and operational rules – apply to the spectrum lessee as well. *Secondary Markets First Report and Order*, 18 FCC Rcd at 20648-49, paras. 91-92; *see* 47 C.F.R.§§ 1.9020(c)-(d), 1.9030 (c)-(d), 1.9035(c)-(d). The rules and procedures for spectrum leasing arrangements are set forth in Part 1, Subpart X. 47 C.F.R §§ 1.9001 *et seq*.

[600] A *de facto* transfer leasing arrangement is one in which a licensee retains *de jure* control of its license while transferring *de facto* control of the leased spectrum to a spectrum lessee. *See* 47 C.F.R. §§ 1.9003, 1.9010.

[601] A licensee and a spectrum lessee may enter into a spectrum manager leasing arrangement provided that the licensee retains *de jure* control of the license and *de facto* control of the leased spectrum. *See* 47 C.F.R. §§ 1.9003, 1.9010, 1.9020.

[602] *See Secondary Markets First Report and Order*, 18 FCC Rcd at 20607, para. 2. Since 2004, the Commission has added more terrestrial services to this spectrum leasing framework. *See AWS-1 Report and Order*, *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, WT Docket Nos. 03-66, 03-67, 02-68, 00-230, MM Docket No. 97-217, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 14165, 14232-34, paras. 177-181 (2004), *2 GHz Band Co-Allocation Order*, 26 FCC Rcd at 5716-19, paras. 14-19.

[603] *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, WT Docket No. 00-230, Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking, 19 FCC Rcd 17503 (2004) (*Secondary Markets Second Report and Order*).

[604] *Id. See e.g.*, 47 C.F.R. 1.9005(j).

d. License Term, Performance Requirements, Renewal Criteria, and Permanent Discontinuance of Operations

(i) License Term

392. The Communications Act does not specify a term limit for wireless radio services licenses,[605] but the Commission has adopted 10-year license terms for most wireless licenses.[606] We propose that in the 600 MHz band the license term similarly be 10 years. We seek comment on this proposal, and other proposals by commenters, including any costs and benefits of the proposals. In addition, commenters can submit their own proposal for the appropriate license term, which should similarly include a discussion on the costs and benefits. Further, we anticipate that wireless licenses would be issued by the completion of the broadcast transition discussed above, and it is our goal to issue most wireless licenses within 6-9 months of the completion of the auctions. We invite comment on whether this time frame is a reasonable goal.

393. Under our license term proposal, if a license in these bands is partitioned or disaggregated, any partitionee or disaggregatee would be authorized to hold its license for the remainder of the partitioner's or disaggregator's original license term. This approach is similar to the partitioning provisions the Commission adopted for BRS,[607] for broadband PCS licensees,[608] for the 700 MHz band licensees,[609] and for AWS-1 licenses at 1710-1755 MHz and 2110-2155 MHz.[610] We emphasize that nothing in our proposal is intended to enable a licensee, by partitioning or disaggregating, to be able to confer greater rights than it was awarded under the terms of its license grant; nor would any partitionee or disaggregatee obtain rights in excess of those previously possessed by the underlying Commission licensee. We seek comment on these proposals, including the cost and benefits of these proposals.

(ii) Performance Requirements

394. The Commission establishes performance requirements to promote the productive use of spectrum, to encourage licensees to provide service to customers in a timely manner, and to promote the provision of innovative services in unserved areas, particularly in rural areas.[611] We propose adopting performance requirements for the 600 MHz band. Over the years, the Commission has tailored performance and construction requirements to the unique characteristics of individual spectrum blocks and the types of services expected, as well as other factors. Below, we seek comment on the type of performance requirements we should adopt for the 600 MHz band. We note that the propagation

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[605] The only statutory limit on license terms is eight years for licenses in the broadcast services. *See* 47 U.S.C. § 307(c)(1); *see also* 47 C.F.R. § 73.1020(a).

[606] *See, e.g.*, 47 C.F.R. §§ 24.15, 27.13(a).

[607] *See* Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service, MM Docket No. 94-131, PP Docket No. 93-253, *Report and Order,* 10 FCC Rcd 9589, 9614, para. 46 (1995).

[608] *See* Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Services Licensees, WT Docket No. 96-148, GN Docket No. 96-113, *Report and Order and Further Notice of Proposed Rulemaking,* 11 FCC Rcd 21831, 21870, paras. 76-77 (1996).

[609] *See* Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *First Report and Order*, 15 FCC Rcd 476, 506-08, paras.74-78 (2000); Reallocation and Service Rules for 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, *Report and Order*, 17 FCC Rcd 1022, 1079-81, paras. 152-57 (2002).

[610] *AWS-1 Report and Order*, 18 FCC Rcd at 25193-95, paras. 81-83.

[611] *See 700 MHz Second Report and Order*, 22 FCC Rcd at 15348, para. 154.

characteristics of the 600 MHz band should allow for robust coverage at a lower cost than some other comparable bands.[612] We encourage commenters to account for these and other technical characteristics as they address the topic of performance requirements.

395. We seek comment on three aspects of performance requirements: (1) what type of construction requirements we should impose (*e.g.,* a "substantial service" requirement or specific quantifiable coverage target, measured as a percentage of a population or geographic area); (2) when we should measure compliance with the requirements (*e.g.,* using interim benchmarks, an end-of-term goal, or multiple benchmarks); and (3) what sorts of penalties we should impose for licensees that fail to meet the requirements.

396. *Construction Requirements.* In the *AWS-1 Service Rules Report and Order*,[613] the Commission applied a substantial service standard for flexible use services. In the *AWS-2 Service Rules NPRM*[614] and the *AWS-4 NPRM*,[615] the Commission proposed specific measurable benchmarks. For licensees operating in the 2.3 GHz Wireless Communications Services (WCS) band[616] and in the 700 MHz band,[617] the Commission adopted specific performance requirements, which include detailed interim and final construction benchmarks (measured using either geography- or population-based targets) and reporting requirements.

397. To ensure that licensees begin providing service to consumers in a timely manner, we propose adopting specific quantifiable benchmarks as an important component of our performance requirements. We seek comment on whether we should adopt an interim benchmark (*e.g.*, at 3 or 4 years from the license issue date), an end-of-term benchmark, and/or multiple benchmarks throughout the license term. We propose to measure build-out progress according to percentage of population served within the license area. In the alternative, we seek comment on whether we should use geographic area served. We also seek comment on what percentages would be appropriate population- or geography-based targets.

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[612] *See* Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, including Commercial Mobile Services, WT Docket No. 10-133, *Fifteenth Report*, 26 FCC Rcd 9664, 9833-9837, paras. 292-297 (2011).

[613] In the *AWS-1 Service Rules Report and Order*, the Commission applied the substantial service requirement in section 27.14(a) of the Commission's rules to the 1710-1755 and 2110-2155 MHz bands. According to that provision, by the end of its license term an AWS-1 licensee must provide "'substantial service,' that is, service that is sound, favorable and substantially above the level of mediocre service that just might minimally warrant renewal." 47 C.F.R. § 27.14(a). *AWS-1 Service Rules Report and Order*, 18 FCC Rcd at 25192, para. 75. The Commission decided not to impose mid-license term performance requirements on AWS-1 licensees. *AWS-1 Service Rules Report and Order*, 18 FCC Rcd at 25192, para. 77.

[614] For example, in the *AWS-2 NPRM*, the Commission sought comment on whether licensees in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz, and 2175-2180 MHz bands should be subject to any performance requirements in addition to a substantial service requirement at license renewal. *AWS-2 NPRM*, 19 FCC Rcd at 19293-94, para. 74.

[615] *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Notice of Proposed Rulemaking and Notice of Inquiry, WT Docket No. 12-70, 27 FCC Rcd 3561, 3590-91, paras. 92-93 (2012).

[616] Licensees in the 2.3 GHz WCS band must provide service to 40 percent of the license area's population within three-and-a-half years and 75 percent within six years. *See* 47 C.F.R. § 27.14(p).

[617] The Commission adopted more stringent performance requirements for certain portions of the 700 MHz Band, including either geography- or population-based construction requirements, interim and end-of-term benchmarks and reporting requirements. *See 700 MHz Second Report and Order*, 22 FCC Rcd at 15348-15355, paras. 153-77.

398. *Penalties for Failure to Meet Construction Requirements*. Along with these benchmarks, we must have meaningful and enforceable consequences, or penalties, for failing to meet construction requirements. We seek comment on which penalties will most effectively ensure timely build-out. For example, we seek comment on whether a licensee's failure to meet an interim benchmark should result in a reduction of the overall length of the license term. We also seek comment on whether failure to meet an end-of-term benchmark should result in license cancellation, loss of authorization for the unserved portions of a license area,[618] or alternatively, a requirement to offer any unused spectrum for lease. Is the threat of license cancellation for failing to meet a benchmark more effective at promoting timely build-out than other penalties the Commission has implemented historically? Are there other penalties that would be effective in promoting timely build-out? Commenters should discuss the appropriate penalties and the attendant costs and benefits of imposing such requirements.

399. *Build-Out Approaches*. In light of the variety of service benchmarks and penalties that we discuss above, we seek comment on the most effective combination for fostering build-out of the 600 MHz spectrum, including several approaches we have adopted for other wireless broadband spectrum bands.

400. *PCS*. We seek comment on whether we should mirror the approach adopted in the broadband PCS services and subsequently adopted or proposed in other services (*e.g.*, 2.3 GHz WCS band, *AWS-4 NPRM*),which includes specific interim and final build-out requirements with licenses automatically terminating if the licensee fails to construct.[619]

401. *700 MHz*. We seek comment on whether we should adopt an approach similar to that used in the 700 MHz band. Specifically, we seek comment on whether we should adopt rules similar to those for Upper 700 MHz C-Block licensees, which require them to meet specific interim and end-of-term population-based benchmarks, and include reducing their license term for failing to meet the interim benchmark, thus requiring them to meet their end-of-term benchmark on an accelerated schedule.[620] We also seek comment on whether we should adopt a "keep-what-you-use" re-licensing mechanism, under which a licensee that fails to meet its final construction benchmark loses authorization for unserved portions of its license area, which are then returned to the Commission for reassignment.[621]

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[618] This concept, a "keep-what-you-use" re-licensing mechanism, under which a licensee that fails to meet its construction benchmark loses the unserved portion of its license area, is discussed further below.

[619] Specifically, in the 2.3 WCS band, the Commission implemented an interim build-out requirement of 3.5 years / 40% of population (per license) and a final build-out requirement of 6 years / 75% of population (per license) with automatic license termination as the penalty for failing to meet either the interim or final benchmark. *See Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band*, Report & Order and Second Report and Order, 25 FCC Rcd 11710, 11791, para. 197 (2010). Similarly, in the *AWS-4 NPRM,* the Commission proposed an interim build-out requirement of 3 years / 30% of population (nationwide / aggregate license areas) with all AWS-4 and 2 GHz MSS licenses automatically terminating if that interim requirement is not met; and a final build-out requirement of 7 years / 70% of population (in each license area) with licenses automatically terminating in each license area in which the licensee fails to construct. *AWS-4 NPRM*, 27 FCC Rcd at 3590-92, paras. 92-96.

[620] Specifically, each C-Block licensee must provide signal coverage and offer service to at least 40 percent of the population in each EA in its license area within four years and 75 percent of the population of each of these EAs at the end of the license term. *See 700 MHz Second Report and Order*, 22 FCC Rcd at 15351, para. 163-64. Although the C Block was licensed by REAG, the rules require C-Block licensees to meet these benchmarks in each EA. 47 C.F.R. § 27.6(b)(2).

[621] *See 700 MHz Second Report and Order*, 22 FCC Rcd at 15348, para. 153. *See 700 MHz Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd at 8142, para. 214.

402. *"Triggered" Keep-What-You-Use*. We also seek comment on a variation of the "keep-what-you-use" rule, which was originally proposed in the 700 MHz context.[622] Specifically, we ask whether the Commission, rather than reclaiming "unused" spectrum after a period of time, should reclaim spectrum only in the event that a third party seeks access to the licensed spectrum in an unserved portion of the license area. We seek comment on whether this triggered approach may offer a more efficient spectrum relicensing mechanism than the "keep-what-you-use" rule, because the Commission would only reclaim spectrum that a new licensee is ready to build. We further seek comment on two variations of this approach. In the first, as was proposed in 700 MHz, the achievement of a final build-out milestone would preclude third party applications for "unused" spectrum. In the second variation, and most similar to the original cellular construction rules, we would forego a final benchmark requirement, and simply allow licensees to only "keep-what-you-use" at the end of their license terms, regardless of how much of their license area they build out.

403. We also seek comment on the appropriate relicensing process under a triggered "keep-what-you-use" rule. For example, should we follow the process set forth in the 700 MHz rules?[623] If so, how should we address the variations that a "triggered keep-what-you-use" model establishes, such as what steps the Commission, or the licensee, should take to notify third parties about what "unserved" portions are available?

404. "*Use It or Lease It*." We also seek comment on whether "keep-what-you-use" approaches are an effective means to provide additional service in unserved areas, including in rural areas, or whether another approach is advisable to meet this goal. For example, we seek comment on whether, instead of taking back unused portions of a license, we should require the licensee to lease the unused spectrum. Specifically, we ask whether licensees should be required to participate in good faith negotiations with third parties expressing an interest in spectrum leasing in license areas that have not been built-out at the end of the initial term. If so, what specific good faith negotiation process should we require?[624] For all build-out approaches addressed in their comments, commenters should discuss and quantify how any supported build-out requirements will affect investment and innovation, as well as discuss and quantify other costs and benefits associated with their proposals.

405. *"Use It or Share It."* In lieu of a "use it or lease it" approach, we also seek comment on whether, following the build-out term, we should permit third parties to make use of unused spectrum on a localized basis until a licensee deploys service in those areas.[625] Specifically, for the 600 MHz

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[622] *See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT Docket Nos. 06-150, 01-309 CC Docket No. 94-102, Notice of Proposed Rulemaking, Fourth Further Notice of Proposed Rulemaking, and Second Further Notice of Proposed Rulemaking 21 FCC Rcd 9345, 9376, paras. 67-69 (2006).

[623] 47 C.F.R. § 27.14(g)(2).

[624] *See, e.g.*, Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, *Notice of Proposed Rulemaking,* WT Docket No. 07-195, 22 FCC Rcd 17035, 17083-89, paras. 111-123 (2007) (*2007 AWS NPRM*) (subsequent history omitted) (discussing at length various possible performance requirements). In the March 2011 *Native Nations Notice of Proposed Rulemaking*, the Commission discussed the potential for requiring good faith negotiations to address difficulties that Tribes have detailed in securing spectrum access from existing wireless licensees whose licenses cover Tribal Land areas. *See* Improving Communications Services for Native Nations by Promoting Greater Utilization of Spectrum Over Tribal Lands*, Notice of Proposed Rulemaking*, WT Docket No. 11-40, 26 FCC Rcd 2623, 2637-40, paras. 41-52 (2011) (also stating that the approaches in the NPRM were crafted to address the unique circumstances of underserved Tribal lands).

[625] *See* Letter from Michael Calabrese, PISC, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 04-186, WT Dockets No. 12-70, 12-69, 10-4 (filed August 20, 2012) at 3. We note that PISC proposes to apply the "use it or share it" approach to the AWS-4 spectrum, which has a different set of circumstances because of the existing satellite service in the band. Further, PISC suggests a "use it or share it" approach throughout the license term (continued….)

spectrum, we seek comment on whether a "use it or share it" approach is feasible in areas where a licensee has failed to deploy service by the end of its build-out term. If we do adopt this approach, how should we permit third parties to gain access to unused spectrum? For example, should we allow unlicensed use of such spectrum through the white spaces database systems? [626] What other processes should we consider?

406. *Other Approaches*. We also seek comment on any other construction models that might be appropriate to the 600 MHz context, including approaches used successfully in other spectrum bands.

407. *Compliance Procedures*. Assuming that we adopt interim and end-of-term construction benchmarks, we propose requiring licensees to demonstrate compliance with these performance requirements. We note that 600 MHz licensees would be subject to our generally applicable rules specifying that licensees file a construction notification within 15 days of the relevant benchmark certifying that they have met the applicable performance benchmark.[627] Consistent with the 700 MHz rules, we propose that if a licensee has not met our performance requirements, the licensee must file a description and certification for the areas for which they are providing service.[628] If we adopt a triggered "keep-what-you-use" relicensing mechanism or another mechanism that requires licensees to make unserved areas available to third parties (such as "use it or lease it"), we seek comment on whether additional filing requirements are necessary.[629] We believe that transparency is integral to the success of these approaches, and ask commenters to discuss what specific information we should require licensees to provide to ensure that third parties can determine what spectrum is available.

408. *Renewal*. We seek comment on how our approach to performance requirements can work effectively with our separate renewal criteria standard for 600 MHz licenses. While the distinctions between performance requirements and renewal standards are discussed in detail below, we seek comment on the costs and benefits of requiring separate filings to prove compliance with separate performance requirement and renewal standards. Further, if the Commission adopts a triggered "keep-what-you-use" or "use it or lease it" approach, how should we evaluate a licensee's renewal application where a licensee has not met our build-out requirements but is otherwise required to make unused spectrum available to third parties?[630]

(Continued from previous page)
whereas our discussion above for the 600 MHz spectrum contemplates applying "use it or share it" only after the licensee's build-out term has concluded.

[626] *See id.*

[627] See 47 C.F.R. § 1.946(d).

[628] *See 700 MHz Second Report and Order*, 22 FCC Rcd at 15352, para. 166. *See* 47 C.F.R. § 1.946(d).

[629] For example, we seek comment on the best way to alert third parties seeking access to unused spectrum that a licensee has built into a previously unserved area. Should filing of or acceptance of an updated construction notification be a prerequisite for protecting subsequently-built portions of a license from third-party applications?

[630] We note that a licensee that meets its interim and end-of-term build-out requirements is not guaranteed of receiving its license renewal. Performance requirements and renewal criteria are two different sets of standards.

(iii) Renewal Criteria

409. Pursuant to section 308(b) of the Communications Act, the Commission may require renewal applicants to "set forth such facts as the Commission by regulation may prescribe as to the citizenship, character, and financial, technical, and other qualifications of the applicant to operate the station" as well as "such other information as it may require."[631] We note that 600 MHz licensees would be subject to our generally applicable rules regarding renewal filings.[632] We propose to adopt service-specific 600 MHz license renewal requirements consistent with those adopted in the *700 MHz First Report and Order* and which form the basis of the renewal paradigm proposed in the *WRS Renewal NPRM and Order*.[633]

410. We emphasize that, as the Commission made clear in both of these items, a licensee's performance showing and its renewal showing are two distinct showings.[634] Broadly speaking, a performance showing provides a snapshot in time of the level of a licensee's service. By contrast, a renewal showing provides information regarding the level and types of the licensee's service offered over its entire license term. We propose that applicants for renewal of 600 MHz licenses file a "renewal showing," in which they demonstrate that they have and are continuing to provide service to the public, and are compliant with the Commission's rules and policies and [with] the Communications Act.[635] In the *700 MHz First Report and Order,* the Commission explained that, in the renewal context, the Commission considers "a variety of factors including the level and quality of service, whether service was ever interrupted or discontinued, whether service has been provided to rural areas, and any other factors associated with a licensee's level of service to the public."[636] The *WRS Renewals NPRM and Order* also proposed to consider the extent to which service is provided to qualifying tribal lands.[637] We propose that these same factors should be considered when evaluating renewal showings for the 600 MHz band and seek comment on this approach. Commenters should discuss and quantify the costs and benefits of this approach on competition, innovation, and investment.

411. To further encourage licensees to comply with their performance obligations, we propose awarding renewal expectancies to 600 MHz licensees that meet their performance obligations, and have otherwise complied with the Commission's rules and policies and the Communications Act during their license term.[638] We seek comment on the above proposal and on whether 600 MHz licensees should obtain a renewal expectancy for subsequent license terms, if they continue to provide at least the level of service demonstrated at the final performance benchmark through the end of any subsequent license

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[631] 47 U.S.C. § 308(b). We note that the Spectrum Act specifically provides that the Commission can adopt citizenship, character, financial, and technical qualifications pursuant to its statutory authority under Section 308(b) of the Communications Act. Spectrum Act § 6404.

[632] See 47 C.F.R. § 1.949.

[633] *See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT Docket Nos. 06-150, 01-309, 03-264, 06-169, 96-86, CC Docket No. 94-102, PS Docket No. 06-229, Report and Order and Further Notice of Proposed Rulemaking 22 FCC Rcd 8064, 8093-94, paras. 75-77 (2007) (*700 MHz First Report and Order*); *WRS Renewals NPRM and Order,* 25 FCC Rcd at 6997-98, 7002-09, paras. 2, 16-32.

[634] *See 700 MHz First Report and Order*, 22 FCC Rcd at 8093, para. 75; *WRS Renewals NPRM and Order*, 25 FCC Rcd at 6997-98, 7004-11, paras. 2, 21-35.

[635] *See WRS Renewals NPRM and Order*, 25 FCC Rcd at 6997-98, 7002-09, paras. 2, 16-32.

[636] *700 MHz First Report and Order*, 22 FCC Rcd at 8093, para. 75.

[637] *WRS Renewals NPRM and Order*, 25 FCC Rcd at 7044 App. A (proposed rule 1.949(c)(4)).

[638] Although we are not proposing specific performance requirements at this time, the renewal expectancy would be based on meeting the performance requirements that are ultimately adopted. *See* Section X.C.2.d(ii) (Performance).

terms. In addition, we seek comment on how a licensee's failure to meet its performance requirements should affect its ability to renew its license. Commenters should discuss and quantify the costs and benefits of each approach on competition, innovation, and investment.

412. Finally, consistent with the *700 MHz First Report and Order* and the *WRS Renewals NPRM and Order*, we propose to prohibit the filing of mutually exclusive applications at the time of renewal,[639] and that if a license is not renewed, the associated spectrum would be returned to the Commission for reassignment.[640] We seek comment on these proposals, including the costs and benefits of these proposals.

(iv) Permanent Discontinuance of Operations

413. We also request comment on whether to apply to licensees in the 600 MHz band the Commission's rules governing the permanent discontinuance of operations, which are intended to afford licensees operational flexibility to use their spectrum efficiently while ensuring that spectrum does not lay idle for extended periods.[641] Under section 1.955(a)(3), an authorization will automatically terminate, without specific Commission action, if service is "permanently discontinued."[642] For the 600 MHz band, we propose to define "permanently discontinued" as a period of 180 consecutive days during which a licensee does not operate and does not serve at least one subscriber that is not affiliated with, controlled by, or related to the provider. We believe this definition strikes an appropriate balance between our twin goals of providing licensees operational flexibility while ensuring that spectrum does not lie fallow. Licensees would not be subject to this requirement until the date of the first performance requirement benchmark so they will have adequate time to comply. In addition, consistent with section 1.955(a)(3) of the Commission's rules, we propose that, if a 600 MHz licensee permanently discontinues service, the licensee must notify the Commission of the discontinuance within 10 days by filing FCC Form 601 or 605 and requesting license cancellation. An authorization will automatically terminate without specific Commission action if service is permanently discontinued even if a licensee fails to file the required form.

e. Other Operating Requirements

414. Even though licenses in the 600 MHz band may be issued pursuant to one rule part, licensees in this band may be required to comply with rules contained in other parts of the Commission's rules, depending on the particular services they provide. For example:

- Applicants and licensees would be subject to the application filing procedures for the Universal Licensing System, set forth in Part 1 of our rules.[643]
- Licensees would be required to comply with the practices and procedures listed in Part 1 of our rules for license applications, adjudicatory proceedings, etc.
- Licensees would be required to comply with the Commission's environmental provisions, including section 1.1307. [644]

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[639] *WRS Renewals NPRM and Order,* 25 FCC Rcd at 6998, 7012-13, paras. 3, 40-42; *700 MHz First Report and Order*, 22 FCC Rcd at 8093-8094, paras.76-77.

[640] *WRS Renewals NPRM and Order,* 25 FCC Rcd at 6998, 7013-14, paras. 3, 43-44; *700 MHz First Report and Order*, 22 FCC Rcd at 8093, para.76.

[641] *See WRS Renewals NPRM and Order,* 25 FCC Rcd at 7017, para.49-50.

[642] 47 C.F.R. § 1.955(a)(3).

[643] *See* 47 C.F.R. Part 1, Subpart F.

[644] 47 C.F.R. § 1.1307.

- Licensees would be required to comply with the antenna structure provisions of Part 17 of our rules.
- To the extent a licensee provides a Commercial Mobile Radio Service, such service would be subject to the provisions of Part 20 of the Commission's rules, including 911/E911 and hearing aid-compatibility (HAC) requirements, along with the provisions in the rule part under which the license was issued.[645] Part 20 applies to all CMRS providers, even though the stations may be licensed under other parts of our rules.[646]
- To the extent a licensee provides interconnected VoIP services, the licensee would be subject to the E911 service requirements set forth in Part 9 of our rules.[647]
- The application of general provisions of Parts 22, 24, 27, or 101 would include rules related to equal employment opportunity, *etc*.

415. We seek comment on whether we need to modify any of these rules to ensure that 600 MHz licensees are covered under the necessary provisions. We seek comment on applying these rules to the 600 MHz spectrum and specifically on any rules that would be affected by our proposal to apply elements of the framework of these parts, whether separately or in conjunction with other requirements.

XI. PROCEDURAL MATTERS

A. *Ex Parte* Presentations

416. *Requests for Ex Parte Meetings*. All requests for meetings with Commission staff regarding this Docket should be made on-line, using the link at http://www.fcc.gov/incentiveauctions. Those who lack Internet access may direct their requests to Amaryllis Flores, Office of Strategic Planning and Policy Analysis, (202) 418-7115.

417. The proceeding this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[648] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt,

[645] 47 C.F.R. Part 20; *see also* 47 C.F.R. § 27.3(g).

[646] *See, e.g.*, Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, *Second Report and Order*, 22 FCC Rcd 15289, 15478-79, paras. 550-53 (2007).

[647] 47 C.F.R. Part 9.

[648] 47 C.F.R. §§ 1.1200 *et seq.*

searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

B. Comment Period and Filing Procedures

418. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. All filings related to this Notice of Proposed Rulemaking should refer to Docket No. 12-268. Further, we strongly encourage parties to develop responses to this Notice that adhere to the organization and structure of this Notice. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: http://fjallfoss.fcc.gov/ecfs2/.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

419. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

420. People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

C. Initial Regulatory Flexibility Analysis

421. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the proposals suggested in this document. The IRFA is set forth in Appendix B.

D. Paperwork Reduction Act Analysis

422. This document contains proposed new or modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

E. Further Information

423. For further information about this Notice, please contact Jennifer Manner at (202) 418-3619, Jennifer.Manner@fcc.gov.

XII. ORDERING CLAUSES

424. IT IS ORDERED that pursuant to sections 1, 4, 301, 303, 307, 308, 309, 310, 316, 319, 332 and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154, 301, 303, 307, 308, 309, 310, 316, 319, 332, and 403, and sections 6004, 6402, 6403, 6404, and 6407 of Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §§ 6004, 6402, 6403, 6404, and 6407, 125 Stat. 156 (2012), this *Notice of Proposed Rule Making* IS ADOPTED.

425. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Notice of Proposed Rule Making,* including the Initial Regulatory Flexibility Analysis to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR parts 1, 27, and 73 as follows:

PART 1—PRACTICE AND PROCEDURE

1. The authority citation for part 1 is revised to read as follows:

Authority: 15 U.S.C. 79 *et seq.*; 47 U.S.C. 151, 154(i), 154(j), 155, 157, 225, 227, 303(r) and 309; Secs. 6004, 6403, Pub. L. 112-96, 125 Stat. 156.

2. Section 1.949 is amended by adding paragraph (c) to read as follows:

§ 1.949 Application for renewal of license.

*****

(c) Renewal Showing. An applicant for renewal of a geographic-area authorization in the 600 MHz band must make a renewal showing, independent of its performance requirements, as a condition of renewal. The showing must include a detailed description of the applicant's provision of service during the entire license period and address:

(1) The level and quality of service provided by the applicant (e.g., the population served, the area served, the number of subscribers, the services offered);

(2) The date service commenced, whether service was ever interrupted, and the duration of any interruption or outage;

(3) The extent to which service is provided to rural areas;

(4) The extent to which service is provided to qualifying tribal land as defined in § 1.2110(f)(3)(i); and

(5) Any other factors associated with the level of service to the public.

3. Section 1.9005 is amended by adding paragraph (kk) to read as follows:

§ 1.9005 Included Services.

*****

(kk) The 600 MHz band (part 27 of this chapter).

§1.2102 [Amended]

4. Section 1.2102 is amended by removing paragraph (c).

5. Section 1.2103 is revised to read as follows:

§ 1.2103 Competitive bidding design options.

(a) Public Notice of Competitive Bidding Design Options. Prior to any competitive bidding conducted by the Commission, public notice shall be provided of the detailed procedures that may be used to implement auction design options.

(b) Competitive Bidding Design Options. The public notice detailing competitive bidding procedures may establish procedures for collecting bids, assigning winning bids, and determining payments, including without limitation:

(1) Procedures for Collecting Bids. (i) Procedures for collecting bids in a single round or in multiple rounds.

(ii) Procedures allowing for bids that specify a price, indicate demand at a specified price, or provide other information as specified by the Commission.

(iii) Procedures allowing for bids for specific items or bids for a number of generic items in one or more categories of items.

(iv) Procedures allowing for bids that specify a bidder's willingness to accept a price only in the event that other bids are also accepted or other conditions are met, such as for packages of licenses or contiguous licenses.

(v) Procedures to collect bids in any needed additional stage or stages following an initial single or multiple round auction, such as an assignment stage for generic items.

(2) Procedures for Assigning Winning Bids. (i) Procedures that take into account one or more factors identified by the Commission in addition to the submitted bid amount, including but not limited to the amount of bids submitted in separate competitive bidding conducted by the Commission.

(ii) Procedures to incorporate public interest considerations into the process for assigning winning bids.

(3) Procedures for Determining Payments. (i) Procedures to determine the amount of any payments made

to or by winning bidders consistent with other auction design choices.

(ii) Procedures that provide for payments based on the amount as bid or on the bid amount that would have been assigned winning status.

6. Section 1.2104 is amended by revising paragraph (e) to read as follows:

§ 1.2104 Competitive bidding mechanisms.

* * * * *

(e) Stopping Rules. The Commission may establish stopping rules before or during multiple round auctions in order to terminate the auctions within a reasonable time and in accordance with the goals, statutory requirements, and rules for the auctions, including the reserve price or prices.

* * * * *

7. Section 1.2105 is amended by adding paragraph (a)(2)(xii) to read as follows:

§ 1.2105 Bidding application and certification procedures; prohibition of certain communications.

(a) * * *

(2) * * *

(xii) For auctions required to be conducted under Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 (Pub. L. No. 112-96) or in which any spectrum usage rights for which licenses are being assigned were made available under 47 U.S.C. 309(j)(8)(G)(i), the Commission may require certification under penalty of perjury that the applicant and all of the person(s) disclosed under paragraph (a)(2)(ii) of this section are not person(s) who have been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant. For the purposes of this certification, the term "person" means an individual, partnership, association, joint-stock company, trust, or corporation, and the term "reasons of national security" means matters relating to the national defense and foreign relations of the United States.

* * * * *

8. Subpart BB is added to part 1 to read as follows:

Subpart BB—Competitive Bidding—Broadcast Television Spectrum Reverse Auction

Sec.

§ 1.22000 Definitions.

For purposes of this subpart:

(1) Broadcast Television Licensee. The term broadcast television licensee means the licensee of (A) a full-power television station; or (B) a low-power television station that has been accorded primary status as a Class A television licensee under § 73.6001(a) of this chapter.

(2) Forward Auction. The term forward auction means the portion of an incentive auction of broadcast television spectrum described in section 6403(c) of the Spectrum Act.

(3) Relinquishment Bid. The term relinquishment bid means a bid to relinquish some or all of a broadcast television licensee's broadcast television spectrum usage rights. Relinquishment bids include a bid to relinquish all usage rights with respect to a particular television channel without receiving in return any usage rights with respect to another television channel; a bid to relinquish all usage rights with respect to an ultra high frequency television channel in return for receiving usage rights with respect to a very high frequency television channel; a bid to relinquish usage rights in order to share a television channel with another licensee; and any other relinquishment bids permitted by the Commission.

(4) Reverse Auction. The term reverse auction means the portion of an incentive auction of broadcast television spectrum described in section 6403(a) of the Spectrum Act.

(5) Spectrum Act. The term Spectrum Act means Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 (Pub. L. No. 112-96).

§ 1.22001 Purpose.

The provisions of this subpart implement section 6403 of the Spectrum Act, which requires the Commission to conduct a reverse auction to determine the amount of compensation that each broadcast television licensee would accept in return for voluntarily relinquishing some or all of its broadcast television spectrum usage rights in order to make spectrum available for assignment through a system of competitive bidding under Subparagraph (G) of section 309(j)(8) of the Communications Act of 1934, as added by section 6402 of the Spectrum Act.

§ 1.22002 Competitive bidding design options.

(a) Public Notice of Competitive Bidding Design Options. Prior to conducting competitive bidding in the reverse auction, public notice shall be provided of the detailed procedures that may be used to implement auction design options.

(b) Competitive Bidding Design Options. The public notice detailing competitive bidding procedures for the reverse auction may establish procedures for collecting bids, assigning winning bids, and determining payments, including without limitation:

(1) Procedures for Collecting Bids. (i) Procedures for collecting bids in a single round or in multiple rounds.

(ii) Procedures for collecting bids for multiple relinquishment options.

(iii) Procedures allowing for bids that specify a price for a relinquishment option, indicate demand at a specified price, or provide other information as specified by the Commission.

(iv) Procedures allowing for bids that are contingent on specified conditions, such as other bids being accepted.

(v) Procedures to collect bids in an additional stage or stages, if needed, following an initial single or multiple round auction.

(2) Procedures for Assigning Winning Bids. (i) Procedures for scoring bids by factors in addition to bid

amount, such as population coverage or geographic contour, or other relevant measurable factors.

(ii) Procedures to evaluate the technical feasibility of assigning a winning bid.

(A) Procedures that utilize mathematical computer optimization software, such as integer programming, to evaluate bids and technical feasibility, or that utilize other decision routines, such as sequentially evaluating bids based on a ranking of scored bids.

(B) Procedures that combine computer optimization algorithms with other decision routines.

(iii) Procedures to incorporate public interest considerations into the process for assigning winning bids.

(3) Procedures for Determining Payments. (i) Procedures to determine the amount of any incentive payments made to winning bidders consistent with other auction design choices.

(ii) Procedures that provide for incentive payments based on the amount as bid or on the highest bid amount that would have been assigned winning status.

§ 1.22003 Competitive bidding mechanisms.

(a) Public Notice of Competitive Bidding Procedures. Detailed competitive bidding procedures shall be established by public notice prior to the commencement of the reverse auction.

(b) Sequencing. The Commission will establish the sequencing with which the reverse auction and the related forward auction assigning new spectrum licenses will occur.

(c) Reserve Price. The Commission may establish reserve prices, either disclosed or undisclosed, above which relinquishment bids for various bidding options would not win in the reverse auction. The reserve prices may apply individually, in combination, or in the aggregate.

(d) Opening Bids and Bid Increments. The Commission may, by announcement before or during the reverse auction, require maximum or minimum bid increments in dollar or percentage terms. The Commission also may establish maximum or minimum opening bids.

(e) Stopping Rules. The Commission may establish stopping rules before or during the reverse auction in order to terminate the auction within a reasonable time and in accordance with the goals, statutory requirements, and rules for the auction, including the reserve price or prices.

(f) Activity Rules. The Commission may establish activity rules which require a minimum amount of

bidding activity.

(g) Auction Delay, Suspension, or Cancellation. By public notice or by announcement during the reverse auction, the Commission may delay, suspend, or cancel the auction in the event of a natural disaster, technical obstacle, network disruption, evidence of an auction security breach or unlawful bidding activity, administrative or weather necessity, or for any other reason that affects the fair and efficient conduct of the competitive bidding. The Commission also has the authority, at its sole discretion, to resume the competitive bidding starting from the beginning of the current or some previous round or cancel the competitive bidding in its entirety.

§ 1.22004 Applications to participate in competitive bidding.

(a) Public Notice of the Application Process. All applications to participate must be filed electronically. The dates and procedures for submitting applications to participate in the reverse auction shall be announced by public notice.

(b) Applicant. The applicant identified on the application to participate must be the broadcast television licensee that would relinquish spectrum usage rights if it places a winning bid.

(c) Information and Certifications Provided in the Application to Participate. The Commission may require an applicant to provide the following information in its application to participate in the reverse auction:

(1) The following identifying information:

(i) If the applicant is an individual, the applicant's name and address. If the applicant is a corporation, the name and address of the corporate office and the name and title of an officer or director. If the applicant is a partnership, the name, citizenship, and address of all general partners, and, if a general partner is not a natural person, then the name and title of a responsible person for that partner, as well. If the applicant is a trust, the name and address of the trustee. If the applicant is none of the above, it must identify and describe itself and its principals or other responsible persons;

(ii) Applicant ownership and other information as set forth in section 1.2112(a) of this title; and

(iii) For NCE stations, information regarding the applicant's governing board and any educational

institution or governmental entity with a controlling interest in the station, if applicable.

(2) The identity of the person(s) authorized to take binding action in the bidding on behalf of the applicant.

(3) For each broadcast television license for which the applicant intends to submit relinquishment bids:

(i) The identity of the station and the television channel;

(ii) Whether it is a full-power or Class A television station;

(iii) If the license is for a Class A television station, certification that it is and will remain in compliance with the ongoing statutory eligibility requirements to remain a Class A station;

(iv) Whether it is an NCE station, and if so, whether it operates on a reserved or non-reserved channel;

(v) The types of relinquishment bids that the applicant may submit; and

(vi) Any additional information required to assess the spectrum usage rights offered.

(4) For each broadcast television license for which the applicant intends to submit a bid to relinquish usage rights in order to share a television channel with another licensee:

(i) The identity of the television channel that the applicant has agreed to share with another licensee;

(ii) Any information regarding the channel sharing agreement required by the Commission;

(iii) Certification that the channel sharing agreement is consistent with all Commission rules and policies, and that the applicant accepts any risk that the implementation of the channel sharing agreement may not be feasible for any reason, including any conflict with requirements for operation on the shared channel; and

(iv) Certification that its shared channel facilities will continue to provide minimum coverage to its principal community of license as set forth in the Commission's rules.

(5) Certification under penalty of perjury that the applicant and all of the person(s) disclosed under paragraph (c)(1) of this section are not person(s) who have been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant. For the purposes of this certification, the term "person" means an individual, partnership, association, joint-stock company, trust, or corporation, and the term "reasons of national

security" means matters relating to the national defense and foreign relations of the United States.

(6) An exhibit, certified as truthful under penalty of perjury, identifying all parties with whom the applicant has entered into partnerships, joint ventures, consortia, or other agreements, arrangements, or understandings of any kind relating to the spectrum usage rights being auctioned, including any such agreements relating to the post-auction market structure.

(7) Certification under penalty of perjury that the applicant has not entered and will not enter into any explicit or implicit agreements, arrangements, or understandings of any kind with any parties other than those identified pursuant to paragraph (c)(6) of this section regarding the amount of their bids, bidding strategies, or the particular relinquishment bids that they will or will not submit.

(8) An exhibit identifying all current delinquencies on any non-tax debt owed to any Federal agency.

(9) Certification that the applicant agrees that it has sole responsibility for investigating and evaluating all technical and marketplace factors that may have a bearing on the bids it submits in the reverse auction.

(10) Certification that the applicant agrees that the bids it submits in the reverse auction are irrevocable, binding offers by the applicant.

(11) Certification that the individual submitting the application to participate and providing the certifications is authorized to do so on behalf of the applicant, and if such individual is not an officer, director, board member, or controlling interest holder of the applicant, evidence that such individual has the authority to bind the applicant.

(12) Certification that the applicant is in compliance with all statutory and regulatory requirements for participation in the reverse auction, including any requirements with respect to the license(s) identified in the application to participate.

(13) Such additional information as the Commission may require.

(d) Application Processing. (1) Any timely submitted application to participate will be reviewed by Commission staff for completeness and compliance with the Commission's rules. No untimely applications to participate shall be reviewed or considered.

(2) Any application to participate that does not contain all of the certifications required pursuant to this

section is unacceptable for filing, cannot be corrected subsequent to the application filing deadline, and will be dismissed with prejudice.

(3) The Commission will provide bidders a limited opportunity to cure specified defects and to resubmit a corrected application to participate. During the resubmission period for curing defects, an application to participate may be amended or modified to cure defects identified by the Commission or to make minor amendments or modifications. After the resubmission period has ended, an application to participate may be amended or modified to make minor changes or correct minor errors in the application to participate. Minor amendments may be subject to a deadline specified by public notice. Major amendments cannot be made to an application to participate after the initial filing deadline. Major amendments include, but are not limited to, changes in ownership of the applicant that would constitute an assignment or transfer of control, changes to any of the required certifications, and the addition or removal of licenses identified on the application to participate for which the applicant intends to submit relinquishment bids. Minor amendments include any changes that are not major, such as correcting typographical errors and supplying or correcting information requested by the Commission to support the certifications made in the application.

(4) Applicants who fail to correct defects in their applications to participate in a timely manner as specified by public notice will have their applications to participate dismissed with no opportunity for resubmission.

(5) Applicants shall have a continuing obligation to make any amendments or modifications that are necessary to maintain the accuracy and completeness of information furnished in pending applications to participate. Such amendments or modifications shall be made as promptly as possible, and in no case more than five business days after applicants become aware of the need to make any amendment or modification, or five business days after the reportable event occurs, whichever is later. An applicant's obligation to make such amendments or modifications to a pending application to participate continues until they are made.

(e) Notice to Qualified and Non-Qualified Applicants. The Commission will notify each applicant as to

whether it is qualified or not qualified to participate in the reverse auction.

§ 1.22005 Prohibition of certain communications.

(a) Definition of Applicant. For purposes of this section, the term "applicant" shall include the entity submitting an application to participate in the reverse auction, all controlling interests in the entity submitting the application to participate, as well as all holders of partnership and other ownership interests and any stock interest amounting to ten percent or more of the entity, or outstanding stock, or outstanding voting stock of the entity submitting the application to participate, and all officers and directors of that entity. For NCEs, the term "applicant" shall also include all members of the licensee's governing board.

(b) Certain Communications Prohibited. After the deadline for submitting applications to participate in the reverse auction, an applicant is prohibited from cooperating or collaborating with any other applicant with respect to its own, or one another's, or any other applicant's bids or bidding strategies, and is prohibited from communicating with any other applicant directly or indirectly in any manner the substance of its own, or one another's, or any other applicant's bids or bidding strategies, until a date specified by public notice.

(c) Duty to Report Potentially Prohibited Communications. An applicant that makes or receives a communication that may be prohibited under paragraph (b) of this section shall report such communication in writing to Commission staff immediately, and in any case no later than five business days after the communication occurs. An applicant's obligation to make such a report continues until the report has been made.

(d) Procedures for Reporting Potentially Prohibited Communications. Particular procedures for parties to report communications that may be prohibited under paragraph (b) of this section may be established by public notice. If no such procedures are established by public notice, the party making the report shall do so in writing to the Chief of the Auctions and Spectrum Access Division, Wireless Telecommunications Bureau, by the most expeditious means available, including electronic transmission such as email.

§ 1.22006 Confidentiality of Commission-held data.

The Commission will take all reasonable steps necessary to protect the confidentiality of Commission-held data of a broadcast television licensee participating in the reverse auction, including withholding the identity of such licensee, until the reassignments and reallocations (if any) under section 6403(b)(1)(B) of the Spectrum Act become effective.

§ 1.22007 Two competing participants required.

The Commission may not enter into an agreement for a broadcast television licensee to relinquish broadcast television spectrum usage rights in exchange for a share of the proceeds from the related forward auction assigning new spectrum licenses unless at least two competing broadcast television licensees participate in the reverse auction.

§ 1.22008 Public notice of auction completion and auction results.

Public notice shall be provided when the reverse auction is complete and when the forward auction is complete. Public notice shall be provided of the results of the reverse auction, forward auction, and repacking, and shall indicate that the reassignments of television channels and reallocations of broadcast television spectrum are effective.

§ 1.22009 Binding obligations.

A bidder in the reverse auction assumes an irrevocable, binding obligation to relinquish its spectrum usage rights upon placing a winning bid. Winning bidders will relinquish the spectrum usage rights associated with any winning bids by a date specified by public notice.

§ 1.22010 Disbursement of incentive payments.

A winning bidder shall submit to the Commission the necessary financial information to facilitate the disbursement of the winning bidder's incentive payment. Specific procedures for submitting financial information, including applicable deadlines, will be set out by public notice.

PART 27—MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

9. The authority citation for part 27 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 332, 336, and 337 unless otherwise noted.

10. Section 27.1 is amended by adding paragraph (b)(10) to read as follows:

§ 27.1 Basis and purpose.

*****

(b) ***

(10) Spectrum in the 470-698 MHz UHF band that has been reallocated and redesignated for flexible fixed and mobile use pursuant to Section 6403 of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 125 Stat. 156.

*****

11. Section 27.4 is amended by adding a paragraph titled "600 MHz service" to read as follows:

§ 27.4 Terms and definitions.

600 MHz service. A radiocommunication service licensed pursuant to this part for the frequency bands specified in § 27.5(j).

*****

12. Section 27.5 is amended by adding paragraph (j) to read as follows:

§ 27.5 Frequencies.

*****

(j) 600 MHz band. In accordance with the terms and conditions established in Docket No. 12-268, pursuant to Section 6403 of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 125 Stat. 156, the following frequencies are available for licensing pursuant to this part in the 600 MHz band:

(1) [**XX]** channel blocks of 5 megahertz each are available for assignment for uplink communications (hereinafter the 600 MHz uplink band).

(2) [**XX]** channel blocks of 5 megahertz each are available for assignment for downlink communications (hereinafter the 600 MHz downlink band).

Note to paragraph (j): The specific frequencies and number of channel blocks will be determined in light of further proceedings pursuant to Docket No. 12-268 and the rule will be updated accordingly.

13. Section 27.6 is amended by adding paragraph (i) to read as follows:

§ 27.6 Service areas.

*****

(i) 600 MHz band. Service areas for the 600 MHz band prescribed in Section 27.5 are based on Economic Areas (EAs) as defined in paragraph (a) of this section.

14. Section 27.11 is amended by adding paragraph (j) to read as follows:

§ 27.11 Initial authorization.

*****

(j) 600 MHz band. Initial authorizations for the 600 MHz band shall be for 5 megahertz of spectrum in accordance with §27.5(j). Authorizations will be based on Economic Areas (EAs), as specified in §27.6(a).

15. Section 27.13 is amended by adding paragraph (i) to read as follows:

§ 27.13 License period.

*****

(i) 600 MHz band. Authorizations for the 600 MHz band will have a term not to exceed ten years from the date of issuance or renewal.

16. Section 27.14 is amended by revising the first sentence of paragraph (f) to read as follows:

§ 27.14 Construction requirements; Criteria for renewal.

*****

(f) Comparative renewal proceedings do not apply to WCS licensees holding authorizations for the 600 MHz, 698–746 MHz, 747–762 MHz, and 777–792 MHz bands. ***

*****

17. Section 27.15 is amended by revising paragraph (d)(1)(i); adding paragraph (d)(1)(iii); revising paragraph (d)(2)(i), and adding paragraph (d)(2)(iii) to read as follows:

§ 27.15 Geographic partitioning and spectrum disaggregation.

*****

(d) ***

(1) ***

(i) Except for WCS licensees holding authorizations for the 600 MHz band, Block A in the 698–704 MHz and 728–734 MHz bands, Block B in the 704–710 MHz and 734–740 MHz bands, Block E in the 722–728 MHz band, Blocks C, C1, or C2 in the 746–757 MHz and 776–787 MHz bands, or Block D in the 758–763 MHz and 788–793 MHz bands, the following rules apply to WCS and AWS licensees holding authorizations for purposes of implementing the construction requirements set forth in §27.14. Parties to partitioning agreements have two options for satisfying the construction requirements set forth in §27.14. Under the first option, the partitioner and partitionee each certifies that it will independently satisfy the substantial service requirement for its respective partitioned area. If a licensee subsequently fails to meet its substantial service requirement, its license will be subject to automatic cancellation without further Commission action. Under the section option, the partitioner certifies that it has met or will meet the substantial service requirement for the entire, pre-partitioned geographic service area. If the partitioner subsequently fails to meet its substantial service requirement, only its license will be subject to automatic cancellation without further Commission action.

*****

(iii) For licensees in the 600 MHz band, the following rules apply for purposes of implementing the construction requirements set forth in §27.14. Each party to a geographic partitioning must individually meet any service-specific performance requirements (i.e., construction and operation requirements).

(2) ***

(i) Except for WCS licensees holding authorizations for the 600 MHz band, Block A in the 698–704 MHz and 728–734 MHz bands, Block B in the 704–710 MHz and 734–740 MHz bands, Block E in the 722–

728 MHz band, Blocks C, C1, or C2 in the 746–757 MHz and 776–787 MHz bands, or Block D in the 758–763 MHz and 788–793 MHz bands, the following rules apply to WCS and AWS licensees holding authorizations for purposes of implementing the construction requirements set forth in §27.14. Parties to disaggregation agreements have two options for satisfying the construction requirements set forth in §27.14. Under the first option, the disaggregator and disaggregatee each certifies that it will share responsibility for meeting the substantial service requirement for the geographic service area. If the parties choose this option and either party subsequently fails to satisfy its substantial service responsibility, both parties' licenses will be subject to forfeiture without further Commission action. Under the second option, both parties certify either that the disaggregator or the disaggregatee will meet the substantial service requirement for the geographic service area. If the parties choose this option, and the party responsible subsequently fails to meet the substantial service requirement, only that party's license will be subject to forfeiture without further Commission action.

*****

(iii) For licensees holding authorizations in the 600 MHz band, the following rules apply for purposes of implementing the construction requirements set forth in §27.14. Each party to a spectrum disaggregation must individually meet any service-specific performance requirements (i.e., construction and operation requirements).

18. Section 27.17 is added to read as follows:

§ 27.17 Discontinuance of service in the 600 MHz band.

(a) Termination of Authorization. A licensee's authorization in the 600 MHz band will automatically terminate, without specific Commission action, if it permanently discontinues service after meeting the interim buildout requirements.

(b) Permanent discontinuance of service is defined as 180 consecutive days during which a 600 MHz licensee does not operate or, in the case of a commercial mobile radio service provider, does not provide service to at least one subscriber that is not affiliated with, controlled by, or related to the providing carrier.

(c) Filing Requirements. A licensee of the 600 MHz band that permanently discontinues service as defined in this section must notify the Commission of the discontinuance within 10 days by filing FCC Form 601 or 605 requesting license cancellation. An authorization will automatically terminate, without specific Commission action, if service is permanently discontinued as defined in this section, even if a licensee fails to file the required form requesting license cancellation.

19. Section 27.50 is amended by revising paragraphs (c) introductory text, (c)(5), (c) (9), (c) (10), and the heading to Tables 1 through 4 to read as follows:

§ 27.50 Power limits and duty cycle.

*****

(c) The following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band and the 600 MHz downlink band:

***

(5) Licensees, except for licensees operating in the 600 MHz downlink band, seeking to operate a fixed or base station located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal at an ERP greater than 1000 watts must:

*****

(9) Control and mobile stations are limited to 30 watts ERP in the 698–746 MHz band and 3 watts ERP in the 600 MHz uplink band but are precluded in the 600 MHz downlink band;

(10) Portable stations (hand-held devices) are limited to 3 watts ERP in the 698–746 MHz band and the 600 MHz uplink band but are precluded in the 600 MHz downlink band; and

*****

Table 1 to §27.50—Permissible Power and Antenna Heights for Base and Fixed Stations in the 757–758 and 775–776 MHz Bands and for Base and Fixed Stations in the 600 MHz, 698–757 MHz, 758–763 MHz, 776–787 MHz and 788–793 MHz Bands Transmitting a Signal With an Emission Bandwidth of 1 MHz or Less

*****

Table 2 to §27.50—Permissible Power and Antenna Heights for Base and Fixed Stations in the 600 MHz, 698–757 MHz, 758–763 MHz, 776–787 MHz and 788–793 MHz Bands Transmitting a Signal With an Emission Bandwidth of 1 MHz or Less

*****

Table 3 to §27.50—Permissible Power and Antenna Heights for Base and Fixed Stations in the 600 MHz, 698–757 MHz, 758–763 MHz, 776–787 MHz and 788–793 MHz Bands Transmitting a Signal With an Emission Bandwidth Greater than 1 MHz

*****

Table 4 to §27.50—Permissible Power and Antenna Heights for Base and Fixed Stations in the 600 MHz, 698–757 MHz, 758–763 MHz, 776–787 MHz and 788–793 MHz Bands Transmitting a Signal With an Emission Bandwidth Greater than 1 MHz

*****

20. Section 27.53 is amended by revising paragraph (g) to read as follows:

§ 27.53 Emission limits.

*****

(g) For operations in the 600 MHz and 698–746 MHz bands, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

*****

21. Section 27.55 is amended by revising paragraphs (a)(2) and (b) to read as follows:

§ 27.55 Power strength limits.

*****

(a)*****

(2) 600 MHz, 698–758, and 775–787 MHz bands: 40 dBμV/m.

*****

(b) Power flux density limit for stations operating in the 698–746 MHz band and the 600 MHz band. For base and fixed stations operating in the 698–746 MHz band and the 600 MHz band in accordance with the provisions of §27.50(c)(6), the power flux density that would be produced by such stations through a combination of antenna height and vertical gain pattern must not exceed 3000 microwatts per square meter on the ground over the area extending to 1 km from the base of the antenna mounting structure.

*****

22. Subpart O is added to part 27 to read as follows:

Subpart O—Competitive Bidding Procedures for the 600 MHz Band

Sec.

§ 27.1401 600 MHz band subject to competitive bidding.

Mutually exclusive initial applications for licenses in the 600 MHz band (*i.e.*, the frequency bands specified in section 27.5(j) of this part) are subject to competitive bidding. The general competitive bidding procedures set forth in part 1, subpart Q of this chapter will apply unless otherwise provided in this subpart.

§ 27.1402 Designated entities in the 600 MHz band.

(a) Eligibility for small business provisions.

(1) A small business is an entity that has average attributable gross revenues, as determined pursuant to § 1.2110 of this chapter, not exceeding $40 million for the preceding three years.

(2) A very small business is an entity that has average attributable gross revenues, as determined pursuant to § 1.2110 of this chapter, not exceeding $15 million for the preceding three years.

(b) Bidding credits.

(1) A winning bidder that qualifies as a small business, as defined in this section, or a consortium of small businesses may use the bidding credit specified in § 1.2110(f)(2)(iii) of this chapter.

(2) A winning bidder that qualifies as a very small business, as defined in this section, or a consortium of very small businesses may use the bidding credit specified in § 1.2110(f)(2)(ii) of this chapter.

PART 73—RADIO BROADCAST SERVICES

23. The authority citation for part 73 continues to read:

Authority: 47 U.S.C. 154, 303, 334, 336, and 339.

24. Section 73.3572 is amended by adding paragraph (a)(4)(vi) to read as follows:

§ 73.3572 Processing of TV broadcast, Class A TV broadcast, low power TV, TV translators, and TV booster applications.

*****

(a) ***

(4) ***

(vi) Low power television and TV translators displaced as a result of the broadcast television incentive auction set forth in 47 CFR 73.3700 shall be permitted to submit an application for displacement relief in a restricted filing window announced by the Media Bureau by Public Notice. Priority processing shall be afforded to mutually exclusive applications filed by low power television stations or TV translators that provide the only local over-the-air television service within their protected service area as set forth in § 74.792 of this chapter.

*****

25. Section 73.3700 is revised to read as follows:

§ 73.3700 Reverse Auction Provisions.

(a) Definitions.

(1) High VHF Channel. For purposes of this paragraph, "High VHF Channel" means a television channel located between the frequencies from 174 MHz to 216 MHz (television channels 7 through 13).

(2) Reverse Auction. For purposes of this paragraph, "reverse auction" means the auction set forth in Section 6403(a) of the Middle Class Tax Relief and Job Creation Act of 2012.

(3) Low VHF Channel. For purposes of this paragraph, "Low VHF Channel" means a television channel located between the frequencies from 54 MHz to 72 MHz and 76 MHz to 88 MHz (television channels 2 through 6).

(4) MVPD. For purposes of this paragraph, "MVPD" means a person such as, but not limited to, a cable operator, a multichannel multipoint distribution service, a direct broadcast satellite service, or a television receive-only satellite program distributor, who makes available for purchase, by subscribers or customers, multiple channels of video programming as set forth in section 602 of the Communications Act of 1934 (47 U.S.C. § 522).

(5) Repacking. For purposes of this paragraph, "repacking" means the reorganization of the broadcast television spectrum, including the reassignment of channels in conjunction with the reverse auction, as set forth in Section 6403(b) of the Middle Class Tax Relief and Job Creation Act of 2012.

(6) Television Station. For purposes of this paragraph, "television station" means full power television stations and Class A television stations.

(7) Ultra High Frequency Television Channel. For purposes of this paragraph, "ultra high frequency television channel" ("UHF") means a television channel that is located in the portion of the electromagnetic spectrum between the frequencies from 470 MHz to 698 MHz (television channels 14 through 51).

(8) Very High Frequency Television Channel. For purposes of this paragraph, "very high frequency television channel" ("VHF") means a television channel that is located in the portion of the electromagnetic spectrum between the frequencies from 54 MHz to 72 MHz, from 76 MHz to 88 MHz, or from 174 MHz to 216 MHz (television channels 2 through 13).

(b) Participation in Reverse Auction. (1) A television station licensee or holder of a construction permit for a newly authorized unbuilt station, may participate in the reverse auction so long as it holds a license for the spectrum it seeks to relinquish prior to the date it submits its application to participate in the

reverse auction.

(2) Noncommercial educational (NCE) television stations may participate in the reverse auction.

(3) Television stations may participate in the reverse auction regardless of whether they are subject to any pending complaints or investigations related to the spectrum being contributed to the incentive auction, unless such complaints or investigations have resulted in a revocation or non-renewal of the station's license.

(c) Channel Sharing. Each licensee participating in a channel sharing arrangement shall continue to be licensed and operated separately, have its own call sign and be separately subject to all of the Commission's obligations, rules, and policies applicable to the television service.

(1) Channel Sharing Arrangements Involving Full Power Television and Class A Television Stations.

(i) Channel sharing is permissible between full power television stations, between Class A television stations and between full power and Class A television stations.

(ii) A Class A television station that relinquishes usage rights to its channel in order to share a channel with a full power television station pursuant to this paragraph will be licensed with the technical facilities of the full power television station, but must comply in all other respects with the rules and policies applicable to Class A stations as set forth in the Community Broadcasters Protection Act of 1999 and 47 CFR subpart J.

(iii) A full power television station that relinquishes usage rights to its channel in order to share a channel with a Class A television station pursuant to this paragraph will be licensed with the part 74 technical facilities of the Class A television station as set forth in part 74 of this chapter but must continue to comply with the provisions in part 73, subpart E except for those that are inconsistent with the part 74 technical requirements.

(iv) A Class A television station sharing a channel with a full power television station pursuant to this paragraph may only qualify for the cable carriage rights afforded "qualified low power television stations" in 47 CFR 76.56(b)(3).

(2) Channel Sharing Between Commercial and Noncommercial Educational Television Stations.

(i) Channel sharing is permissible between commercial and NCE television stations.

(ii) An NCE television station licensee that relinquishes a channel reserved for NCE use to share a channel that has not been reserved for NCE use will retain its NCE status while operating on the non-reserved channel and must continue to comply with the requirements set forth in 47 CFR 73.621 and Commission policies related to NCE television stations. The NCE licensee may only assign or transfer its shared license to an entity qualified in that rule section to become an NCE television licensee.

(iii) An NCE television station licensee sharing a channel reserved for NCE use with a commercial television station licensee will retain its NCE status and the commercial licensee will retain its commercial status. The NCE licensee must continue to comply with the requirements set forth in 47 CFR 73.621 and Commission policies related to NCE television stations, and may only assign or transfer its shared license to an entity qualified in that rule section to become an NCE television licensee.

(3) Required Channel Sharing Agreement Provisions. Channel Sharing Agreements shall contain provisions that:

(i) Ensure that each licensee shall retain sufficient spectrum usage rights to operate one Standard Definition (SD) program stream.

(ii) Ensure that each licensee has reasonable access rights to its shared transmission facilities and is able to operate without limitation.

(iii) Set forth each licensee's rights and responsibilities with respect to maintenance of the shared transmission facilities.

(iv) Specify procedures for licensees to propose and implement modifications to shared transmission facilities.

(v) Provide for the rights of each licensee in the event of assignment or transfer of one of the channel sharing stations to a third party.

(4) Changes to Community of License or Market Designation. Stations may not propose any channel sharing arrangement that would result in a change in the stations' community of license or DMA.

(5) Preservation of Carriage Rights. A broadcast television station that voluntarily relinquishes spectrum

usage rights under this paragraph in order to share a television channel and that possessed carriage rights under section 338, 614, or 615 of the Communications Act of 1934 (47 U.S.C. 338; 534; 535) on November 30, 2010, shall have, at its shared location, the carriage rights under such section that would apply to such station at such location if it were not sharing a channel.

(d) Protection of Licensed Facilities During Repacking. Only the licensed facilities of television stations as they existed on February 22, 2012 shall be protected during the repacking of the broadcast television spectrum.

(1) Class A Television Stations. A Class A television station that has not completed its conversion to digital operations shall be afforded an opportunity prior to completion of the repacking process to specify an authorized digital facility for which it requests protection during repacking.

(e) Post-Auction Licensing. (1) Applications. Following the announcement of the results of the reverse auction and repacking plan, all stations that have been reassigned to a new channel (excluding a channel sharing station moving to a channel that has not been repacked) must file a minor change application for a construction permit using FCC Forms 301-DTV, 301-CA or 340-DTV by the date specified. Channel sharing stations must each file an application for license using FCC Form 302-DTV by the date specified.

(2) Deadlines. (i) Stations Relinquishing Channels. A television station licensee that wins its reverse auction bid to relinquish a channel without receiving in return any usage rights with respect to another channel must comply with the notification and cancellation procedures in 47 CFR 73.1750 and terminate operations on the relinquished channel within **[XX]** months of notification that it is a winning bidder.

(ii) Channel-Sharing Stations. A licensee that wins its reverse auction bid to relinquish a channel pursuant to a CSA must comply with the notification and cancellation procedures in 47 CFR 73.1750 and terminate operations on the relinquished channel within **[XX]** months of issuance of notification that it is a winning bidder, even if the shared channel has also been repacked.

(iii) Stations Moving From a UHF to VHF Channel and Repacked Stations. A licensee that wins its reverse auction bid to move from a UHF to a VHF channel, and a station reassigned to a new channel in the repacking plan, must terminate operation on its former channel and begin operation on its new

channel within 18 months of issuance of notification that it is a winning bidder or that it has been assigned a new channel during repacking.

(3) Requests for Additional Time to Complete Construction. Stations subject to the deadlines in § 73.3700(e)(2) may seek additional time to terminate operations on their former channel facilities and, where applicable, to complete construction of their new channel facilities.

(4) Consumer Education. Stations subject to the deadlines in § 73.3700(e)(2) must provide notice to their viewers of their planned termination of operations and, if applicable, relocation to a new channel.

(5) Notice to MVPDs. Winning bidders in the reverse auction and repacked stations shall notify MVPDs in writing of any changes to the stations' channel or technical facilities that could affect carriage. Such notification shall be provided not less than **[XX]** days prior to implementation of changes in conjunction with the channel sharing arrangement.

(f) Compensation. (1) Television stations are eligible for reimbursement of the costs reasonably incurred as a result of their channels being reassigned through repacking.

(2) MPVDs are eligible for reimbursement of the costs reasonably incurred in order to continue to carry the signal of a television station that has its channel changed as part of repacking or that relinquishes its spectrum rights through the incentive auction.

(3) Amount of Reimbursement. (i) Television stations may elect to be reimbursed through an advance payment based upon an estimated rate per station or may submit a showing and be reimbursed based upon their actual expenditures incurred in the repacking process.

(ii) MVPDs may elect to be reimbursed through an advance payment based upon an estimated rate per station change or may submit a showing and be reimbursed based upon their actual expenditures incurred to accommodate changes that result from the reverse auction or repacking processes.

(4) In lieu of receiving reimbursement of their costs reasonably incurred as a result of their channels being reassigned through repacking, a television station may accept a waiver of the service rules to permit the television station to provide services other than broadcast television services. Such waiver shall only

remain in effect while the licensee provides at least one broadcast television program stream on such spectrum at no charge to the public.

26. Section 73.6012 is revised to read as follows:

§ 73.6012 Protection of Class A TV, low power TV and TV translator stations.

An application to change the facilities of an existing Class A TV station will not be accepted if it fails to protect other authorized Class A TV, low power TV and TV translator stations and applications for changes in such stations filed prior to the date the Class A application is filed, pursuant to the requirements specified in §74.707 of this chapter. The protection of other authorized low power TV and TV translator stations and applications for changes in such stations shall not apply in connection with any application filed by a Class A TV station to implement the reorganization of broadcast spectrum authorized in section 6403(b) of the Middle Class Tax Relief and Job Creation Act of 2012.

27. Section 73.6019 is revised to read as follows:

§ 73.6019 Digital Class A TV station protection of low power TV, TV translator, digital low power TV and digital TV translator stations.

An application for digital operation of an existing Class A TV station or to change the facilities of a digital Class A TV station will not be accepted if it fails to protect authorized low power TV, TV translator, digital low power TV and digital TV translator stations in accordance with the requirements of § 74.793 (b) through (d) and (h) of this chapter. This protection must be afforded to applications for changes filed prior to the date the digital Class A station is filed. The protection of other authorized low power TV, TV translator, digital low power TV and digital TV translator stations shall not apply in connection with any application filed by a Class A TV station to implement the reorganization of broadcast spectrum authorized in section 6403(b) of the Middle Class Tax Relief and Job Creation Act of 2012.

APPENDIX B

Initial Regulatory Flexibility Act Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended ("RFA")[1] the Commission has prepared this present Initial Regulatory Flexibility Analysis ("IRFA") concerning the possible significant economic impact on small entities by the policies and rules proposed in this *Notice of Proposed Rulemaking* (*Notice*). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments indicated on the first page of the *Notice*. The Commission will send a copy of the *Notice,* including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *Notice* and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for and Objectives of the Proposed Rules

2. In the *Notice*, the Commission considers matters related to the implementation of Congress's mandate to conduct an incentive auction of broadcast television spectrum as set forth in the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §§ 6402, 6403, 125 Stat. 156 (2012) (Spectrum Act). Congress's passage of the Spectrum Act set the stage for this proceeding and further expanded the Commission's ability to facilitate technological and economic growth. Wireless broadband is now a key component of economic growth, job creation and global competitiveness, and the explosive growth of wireless broadband services has created increased demand for wireless spectrum. Government entities and private industry alike have recognized the urgent need for more spectrum for wireless broadband services, and have been working to increase the availability of spectrum for these valuable uses. As part of the American Recovery and Reinvestment Act of 2009, Congress directed the FCC to develop a "national broadband plan" to ensure that every American has "access to broadband capability." The resulting National Broadband Plan emphasized the indispensable importance of wireless spectrum in achieving Congress's broadband goals, recommending that the Commission make 300 megahertz of spectrum available for mobile broadband use within five years, including by reallocating a portion of the broadcast television spectrum.

3. The Spectrum Act authorizes the Commission to conduct incentive auctions in which licensees may voluntarily relinquish their spectrum usage rights in order to permit the assignment by auction of new initial licenses subject to flexible use service rules, in exchange for a portion of the resulting auction proceeds. Section 6403 of the Spectrum Act, which is not codified in the Communications Act, requires the Commission to conduct an incentive auction of the broadcast television spectrum and includes specific requirements and safeguards for the required auction.

4. The purpose of the *Notice* is to develop rules and policies for the incentive auction process. The incentive auction will have three major pieces: (1) a "reverse auction" in which broadcast television licensees submit bids to voluntarily relinquish certain broadcast rights in exchange for payments; (2) a reorganization or "repacking" of the broadcast television bands in order to free up a portion of the ultra-high frequency (UHF) band for other uses; and (3) a "forward auction" of initial licenses for flexible use of the newly available spectrum.

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 et. seq., has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 ("SBREFA"), Pub. L. No. 104-121, Title II, 110 Stat. 847 (1996). The SBREFA was enacted as Title II of the Contract With America Advancement Act of 1996 ("CWAAA").

[2] *See* 5 U.S.C. § 603(a).

[3] *See id*. § 603(a).

5. Section 6403 of the Spectrum Act directs the Commission to conduct an incentive auction of broadcast television spectrum and includes special requirements for such an auction.[4] The incentive auction will have two competitive bidding components: (1) a "reverse auction" in which broadcast television licensees submit bids to voluntarily relinquish certain broadcast rights in exchange for payments; and (2) a "forward auction" of initial licenses for flexible use of the newly available spectrum.[5] In order to implement this congressional mandate to conduct an incentive auction of broadcast television spectrum, the *Notice* proposes and seeks comment on proposals to devise auction design and competitive bidding rules to govern the reverse auction, and considers changes to the Commission's general competitive bidding rules in Part 1 that may be necessary or desirable to conduct the related forward auction for new spectrum licenses. For example, the Commission will be seeking comment on: (i) bid collection procedures that determine how bids in the auction are gathered, (ii) assignment procedures that determine which bids are accepted, and (iii) pricing procedures that determine what each bidder pays, or in the case of the reverse auction, receives in payment. The other major component of the incentive auction—the repacking—will help to determine which reverse auction bids will be accepted. In addition, consistent with the Commission's typical approach to spectrum license auctions, the proposed rules and Part 1 rule revisions provide a general framework to guide the development—through a series of public notices with opportunities for comment—of the detailed procedures and deadlines needed to conduct the auction. The public notice process will allow both the Commission and interested parties to focus and provide input on certain details of the auction design and the auction procedures after the rules have been established and the remaining procedural issues are better defined.

6. To assist small entities in competitive bidding in the forward auction, the *Notice* proposes to establish small business size standards that were adopted in the 700 MHz band, as well as bidding credits that are set forth in the standardized schedule in Part 1 of the Commission's rules. Specifically, the *Notice* proposes to define a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding $40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding $15 million. The *Notice* also proposes to provide small businesses with a bidding credit of 15 percent and very small businesses with a bidding credit of 25 percent.

7. The *Notice* proposes to limit participation in the reverse auction to full power and Class A television licensees and to exclude non-Class A low power television stations and TV translators (collectively, "low power television stations"). The Spectrum Act definitions and its repacking and reimbursement provisions limit participation to only full power and Class A television licensees. Further, because low power television stations have secondary interference rights, these facilities do not impede the band clearing and repacking process, and therefore there is no reason to facilitate their relinquishment through participation in the reverse auction.

8. It is proposed that noncommercial educational television stations may participate in the reverse auction. The Spectrum Act does not prohibit participation and the prohibition on subjecting NCEs to auction in Section 309(j) of the Communications Act would not apply because the reverse auction is being conducted under a separate Section 309(j) provision. Allowing NCEs to participate will ensure greater participation in the reverse auction and a return of a greater number of television channels for reallocation.

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[4] *See* Spectrum Act § 6403.

[5] *See id.* at §§ 6403(a)-(c). *See also id.* at §§ 6001(16), (30) (defining "forward auction" and "reverse auction," respectively). Note that the incentive auction of broadcast television spectrum has a third component—a reorganization or "repacking" of the broadcast television spectrum bands in order to free up a portion of the UHF band for other uses.

9. The *Notice* proposes that entities with original construction permits be allowed to participate in the reverse auction if they become licensees before the deadline for submission of the application to participate in the auction. There are only very few entities in this category, and allowing the few original construction permit holders to participate in the incentive auction, so long as they receive a license by the deadline specified above, will maximize the amount of spectrum available for auction.

10. For the reverse auction bidding, it is proposed that the Commission only examine the spectrum usage rights held by stations in their licenses as of February 22, 2012. This conforms to the mandate in Section 6403 of the Spectrum Act that the Commission protect in repacking the coverage area and population served by a licensee as of the Spectrum Act enactment date.

11. For a new station permittee not licensed on February 22, 2012 (but auction eligible because it becomes licensed by the pre-auction application filing deadline), the Commission proposes to evaluate its bid based on the spectrum usage rights authorized in the construction permit it held on February 22, 2012. This approach conforms with the Commission's proposal to extend repacking protections on public policy grounds to the facilities authorized in a construction permit for a new station on February 22, 2012. In order to conform with the mandate in Section 6403 of the Spectrum Act to make all reasonable efforts to preserve the coverage area and population served of each television licensee only as of the Spectrum Act enactment date (February 22, 2012), any modifications made after February 22, 2012 to a licensed facility or to the construction permit of a new station will not be considered in evaluating a licensee's spectrum relinquishment offer.

12. Although the Commission seeks to maximize the spectrum reclaimed in the reverse auction process, it does not want to compensate a broadcaster for relinquishing spectrum rights to which it may no longer be entitled as the result of its license having expired, or having been cancelled or revoked in an enforcement proceeding. On the other hand, the Commission does not want to let the existence of such pending proceedings impede the auction process. Therefore, the Commission proposes that any full power or Class A station with an expired, cancelled or revoked license should not be eligible to bid in the reverse auction.

13. In the *Notice*, the Commission proposes allowing stations to participate in the reverse auction by agreeing to relinquish a "high VHF channel" (channels 7-13) in exchange for a "low VHF channel" (channels 2-6). Because high VHF spectrum may be more desirable than low VHF spectrum to a UHF to VHF bidder, making additional high VHF spectrum available by encouraging high VHF to low VHF moves may result in a greater reverse auction participation.

14. The Commission also seeks comment on whether to allow licensees to participate in the reverse auction by relinquishing spectrum usage rights through the acceptance of additional interference. By permitting this type of creative arrangement, the Commission believes it can potentially create an unencumbered wireless broadband service area license while still permitting a broadcast licensee to cover a portion of its service area.

15. The Commission also proposes to prohibit a licensee to effectuate a channel sharing arrangement that would result in a change in the station's community of license and/or DMA. The Commission proposes this limitation because it believes that allowing changes in community of license in addition to changes in channel assignments would raise section 307(b) issues such as the fair, efficient and equitable distribution of service,[6] and would complicate its repacking efforts.

16. It is critical, to enable repacking of the broadcast spectrum, that the Commission determine how to preserve the coverage area and population served as required by the Spectrum Act. Accordingly, the Commission seeks comment on engineering and other technical aspects of the repacking

[6] *See* 47 U.S.C. § 307(b).

process, in particular Congress's mandate in Section 6403(b)(2) of the Spectrum Act that it make all reasonable efforts to preserve the coverage area and population served of television stations in the repacking. The broadcast television spectrum incentive auction and the associated repacking process could impact both the coverage area and the population served of television stations. If a station is assigned to a different channel, then its technical facilities must be modified in order to replicate its coverage area, because radio signals propagate differently on different frequencies. These varying propagation characteristics also mean that a new channel assignment may change the areas within a station's noise-limited service area affected by terrain loss. Channel reassignments, and stations going off the air as a result of the reverse auction, also may change the interference relationships between stations, which relationships in turn affect population served. Stations going off the air can eliminate existing interference to the stations that remain on the air. Likewise, new channel assignments generally will eliminate interference that the reassigned stations are now causing or receiving. At the same time, new channel assignments create a potential for new interference between nearby stations on the same channel or a first adjacent channel. The Commission seeks comment on a repacking methodology that takes in account all of these impacts in order to carry out Congress's mandate in section 6403(b)(2).

17. The Commission recently adopted rules to enable unlicensed devices to operate in parts of the TV spectrum that are unused at any given location. The availability of spectrum in the TV bands for unlicensed devices is an important part of supporting a robust wireless marketplace. To this end, the *Notice* explores several ways to further improve the availability of the TV broadcast spectrum for unlicensed uses.

18. The Commission is developing a band plan for the incentive auction process that balances flexibility with certainty, accommodating varying amounts of available wireless spectrum in different geographic areas rather than requiring that a uniform set of television channels be cleared nationwide. Specifically, the Commission seeks comment on whether to keep the downlink spectrum band consistent nationwide while allowing variations in the amount of uplink spectrum available in any geographic area. With this approach, the Commission believes it can ensure as a technical matter that wireless providers will be able to offer mobile devices that can operate across the country, which should minimize device cost and interoperability concerns, and allow for greater economies of scale. The Commission also proposes designating specific uplink and downlink blocks, pairing them where possible, to support expansion of cutting-edge wireless broadband technologies.

19. TV channel 37 is not used for TV broadcasting but rather is allocated for use by radio astronomy and medical telemetry equipment. TV channel 37 is situated in the spectrum such that it could affect the viability of certain band plans for wireless broadband service that would be most viable from a technical and economic standpoint. The Commission's proposed band plan does not require that existing channel 37 operations be relocated, and instead, attempts to benefit from allowing existing channel 37 operations to remain in that frequency band by using channel 37 as a guard band between television operations and mobile broadband operations.

20. The Commission proposes that, during repacking, it would only preserve the service areas of full power and Class A television stations with regard to stations' 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. Further, the Commission proposes to protect the facilities set forth in unbuilt construction permits for new full power television stations as of February 22, 2012. It did not propose to protect the facilities contained in pending facility modification applications. The Commission found that consideration of all pending facility modification applications would greatly complicate the repacking analysis by increasing the amount of facilities under consideration in the repacking process. Additionally, protection of both a licensed facility and a modification thereto that would expand or alter the station's service area would further encumber the spectrum.

21. As it did with respect to reverse auction bids by Class A stations, the Commission also

proposed that Class A stations elect which facilities they would like protected in repacking. Because Class A stations are in the middle of a Commission-mandated digital transition that will not conclude until September 1, 2015, the Commission found that failing to offer repacking protection to those digital transition facilities not licensed by February 22, 2012 would be fundamentally unfair. Moreover, failure to protect these facilities could make it impossible for certain Class A stations to effectuate their conversion plans, thus stalling the digital transition.

22. In the *Notice,* the Commission proposes to only reimburse full power television and Class A stations that are repacked their reasonable expenses (such as a new antenna or transmitter) incurred during the repacking. The Commission explains that the Spectrum Act mandates only that a "broadcast television licensee" receive reimbursement. Furthermore, only full power television and Class A stations have spectrum rights that must be protected in repacking. Therefore, the Commission believes that full power television and Class A licensees are the only stations that fall within the statutory definition of stations that were assigned a new channel in repacking and that should qualify for reimbursement.

23. The Commission also proposes to limit reimbursement to multichannel video programming distributors (MVPDs) as defined by section 602 of the Communications Act. This was the definition set forth in the Spectrum Act and the Commission seeks comment on whether it is appropriate for determining reimbursement from the Relocation Fund.

24. In the *Notice*, the Commission proposes allowing full power and Class A television stations and MVDPs to elect reimbursement of their eligible relocation costs based on either their estimated costs or their actual, out-of-pocket expenditures. Stations and MVPDs choosing to receive reimbursement based on the estimated cost approach would receive their reimbursement through an advance payment, while those choosing reimbursement based on actual costs would receive reimbursement only after incurring and documenting their costs.

25. The Commission seeks comment on the types of expenses incurred by stations and MVPDs that would qualify for reimbursement. The Commission proposes that stations and MVPDs would be able to recover only costs that are reasonable, prudent and the minimum necessary to provide facilities and services comparable to those presently in use. The Commission also seeks comment on whether to permit stations to request reimbursement for facility upgrades made while effectuating the channel changes.

26. The Commission proposes a simplified, one-step process for implementing the post-auction and post-repacking channel changes. Rather than require stations to go through a prolonged two-step process of first amending the DTV Table of Allotments and then filing an application for its repacked facilities, the Commission is proposing simply to allow stations to file either a license application (for stations where no technical changes are proposed such as channel sharing) or a minor change application. The Commission proposes to expedite the processing of "check list" type applications that certify compliance with the technical rules and no substantial changes to their modified facilities. The streamlined procedures are meant to expedite the post-auction licensing and to ensure a smooth post-auction transition and recovery of channels.

27. In the *Notice*, the Commission seeks comment on the amount of time that stations would need to transition to their repacked channels. The Commission recognizes the need to recover channels from the auction to allow their use by new wireless entities but also that stations would need various amounts of time to modify their facilities to operate on their repacked channels depending upon the degree of changes needed. The Commission also recognizes that some stations may need additional time to complete their facilities and sought comment on the procedures for allowing for extensions of time.

28. In order to inform the public of the transition that will occur following the conclusion of the incentive auction and implementation of repacking, the Commission seeks comment on the types of consumer education that stations should perform. The Commission cites the need to notify viewers of

channel changes and changes to station facilities that might result in a loss of service.

29. In fairness to entities with broadcast multiple ownership combinations that could be rendered out of compliance due to channel allotments or technical changes resulting from repacking, the *Notice* proposes that such ownership combinations be permanently "grandfathered." The Commission proposes considering any other multiple ownership issues that result from the incentive auction in its ongoing quadrennial review proceeding.

30. The Commission recognizes that low power television and television translator stations may be greatly impacted by repacking. Because they have only secondary interference protection rights, LPTVs will not be permitted to participate in the reverse auction and will not be protected during repacking. Many stations will be displaced from their current operating channel. To ease the burden on these stations, the Commission proposes allowing displaced LPTV stations to have the first opportunity to submit a displacement application and propose a new operating channel. The Commission also cited the need to determine how to resolve mutually exclusive displacement applications filed by LPTV stations displaced by repacking. The Commission proposes adopting a set of priorities and seeks comment on the types of priorities to recognize. The Commission specifically seeks comment on the impact of such displacement of LPTV stations, and of the priorities by which displacement applications will be evaluated, on small, minority-owned, and women-owned LPTV stations.

31. The *Notice* recognizes several issues related to channel sharing that were not resolved in the Commission's Channel Sharing Report and Order, ET Docket No. 10-235, Report and Order, 27 FCC Rcd 4616 (2012). For example, the Commission seeks comment on whether and when channel sharing agreements (CSAs) should be filed with the Commission and whether CSAs should be required to contain certain provisions concerning access to, maintenance of, and modification of the shared transmission facilities. The Commission also seeks comment on how to resolve the use of termination of CSAs and whether all parties to a CSA should be jointly responsible for compliance with certain of the Commission's rules. Finally, the Commission proposes that the Spectrum Act provision on preservation of cable and satellite carriage would not affect the carriage rights of Class A stations. The Commission notes that the resolution of these issues is important in order to provide needed clarity to parties considering participating in the reverse auction through a channel sharing bid.

32. In proposing terrestrial service rules for the 600 MHz band, which include technical rules to protect against harmful interference, and licensing rules to establish geographic license areas and spectrum block sizes, we advance toward enabling widespread wireless broadband deployment in the band. We do so by proposing service, technical, assignment, and licensing rules for this spectrum that generally follow the Commission's Part 27 rules that generally govern flexible use terrestrial wireless service. For example, the Commission proposes: (1) that the 600 MHz band may be used for any fixed or mobile service that is consistent with the allocations for the band; (2) licensing the spectrum under the flexible regulatory framework of Part 27 of the rules; (3) allowing 600 MHz band licensees to provide both common carrier and non-common carrier services (or switch between them) and to request status as both a common carrier and a non-common carrier under a single license; and (4) allowing 600 MHz licensees to provide all allowable services anywhere within their licensed area at any time, consistent with their regulatory status designated on their license application. These proposals are designed to provide for flexible use of this spectrum by allowing licensees to choose their type of service offerings, to encourage innovation and investment in mobile broadband use in this spectrum, and to provide a stable regulatory environment in which broadband deployment would be able to develop through the application of standard terrestrial wireless rules.

B. Legal Basis

33. The proposed action is authorized under Sections 4(i), 301, 302, 303(e), 303(f), 303(r) and 309(j) of the Communications Act of 1934, as amended, 47 USC Sections 154(i), 301, 302, 303(e), 303(f), 303(r) and 309(j).

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

34. The RFA directs the Commission to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by the proposed rules, if adopted.[7] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," small organization," and "small government jurisdiction."[8] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[9] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[10]

35. **Television Broadcasting**. This Economic Census category "comprises establishments primarily engaged in broadcasting images together with sound. These establishments operate television broadcasting studios and facilities for the programming and transmission of programs to the public."[11] The SBA has created the following small business size standard for Television Broadcasting firms: those having $14 million or less in annual receipts.[12] The Commission has estimated the number of licensed commercial television stations to be 1,384.[13] In addition, according to Commission staff review of the BIA Advisory Services, LLC's *Media Access Pro Television Database* on March 28, 2012, about 950 of an estimated 1,300 commercial television stations (or approximately 73 percent) had revenues of $14 million or less.[14] We therefore estimate that the majority of commercial television broadcasters are small entities.

36. We note, however, that in assessing whether a business concern qualifies as small under the above definition, business (control) affiliations[15] must be included. Our estimate, therefore, likely overstates the number of small entities that might be affected by our action because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies. In addition, an element of the definition of "small business" is that the entity not be dominant in its field of operation. We are unable at this time to define or quantify the criteria that would establish whether a specific television station is dominant in its field of operation. Accordingly, the estimate of small businesses to which rules may apply does not exclude any television station from the definition of a small business on

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[7] *Id*. § 603(b)(3).

[8] 5 U.S.C. § 601(6).

[9] *Id*. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

[10] 15 U.S.C. § 632. Application of the statutory criteria of dominance in its field of operation and independence are sometimes difficult to apply in the context of broadcast television. Accordingly, the Commission's statistical account of television stations may be over-inclusive.

[11] U.S. Census Bureau, 2007 NAICS Definitions, "515120 Television Broadcasting" (partial definition); http://www.census.gov/naics/2007/def/ND515120.HTM#N515120.

[12] 13 C.F.R. § 121.201, NAICS code 515120 (updated for inflation in 2010).

[13] *See FCC News Release*, "Broadcast Station Totals as of June 30, 2012," dated July 19, 2012; http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-315231A1.pdf.

[14] We recognize that BIA's estimate differs slightly from the FCC total given *supra*.

[15] "[Business concerns] are affiliates of each other when one concern controls or has the power to control the other or a third party or parties controls or has to power to control both." 13 C.F.R. § 21.103(a)(1).

this basis and is therefore possibly over-inclusive to that extent.

37. In addition, the Commission has estimated the number of licensed noncommercial educational (NCE) television stations to be 396.[16] These stations are non-profit, and therefore considered to be small entities.[17]

38. In addition, there are also 2,466 low power television stations, including Class A stations and 4,176 television translator stations.[18] Given the nature of these services, we will presume that all of these entities qualify as small entities under the above SBA small business size standard.

39. **Cable Television Distribution Services**. Since 2007, these services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."[19] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees. Census data for 2007 shows that there were 1,383 firms that operated that year.[20] Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of such firms can be considered small.

40. **Cable Companies and Systems**. The Commission has also developed its own small business size standards, for the purpose of cable rate regulation. Under the Commission's rules, a "small cable company" is one serving 400,000 or fewer subscribers, nationwide.[21] Industry data indicate that, of 1,076 cable operators nationwide, all but eleven are small under this size standard.[22] In addition, under the Commission's rules, a "small system" is a cable system serving 15,000 or fewer subscribers.[23] Industry data indicate that, of 6,635 systems nationwide, 5,802 systems have under 10,000 subscribers, and an additional 302 systems have 10,000-19,999 subscribers.[24] Thus, under this second size standard,

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[16] *See FCC News Release*, "Broadcast Station Totals as of June 30, 2012," dated July 19, 2012; http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0106/DOC-315231A1.pdf.

[17] *See generally* 5 U.S.C. §§ 601(4), (6).

[18] *See FCC News Release*, "Broadcast Station Totals as of June 30, 2012," dated July 19, 2012; http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0106/DOC-315231A1.pdf.

[19] U.S. Census Bureau, 2007 NAICS Definitions, 517110 Wired Telecommunications Carriers, (partial definition), http://www.census.gov/naics/2007/def/ND517110.HTM#N517110 (last visited Oct. 21, 2009).

[20] U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

[21] 47 C.F.R. § 76.901(e). The Commission determined that this size standard equates approximately to a size standard of $100 million or less in annual revenues. *Implementation of Sections of the 1992 Cable Act: Rate Regulation,* Sixth Report and Order and Eleventh Order on Reconsideration, 10 FCC Rcd 7393, 7408 (1995).

[22] These data are derived from: R.R. Bowker, *Broadcasting & Cable Yearbook 2006*, "Top 25 Cable/Satellite Operators," pages A-8 & C-2 (data current as of June 30, 2005); Warren Communications News, *Television & Cable Factbook 2006*, "Ownership of Cable Systems in the United States," pages D-1805 to D-1857.

[23] 47 C.F.R. § 76.901(c).

[24] Warren Communications News, *Television & Cable Factbook 2008*, "U.S. Cable Systems by Subscriber Size," page F-2 (data current as of Oct. 2007). The data do not include 851 systems for which classifying data were not available.

most cable systems are small.

41. **Cable System Operators**. The Communications Act of 1934, as amended, also contains a size standard for small cable system operators, which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than 1 percent of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed $250,000,000."[25] The Commission has determined that an operator serving fewer than 677,000 subscribers shall be deemed a small operator, if its annual revenues, when combined with the total annual revenues of all its affiliates, do not exceed $250 million in the aggregate.[26] Industry data indicate that, of 1,076 cable operators nationwide, all but ten are small under this size standard.[27] We note that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose gross annual revenues exceed $250 million,[28] and therefore we are unable to estimate more accurately the number of cable system operators that would qualify as small under this size standard.

42. **Direct Broadcast Satellite ("DBS") Service.** DBS service is a nationally distributed subscription service that delivers video and audio programming via satellite to a small parabolic "dish" antenna at the subscriber's location. DBS, by exception, is now included in the SBA's broad economic census category, "Wired Telecommunications Carriers,"[29] which was developed for small wireline firms. Under this category, the SBA deems a wireline business to be small if it has 1,500 or fewer employees.[30] To gauge small business prevalence for the DBS service, the Commission relies on data currently available from the U.S. Census for the year 2007. According to that source, there were 3,188 firms that in 2007 were Wired Telecommunications Carriers. Of these, 3,144 operated with less than 1,000 employees, and 44 operated with more than 1,000 employees. However, as to the latter 44 there is no data available that shows how many operated with more than 1,500 employees. Based on this data, the majority of these firms can be considered small.[31] Currently, only two entities provide DBS service, which requires a great investment of capital for operation: DIRECTV and EchoStar Communications Corporation ("EchoStar") (marketed as the DISH Network).[32] Each currently offers subscription services.

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[25] 47 U.S.C. § 543(m)(2); *see* 47 C.F.R. § 76.901(f) & nn. 1-3.

[26] 47 C.F.R. § 76.901(f); *see* Public Notice, *FCC Announces New Subscriber Count for the Definition of Small Cable Operator*, DA 01-158 (Cable Services Bureau, Jan. 24, 2001).

[27] These data are derived from: R.R. Bowker, *Broadcasting & Cable Yearbook 2006*, "Top 25 Cable/Satellite Operators," pages A-8 & C-2 (data current as of June 30, 2005); Warren Communications News, *Television & Cable Factbook 2006*, "Ownership of Cable Systems in the United States," pages D-1805 to D-1857.

[28] The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority's finding that the operator does not qualify as a small cable operator pursuant to § 76.901(f) of the Commission's rules. *See* 47 C.F.R. § 76.909(b).

[29] *See* 13 C.F.R. § 121.201, NAICS code 517110 (2007). The 2007 NAICS definition of the category of "Wired Telecommunications Carriers" is cited above.

[30] 13 C.F.R. § 121.201, NAICS code 517110 (2007).

[31] *See* http://www.factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=600&-ds_name=EC0751SSSZ5&-_lang=en.

[32] S*ee Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Thirteenth Annual Report, 24 FCC Rcd 542, 580, ¶ 74 (2009) ("*13th Annual Report*"). We note that, in 2007, EchoStar purchased the licenses of Dominion Video Satellite, Inc. ("Dominion") (marketed as Sky Angel). *See* Public Notice, "Policy Branch Information; Actions Taken," Report No. SAT-00474, 22 FCC Rcd 17776 (IB 2007).

DIRECTV[33] and EchoStar[34] each report annual revenues that are in excess of the threshold for a small business. Because DBS service requires significant capital, we believe it is unlikely that a small entity as defined by the SBA would have the financial wherewithal to become a DBS service provider.

43. **Cable and Other Subscription Programming**. This industry comprises establishments primarily engaged in operating studios and facilities for the broadcasting of programs on a subscription or fee basis. The broadcast programming is typically narrowcast in nature (e.g., limited format, such as news, sports, education, or youth-oriented). These establishments produce programming in their own facilities or acquire programming. The programming material is usually delivered to a third party, such as cable systems or direct-to-home satellite systems, for transmission to viewers.[35] The SBA size standard for this industry establishes [36] as small any company in this category which receives annual receipts of $15 million or less. Based on U.S. Census data for 2007, in that year 469 establishments operated for the entire year. Of that 659, 197 operated with annual receipts of $10 million a year or more. The remaining 462 establishments operated with annual receipts of less than $10 million. Based on this date, the Commission estimates that the majority of establishments operating in this industry is small.[37]

44. **Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing.** The Census Bureau defines this category as follows: "This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment."[38] The SBA has developed a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing, which is: all such firms having 750 or fewer employees. According to Census Bureau data for 2007, there were a total of 939 establishments in this category that operated for part or all of the entire year. According to Census bureau data for 2007, there were a total of 939 firms in this category that operated for the entire year. Of this total, 912 had less than 500 employees and 17 had more than 1000 employees.[39] Thus, under that size standard, the majority of firms can be considered small.

45. **Audio and Video Equipment Manufacturing.** The SBA has classified the manufacturing of audio and video equipment under in NAICS Codes classification scheme as an industry in which a manufacturer is small if it has less than 750 employees.[40] Data contained in the 2007 U.S.

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[33] As of June 2006, DIRECTV is the largest DBS operator and the second largest MVPD, serving an estimated 16.20% of MVPD subscribers nationwide. *See 13th Annual Report*, 24 FCC Rcd at 687, Table B-3.

[34] As of June 2006, DISH Network is the second largest DBS operator and the third largest MVPD, serving an estimated 13.01% of MVPD subscribers nationwide. *Id*. As of June 2006, Dominion served fewer than 500,000 subscribers, which may now be receiving "Sky Angel" service from DISH Network. *See id*. at 581, ¶ 76.

[35] http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=515210&search=2007

[36] See 13 C.F. R 121.201, NAICS Code 515210

[37] http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table

[38] The NAICS Code for this service 334220. *See* 13 C.F.R 121/201. *See also* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-_skip=300&-ds_name=EC0731SG2&-_lang=en

[39] *http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_31SA11&prodType=table*

[40] 13 CFR § 121.201, NAICS Code 334310.

Census indicate that 491 establishments operated in that industry for all or part of that year. In that year, 456 establishments had 99 employees or less; and 35 had more than 100 employees.[41] Thus, under the applicable size standard, a majority of manufacturers of audio and video equipment may be considered small.

46. **Wireless Telecommunications Carriers (except satellite).** This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular phone services, paging services, wireless Internet access, and wireless video services.[42] The appropriate size standard under SBA rules is for the category Wireless Telecommunications Carriers. The size standard for that category is that a business is small if it has 1,500 or fewer employees.[43] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[44] For this category, census data for 2007 show that there were 11,163 firms that operated for the entire year.[45] Of this total, 10,791 firms had employment of 999 or fewer employees and 372 had employment of 1000 employees or more.[46] Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers(except satellite) are small entities that may be affected by our proposed action.[47]

47. **Fixed Microwave Services.** Microwave services include common carrier,[48] private-operational fixed,[49] and broadcast auxiliary radio services.[50] At present, there are approximately 31,549 common carrier fixed licensees and 89,633 private and public safety operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. Microwave services include common

[41] http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_31I1&prodType=table

[42] http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2007%20NAICS%20Search

[43] 13 C.F.R. § 121.201, NAICS code 517210.

[44] 13 C.F.R. § 121.201, NAICS code 517210. The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[45] U.S. Census Bureau, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210" (issued Nov. 2010).

[46] *Id*. Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "100 employees or more."

[47] *See http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ2&prodType=table*

[48] 47 C.F.R. Part 101 *et seq*. (formerly, part 21 of the Commission's Rules) for common carrier fixed microwave services (except MDS).

[49] Persons eligible under Parts 80 and 90 of the Commission's rules can use Private-Operational Fixed Microwave services. *See* 47 C.F.R. Parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station, and only for communications related to the licensee's commercial, industrial, or safety operations.

[50] Auxiliary Microwave Service is governed by Part 74 and Part 78 of Title 47 of the Commission's Rules. Available to licensees of broadcast stations, cable operators, and to broadcast and cable network entities. Auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes TV pickup and CARS pickup, which relay signals from a remote location back to the studio.

carrier,[51] private-operational fixed,[52] and broadcast auxiliary radio services.[53] They also include the Local Multipoint Distribution Service (LMDS),[54] the Digital Electronic Message Service (DEMS),[55] and the 24 GHz Service,[56] where licensees can choose between common carrier and non-common carrier status.[57] The appropriate size standard under SBA rules is for the category Wireless Telecommunications Carriers (except satellite). The size standard for that category is that a business is small if it has 1,500 or fewer employees.[58] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[59] For this category, census data for 2007 show that there were 11,163 firms that operated for the entire year.[60] Of this total, 10,991 firms had employment of 99 or fewer employees and 372 had employment of 1000 employees or more.[61] Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities that may be affected by our proposed action.[62]

48. **Manufacturers of unlicensed devices.** In the context of this IRFA, manufacturers of Part 15 unlicensed devices that are operated in the UHF-TV band (channels 14-51) involve wi-fi services used in wireless data transfer and as such fall into the category of Radio and Television and Wireless Communications Equipment Manufacturing. The Census Bureau defines this category as follows: "This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment."[63] The

[51] *See* 47 C.F.R. Part 101, Subparts C and I.

[52] *See* 47 C.F.R. Part 101, Subparts C and H.

[53] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 C.F.R. Part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[54] *See* 47 C.F.R. Part 101, Subpart L.

[55] *See* 47 C.F.R. Part 101, Subpart G.

[56] *See id.*

[57] *See* 47 C.F.R. §§ 101.533, 101.1017.

[58] 13 C.F.R. § 121.201, NAICS code 517210.

[59] 13 C.F.R. § 121.201, NAICS code 517210. The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[60] U.S. Census Bureau, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210" (issued Nov. 2010).

[61] *Id*. Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "100 employees or more."

[62] *See* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ2&prodType=table

[63] The NAICS Code for this service 334220. *See* 13 C.F.R 121/201. *See also* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-_skip=300&-ds_name=EC0731SG2&-_lang=en

SBA has developed a small business size standard for this category, which is: all such firms having 750 or fewer employees. According to Census Bureau data for 2007, there were a total of 939 firms in this category that operated for the entire year. Of this total, 912 had less than 500 employees and 17 had more than 1000 employees.[64] Thus, under that size standard, the majority of firms can be considered small.

49. **Personal Radio Services/ Wireless Medical Telemetry Service ("WMTS")**. Personal radio services provide short-range, low power radio for personal communications, radio signaling, and business communications not provided for in other services. The Personal Radio Services include spectrum licensed under Part 95 of our rules.[65] These services include Citizen Band Radio Service ("CB"), General Mobile Radio Service ("GMRS"), Radio Control Radio Service ("R/C"), Family Radio Service ("FRS"), Wireless Medical Telemetry Service ("WMTS"), Medical Implant Communications Service ("MICS"), Low Power Radio Service ("LPRS"), and Multi-Use Radio Service ("MURS").[66] There are a variety of methods used to license the spectrum in these rule parts, from licensing by rule, to conditioning operation on successful completion of a required test, to site-based licensing, to geographic area licensing. Under the RFA, the Commission is required to make a determination of which small entities are directly affected by the rules being proposed. Since all such entities are wireless, we apply the definition of Wireless Telecommunications Carriers (except Satellite), pursuant to which a small entity is defined as employing 1,500 or fewer persons.[67] For this category, census data for 2007 show that there were 11,163 firms that operated for the entire year.[68] Of this total, 10,791 firms had employment of 999 or fewer employees and 372 had employment of 1000 employees or more.[69] Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

50. However, we note that many of the licensees in these services are individuals, and thus are not small entities. In addition, due to the mostly unlicensed and shared nature of the spectrum utilized in many of these services, the Commission lacks direct information upon which to base a more specific estimation of the number of small entities under an SBA definition that might be directly affected by our action.

51. **Aeronautical Mobile Telemetry ("AMT")**. Currently there are 9 AMT licenses in the 2360-2395 MHz band. It is unclear how many of these will be affected by our new rules. The Commission has not yet defined a small business with respect to aeronautical mobile telemetry services. For purposes of this analysis, the Commission applies the definition of Wireless Telecommunications Carriers (except Satellite), pursuant to which a small entity is defined as employing 1,500 or fewer persons.[70] For this category, census data for 2007 show that there were 11,163 firms that operated for the

[64] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=4500&-ds_name=EC0731SG3&-_lang=en

[65] 47 C.F.R. part 90.

[66] The Citizens Band Radio Service, General Mobile Radio Service, Radio Control Radio Service, Family Radio Service, Wireless Medical Telemetry Service, Medical Implant Communications Service, Low Power Radio Service, and Multi-Use Radio Service are governed by subpart D, subpart A, subpart C, subpart B, subpart H, subpart I, subpart G, and subpart J, respectively, of part 95 of the Commission's rules. *See generally* 47 C.F.R. part 95.

[67] 13 C.F.R. § 121.201, NAICS Code 517210.

[68] U.S. Census Bureau, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210" (issued Nov. 2010).

[69] *Id*. Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "100 employees or more."

[70] 13 C.F.R. § 121.201, NAICS Code 517210.

entire year.[71] Of this total, 10,791 firms had employment of 999 or fewer employees and 372 had employment of 1000 employees or more.[72] Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities. The rules we adopt provide the flexibility to manufacturers, licensees and coordinators needed to accommodate changes in both AMT and Medical Body Area Network (MBAN) operations and to provide assurance to AMT users that their future access to the spectrum will not be hampered.[73]

52. **Radio Astronomy**. The Commission has not developed a definition for radio astronomy. However the SBA has established a category into which Radio Astronomy fits, which is: All Other Telecommunications.[74] This U.S. industry comprises establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry. [75] The size standard for all establishments engaged in this industry is that annual receipts of $25 million or less establish the firm as small.[76] Based on data in the 2007 U.S. Census, in 2007 there were 2,263 establishments that operated in the All Other Telecommunications category. Of that 2,263, 145 establishments operated with annual receipts of more than $10 million per year. The remaining 2,118 establishments operated with annual receipts of less than $10 million per year. [77] Based on this data, the Commission estimates that the majority of establishments in the All Other Telecommunications category are small.

D. Description of Projected Reporting, Recordkeeping and other Compliance Requirements

53. The *Notice* proposes the following new or revised reporting or recordkeeping requirements.

54. In this *Notice*, the Commission seeks comment on various reporting, record-keeping, and other compliance requirements for the parties that will participate in the broadcast television spectrum incentive auction. The Commission proposes, for example, that a television broadcaster interested in participating in the reverse auction component of the incentive auction process, whereby the broadcaster can offer to relinquish some or all of its spectrum usage rights in exchange for an incentive payment, must disclose certain information, such as its ownership, before becoming qualified to participate in the auction. In addition, the Commission asks whether a broadcaster that may offer to relinquish some of its spectrum usage rights and subsequently enter into a channel-sharing agreement, should be required to

[71] U.S. Census Bureau, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210" (issued Nov. 2010).

[72] *Id*. Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "100 employees or more."

[73] *See* In The Matter of Amendment of The Commission's Rules to Provide Spectrum for the Operation of Medical Body Area Networks, ET Docket 08-59, 27 FCC Rcd. 6422, para 9 (2012).

[74] 13 C.F.R> 121.202, NAICS Code 517919.

[75] http://www.census.gov/cgi-bin/sssd/naics/naicsrch

[76] http://www.census.gov/cgi-bin/sssd/naics/naicsrch

[77]http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table

provide information regarding the channel sharing agreement, possibly including the channel sharing agreement itself.

55. The Commission also seeks comment on compliance requirements that will affect the parties interested in participating in the broadcast television spectrum incentive auction in order to obtain new licenses for the 600 MHz spectrum. The Commission proposes, for example, that a party interested in participating in the forward auction component of the incentive auction process, whereby the party may bid on such licenses, must disclose certain information, such as their ownership, before becoming qualified to participate in the auction.

56. Participants in both the reverse and the forward auction will also be required to report changes to information in their applications and any potential violations of the Commission's prohibition on certain communications relating to the auction process. In addition, any participant that has a bid for relinquishing spectrum usage rights or for a new license accepted will have additional reporting, record-keeping, and compliance requirements.

57. Because the overall design of the broadcast incentive auction has not been finalized, we do not yet have a more specific estimate of potential reporting, recordkeeping, and compliance burdens on small businesses. The Commission anticipates that commenters will address the reporting, record-keeping, and other compliance proposals made in the *Notice*, and will provide reliable information on any costs or burdens on small businesses for inclusion in the record of this proceeding.

58. As it did with respect to reverse auction bids by Class A stations, the Commission also proposes that Class A stations be required to elect which facilities they would like protected in repacking. The Media Bureau will issue a Public Notice outlining the procedures for Class A stations to make their elections.

59. The Commission proposed that full power television stations, Class A television stations and MVPDs that qualify for reimbursement of the expenses incurred in repacking have the option of submitting a filing demonstrating their actual expenses and later be required to report on whether all reimbursement funds were properly dispensed. Alternatively, the Commission proposes to advance payments to stations and MVPDs based on estimated amounts and without first requiring documentation. This was proposed to ease the burden on stations and MVPDs and to expedite the reimbursement process.

60. Stations whose channel assignments are changed as a result of the reverse auction or repacking will be required to submit an application for construction permit or license to implement their channel change. The Commission proposes a simplified, one-step process for implementing the post-auction and post-repacking channel changes. Rather than require stations to go through a prolonged two-step process of first amending the DTV Table of Allotments and then filing an application for its repacked facilities, the Commission is proposing simply to allow stations to file either a license application (for stations where no technical changes are proposed such as channel sharing) or a minor change application. The Commission proposes to expedite the processing of "check list" type applications that certify compliance with the technical rules and no substantial changes to their modified facilities. The streamlined procedures are meant to expedite the post auction licensing and to ensure a smooth post-auction transition and recovery of channels.

61. Stations that need additional time to relocate to their new channel assignments may be required to submit a request for extension of time (FCC Form 337), for tolling (informal filing) or for Special Temporary Authority (STA – informal filing).

62. The Commission proposes that all stations changing channel assignments as a result of the reverse auction or repacking be required to conduct consumer education including airing viewer notifications and submitting a report to the Commission on their consumer education efforts. The reports would be filed on existing FCC Form 388 (that was utilized for consumer education during the digital television transition) revised for use with the band transition. In addition, the Commission proposes that

all stations changing channel assignments provide notice to MVPDs so that MVPDs can make the necessary changes to their channel lineups.

63. LPTV stations displaced as a result of repacking may be permitted to submit a displacement application (FCC Form 346). In addition to preparing and filing the application, the station may also be required to submit a new showing that it qualifies for priorities that will enable its application to be selected from a mutually exclusive group. It is expected that this requirement will have a greater effect on small entities because all LPTVs are small entities.

64. The Commission proposes that channel sharing bidders may be required to submit their channel sharing agreements (CSAs) with the Commission and be required to include certain provisions in their CSAs.

65. All 600 MHz licensees would be required to file a construction notification and certify that they have met any applicable performance benchmark.[78] They will also be required to file a license renewal application.[79] In addition, a 600 MHz licensee must notify the Commission of certain changes. Specifically, notification is required by licensees if they change their regulatory status,[80] their foreign ownership status,[81] or if they permanently discontinue service.[82] Finally, 600 MHz licensees, along with TV broadcasters in the 470-698 MHz band, would need to provide thirty days' notice to all incumbent fixed BAS operations within interference range prior to commencing operations in the vicinity.[83]

E. Steps Taken to Minimize Significant Impact on Small Entities, and Significant Alternatives Considered

66. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;[84] (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[85]

67. The proposed auction design and competitive bidding rules for the reverse auction resulting from the *Notice* will apply to all entities in the same manner. Full power television and Class A stations will be permitted to participate in the reverse auction and the forward auction will be open to all entities. The Commission proposes changes to its Part 1 rules to deal with special issues that arise in the unique incentive auction process. For example, the Commission must consider the requirement of mutual

[78] *See* 47 C.F.R. § 1.946(d).

[79] *See* 47 C.F.R. § 1.949.

[80] *See* 47 C.F.R. § 27.10(d); *see also* 47 C.F.R. § 27.66. A change in a licensee's regulatory status would not require prior Commission authorization, provided the licensee was in compliance with the foreign ownership requirements of Section 310(b) of the Communications Act that would apply as a result of the change. 47 U.S.C. § 310(b).

[81] 47 U.S.C. § 310(b).

[82] The licensee must notify the Commission of the discontinuance within 10 days by filing FCC Form 601 or 605 and requesting license cancellation.

[83] *See, e.g.*, 47 C.F.R. § 101.103(d) (30-day coordination "notice and wait" requirement).

[84] We note that all references to small entities in this IRFA apply also to minority-and women-owned small businesses.

[85] 5 U.S.C. § 603(c)(1)-(c)(4)

exclusivity in the context of the broadcast television spectrum forward auction. Specifically, if the spectrum to be offered in the forward auction consists of generic (non-frequency-specific) blocks, how should the Commission determine whether mutual exclusivity exists? In addition, the Commission asks commenters to address whether applications to participate in the reverse and forward auctions are "mutually exclusive applications" for "initial license[s]" since the reverse and forward auction applicants will submit bids relating to mutually exclusive spectrum usage rights (i.e., the spectrum currently used by broadcast television licensees). With respect to bidding credits for the forward auction, the Commission seeks comment on the use of certain size standards and associated bidding credits for applicants to be licensed in the forward auction with particular focus on the appropriate definitions of small and very small businesses as they relate to the size of the geographic area to be covered and the spectrum allocated to each license. In the reverse auction, the Commission seeks comment on the Spectrum Act statutory provision requiring the Commission to take all reasonable steps necessary to protect the confidentiality of Commission-held data of a licensee participating in the reverse auction, including withholding the identity of such licensee. With respect to all proposed changes to the Part 1 rules, the Commission will apply them uniformly to all entities that choose to participate in spectrum license auctions, including the forward auction. The Commission believes that applying the same rules equally to all entities in these contexts promotes fairness. The Commission does not believe that the limited costs and/or administrative burdens associated with the rules or the proposed auction design will unduly burden small entities.

68. The proposed auction design and competitive bidding rules provide small businesses flexibility with respect to the ways in which they may participate in the reverse auction. For example, the *Notice* proposes to allow a broadcast television licensee to relinquish some or all of its spectrum usage rights in at least three different ways: (1) it may relinquish all of its spectrum usage rights with respect to a particular television channel without receiving in return any usage rights with respect to another television channel; (2) it may relinquish spectrum usage rights in a UHF channel in return for receiving spectrum usage rights in a VHF channel; or (3) it may relinquish its spectrum usage rights in order to share a television channel with another licensee.

69. In addition, the *Notice* recognizes the potential competitive sensitivities related to the information provided by licensees participating in the reverse auction either by submitting bids to exit an ongoing business, or by making significant changes to that business (*e.g.*, by sharing or changing the channels on which they operate). Specifically, as required by section 6403(a)(3) of the Spectrum Act, the *Notice* proposes to take steps to protect the confidentiality of Commission-held data of licensees participating in the reverse auction, including the licensees' identities.

70. In the *Notice*, and in paragraph 6 of this IRFA, the Commission sought comment on its proposed size standards which define a "small business" as an entity with annual average revenues of $40 million over the previous three years; and which define a "very small business" as an entity with an annual average revenues of $15 million over the previous three years. In the *Notice* and in this IRFA, the Commission also sought comment on providing small businesses with a bidding credit of 15 percent and on providing very small businesses with a bidding credit of 25 percent. We believe these proposals will provide an economic benefit to small entities by making it easier to acquire spectrum licenses or to access spectrum through secondary markets.

71. The proposal to limit reverse auction participation to only full power and Class A stations and to not permit participation by low power television stations will have a greater impact on small entities since all low power television stations are small entities. Alternatively, the Commission could allow low power television stations to participate in the reverse auction but this would have no practical use since low power television stations do not have to be protected in repacking and clearing them from their channels in the reverse auction would be unnecessary. The Commission believes the additional burden on low power stations is outweighed by the need to implement Spectrum Act provisions, to

recover a sufficient amount of spectrum in the reverse auction and to complete the successful repacking full power and Class A stations.[86]

72. In order to minimize the impact of the incentive auction and repacking processes on noncommercial educational (NCE) television stations, all of which are small entities, the Commission allowed these stations to participate in the incentive auction. It is expected that participation in the reverse auction will benefit small entities like NCEs by allowing them to strengthen their financial position through the use of auction proceeds. The Commission has decided to not bar NCEs from participating because that could limit the number of channels recovered in the reverse auction and thus negatively affect the outcome of the incentive auction process.

73. The *Notice* proposes that entities with construction permits be allowed to participate in the reverse auction if they become licensees before the deadline for submission of the application to participate in the auction. This would require stations with unbuilt facilities to complete construction of their stations and seek a license prior to participating in the reverse auction. In addition, for a new station permittee not licensed on February 22, 2012 (but auction eligible because it becomes licensed by the pre-auction application filing deadline), the Commission proposes to evaluate its bid based on the spectrum usage rights authorized in the construction permit it held on February 22, 2012. There are only very few entities in this category, and all are full power television stations. Therefore, the proposal would have little adverse, if any, impact and would affect all entities equally.

74. For the reverse auction bidding, it is proposed that the Commission only examine the spectrum usage rights held by stations in their licenses as of February 22, 2012. All stations will be subject to this policy, and therefore, it is not expected to have a significant impact on small entities and, in any case, the impact would affect all entities equally.

75. The Commission's proposal to allow Class A stations to choose which facilities (analog or digital) to have evaluated for their reverse auction bids will benefit these small entities. Alternatively, the Commission could force many Class A stations to have their bids evaluated based on their licensed analog facilities. The Commission believes it would be unfair to those Class A licensees that have yet to convert to digital operation and that made transition plans in reliance on the rules we adopted just one year ago—months before passage of the Spectrum Act—to limit bid evaluations to only those Class A facilities licensed as of February 22, 2012. Class A stations will be permitted to relinquish the facilities with the greatest value, thus maximizing the return for their spectrum. This decision eliminates or minimizes adverse economic impact on Class A stations which are small.

76. Because they will apply in the same way to all stations, the Commission's proposals to not permit full power or Class A stations with an expired or cancelled license to participate in the reverse auction; to allow stations to participate in the reverse auction by agreeing to relinquish a "high VHF channel" (channels 7-13) in exchange for a "low VHF channel" (channels 2-6); and to allow licensees to participate in the reverse auction by relinquishing spectrum usage rights through the acceptance of additional interference; would not have a significant impact on small entities and any impact would affect all entities equally.

77. The Commission's proposal to prevent a licensee from proposing a channel sharing arrangement in its reverse auction bid that would result in a change in the station's community of license and/or DMA would only affect full power television stations. The Commission believes that the burden on small entities of not being able to propose to change their communities of license in their reverse auction bid is greatly outweighed by the need to avoid complicated allocation and repacking issues. Following the conclusion of the incentive auction process, stations will once again be permitted to

[86] As noted in paragraph 30, the Commission has asked for comment on establishing priorities applicable to displacement applications filed by LPTVs, many of which may be owned by small, minority and women applicants.

propose changes to their community of license.

78. As part of the rulemaking, we are seeking comment on the impact on broadcasters of the different repacking approaches we are exploring, including economic and other impacts. For example, the Commission considers engineering and other technical aspects of the repacking process, in particular Congress's mandate in Section 6403 of the Spectrum Act that the Commission make all reasonable efforts to preserve the coverage area and population served of television stations in the repacking. Channel reassignments, and stations going off the air as a result of the reverse auction, also may change the interference relationships between stations, which relationships in turn affect population served. The Commission's proposals must account for all of these impacts in order to carry out Congress's mandate in Section 6403.

79. The unlicensed devices operating in this spectrum are designed to adapt to whatever changes may occur in the spectrum that is available at any given location. Therefore, since the equipment is so flexible and will not have to be reconfigured, the Commission does not currently anticipate any adverse economic impact on the relatively few devices that are already deployed or devices that may be introduced in the future. In the *Notice*, the Commission seeks comment on a variety of measures to ensure that spectrum in the TV bands will continue to be available for unlicensed use, including measures that may increase availability in many markets where little, if any, is available now. Increasing the availability of spectrum for unlicensed use will benefit small entities that use such spectrum for their various unlicensed devices.

80. In the *Notice*, the Commission explores retaining the use of Channel 37 for wireless medical telemetry services and for radio astronomy, as well as the possibility to relocate these users. In the latter case, the Commission seeks comment on the possible economic and other impacts on small, minority-owned, and women-owned small businesses that such a relocation may have, including the availability of other spectrum to support these uses.

81. The Commission proposes to only preserve, during repacking, the service areas of television stations with regard to stations' 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. This proposal would have little impact and any impact would affect all entities equally. Alternatively, the Commission could protect facilities in all pending facility modification applications. However this would greatly complicate the repacking analysis by increasing the amount of facilities under consideration. Additionally, protection of both a licensed facility and a modification thereto that would expand or alter the station's service area would further encumber the spectrum, making it more difficult for the Commission to complete the repacking of the broadcast spectrum.

82. As it did with respect to reverse auction bids by Class A stations, the Commission also proposes that Class A stations elect which facilities they would like protected in repacking. This proposal will benefit small entities such as Class A stations by allowing these stations to choose which facilities to be protected in repacking, Alternatively, the Commission could only protect the Class A station's licensed facilities as of February 22, 2012, but the Commission found that that would be unfair since many Class A's are in the midst of their digital transition; and moreover, failure to protect these stations' unbuilt digital facilities could make it impossible for certain Class A stations to effectuate their conversion plans, thus stalling the digital transition.

83. The Commission proposes to only reimburse the expenses of full power television and Class A stations that are repacked. Alternatively, the Commission could reimburse low power television stations for their repacking expenses. However, that would mean reimbursing stations such as low power television stations that are secondary and that have no expectation of being protected in the repacking process and would also require an expenditure of reimbursement funds that could limit other eligible stations from being fully reimbursed. The burden to small entities such as low power television stations of having to fund their own repacking expenses is outweighed by the intent of Congress to limit

reimbursement to only full power and Class A television stations and that have spectrum rights that must be protected in repacking.

84. The Commission's proposal to limit reimbursement to multichannel video programming distributors (MVPDs) as defined by section 602 of the Communications Act[87] would not have a significant impact on small entities since the definition is very broad and will enable providers affected by the incentive auction and repacking processes to qualify to receive reimbursement.

85. The proposal to reimburse stations and MVPDs based upon pre-determined estimated amounts per station will benefit small entities that cannot afford the expense of having to prepare formal documentation for reimbursement. Alternatively, the Commission could require all stations and MVPDs to prepare and file formal documentation of all expenses. However, the benefit of having more accurate reimbursement amounts is outweighed by the burden on small entities to have to prepare and submit such a filing and the possible delay in the completion of the reimbursement process which has a three-year completion deadline.

86. The proposal to advance reimbursement payments to stations and MVPDs, rather than making them go out-of-pocket for their expenses and reimbursing them, would greatly benefit small entities that may not be in the position financial to go out-of-pocket for their reimbursement expenses. The alternative, to make stations pay for repacking costs out-of-pocket, could would have a significant negative impact on small entities and could substantially delay repacking and make it more difficult to comply with the three-year reimbursement deadline set forth in Section 6403 of the Spectrum Act.

87. The proposal to use a simplified, one-step process for implementing the post-auction and post-repacking channel changes will benefit small entities with limited resources. Rather than requiring small entities to go through a prolonged two-step process of first amending the DTV Table of Allotments and then filing an application for its repacked facilities, the proposal allow stations to file either a license application (for stations where no technical changes are proposed such as channel sharing) or a minor change application. In addition, the streamlined procedures are meant to expedite the post-auction licensing and to ensure a smooth post-auction transition and recovery of channels.

88. The proposal to allow stations to implement their post-auction and repacking facilities on a phased timeline will benefit small entities that may not have the resources to dedicate to the band transition process. Transitioning stations will be able to rely on either auction or reimbursement funds to construct their new facilities. Allowing flexibility in the transition schedule, including requests for additional time, will benefit small entities that may not be able to rely on in-house employees and may have to rely on outside contractors to complete construction of their new facilities.

89. The proposal to require all transitioning stations to inform the public of the transition that will occur following the conclusion of the incentive auction and implementation of repacking will have a greater impact on small entities that may have to expend funds to comply with the requirement or forego the airing of advertisements in lieu of viewer notifications. However, the burden on small entities is outweighed by the public's need to be informed of changes in stations' channel assignments.

90. The *Notice* contains a proposal to allow existing ownership combinations rendered out of compliance due to channel allotments, or technical changes resulting from repacking, to be permanently "grandfathered." This proposal will benefit small entities that would otherwise be forced to sell one or more of their media interests in order to comply with the multiple ownership rules. A "forced" sale

[87] The Communications Act defines MVPD "as a person such as, but not limited to, a cable operator, a multichannel multipoint distribution service, a direct broadcast satellite service, or a television receive-only satellite program distributor, who makes available for purchase, by subscribers or customers, multiple channels of video programming." 47 U.S.C. § 522(13).

would have to be done on an expedited basis and at a reduced price thus resulting in a substantial burden on small entities.

91. To remediate the significant burden to low power television stations, all of which are defined as small entities, from being displaced as a result of repacking, the Commission proposes to allow these stations to have the first opportunity to submit a displacement application and propose a new operating channel. This proposal will benefit small entities by allowing them to identify one of the remaining channels and continue to operate their facilities and avoid having to go off the air.

92. The proposal to require that all channel sharing agreements be in writing; contain certain provisions concerning access to, maintenance of, and modification of the shared transmission facilities; and outline joint responsibility for compliance with certain of the Commission's rules; may have a greater impact on small entities because they may not have access to in-house personnel to prepare and review these agreements. However, the burden on small entities to prepare a channel sharing agreement with the requisite provisions is outweighed by the need to ensure that channel sharing stations comply with the Commission's rules and to prevent disputes that could result in a disruption of service to the public.

93. The proposal to license the 600 MHz band under Economic Areas (EA) geographic size licenses will provide regulatory parity with other bands that provide wireless broadband services that are licensed on an EA basis, such as the lower 700 MHz band licenses. Additionally, assigning 600 MHz licenses in EA geographic areas would allow 600 MHz licensees to make adjustments to suit their individual needs. EA license areas are small enough to provide spectrum access opportunities for smaller carriers. Depending on the licensing mechanism the Commission adopts,[88] licensees may adjust their geographic coverage through auction or through secondary markets. This proposal should make it easier for 600 MHz providers to enter secondary market arrangements involving terrestrial use of their spectrum. The secondary market rules apply equally to all entities, whether small or large. As a result, we believe that this proposal will provide an economic benefit to small entities by making it easier for entities, whether large or small, to enter into secondary market arrangements for 600 MHz spectrum

94. The *Notice* makes several proposals to protect entities operating in nearby spectrum bands from harmful interference, which may include small entities. The proposed technical rules are based on the rules for 700 MHz spectrum, with specific additions or modifications designed to protect broadcast licensees, Radio Astronomy, and Wireless Medical Telemetry Services. The technical analysis contained in the *Notice* also proposes that no additional rule modifications to protect other spectrum bands are necessary. This proposal may help minimize the impact on any small entities – both existing and potential small entities that may seek to provide services using 600 MHz spectrum – by streamlining regulations for operations in these spectrum bands.

95. The *Notice* also proposes to provide 600 MHz licensees with the flexibility to provide any fixed or mobile service that is consistent with the allocations for this spectrum. This proposal is consistent with other spectrum allocated or designated for licensed fixed and mobile services, *e.g.*, Lower 700 MHz. The *Notice* further proposes to license this spectrum under the Commission's market-oriented Part 27 rules. Proposals made pursuant to Part 27 include applying the Commission's secondary market policies and rules to all transactions involving the use of the 600 MHz band for terrestrial services, which will provide greater predictability and regulatory parity with bands licensed for terrestrial mobile broadband service. This proposal should make it easier for 600 MHz providers to enter secondary market arrangements involving terrestrial use of their spectrum. The secondary market rules apply equally to all entities, whether small or large. As a result, we believe that this proposal will provide an economic benefit to small entities by making it easier for entities, whether large or small, to enter into secondary market arrangements for 600 MHz spectrum.

[88] *See* paragraph 5.

F. Federal Rules Which Duplicate, Overlap, or Conflict with the Commission's Proposals

96. None.

APPENDIX C

Auctionomics and *Power Auctions* Incentive Auction Rules Option and Discussion

The *Auctionomics* and *Power Auctions* Incentive Auction Rules Option and Discussion is attached as a PDF to this document.

STATEMENT OF
CHAIRMAN JULIUS GENACHOWKSI

Re: *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket 12-268*

This is a big deal. Today, the U.S. becomes the first nation in the world to launch incentive auctions – a new paradigm in spectrum policy that uses market forces to repurpose beachfront spectrum for licensed and unlicensed wireless broadband.

The world is watching. As Japan's Nikkei Weekly wrote recently, "Japan can learn from the incentive auction system adopted by the U.S. government."

In this flat, competitive world, capital and talent can flow anywhere. We're in a global bandwidth race. It's similar to the space race in that success will unleash waves of innovation that will go a long way toward determining who leads our global economy in the 21st century.

Because of innovative American companies and entrepreneurs, and smart government policies, the U.S. has regained global leadership in mobile innovation over the past few years. Incentive auctions will help keep us there.

They will help ensure that the U.S. has world-leading wireless networks, that we have the mobile bandwidth we need, that we build and maintain a strategic bandwidth advantage, that we keep and extend our edge in mobile innovation, and that we improve coverage and service quality for wireless consumers throughout the country.

The FCC pioneered the original spectrum auctions.

When we first introduced incentive auctions in 2010, as part of a strategy to address the spectrum crunch, one initial reaction was: The idea won't go anywhere, not in this town, not at this time.

But less than two years after the idea's formal introduction in the National Broadband Plan, incentive auctions have gone from idea to law. President Obama, from the beginning, displayed strong leadership on the mobile opportunity for innovation and economic growth, and made incentive auctions a priority.

While, as I've said, I'm concerned about aspects of the law, Congress, to its credit, overcame strong differences to enact a bold law. I commend the leadership of both parties, particularly of the Senate Commerce Committee and House Energy and Commerce Committee, for their hard work and commitment to action, and our duty and intention is to faithfully implement the law, freeing up spectrum, raising very substantial revenue, and helping fund FirstNet first responders.

Today, the FCC formally launches this effort, with a strong, thoughtful and path breaking proposal, and we anticipate conducting the world's first incentive auction in 2014.

When the idea was first proposed the second reaction from some quarters was: there's no spectrum crunch.

Yet, today, virtually every expert confirms the vital need to free up new spectrum, because demand is rapidly exceeding supply.

And it's not going away. U.S. mobile data traffic grew almost 300% last year, and driven by 4G LTE smartphones and tablets, traffic is projected to grow an additional 16-fold by 2016.

The spectrum crunch is a major headache for consumers, who have to deal with dropped connections or spinning pinwheels when they're checking the web on the go.

And it's a headache for U.S. innovators and network operators. We're now leading the world in deploying the next generation of wireless broadband networks – 4G LTE – at scale. With more than two thirds of the world's LTE subscribers, the U.S. is the global test bed for LTE apps and services. But we won't be able to seize the opportunities of this early advantage without taking care of our invisible infrastructure – wireless spectrum.

* * *

To realize the promise of incentive auctions – our single biggest initiative to free up beachfront spectrum and address the spectrum crunch – our work in this proceeding will be guided by a set of core goals and principles:

- Maximizing the amount of spectrum freed up for flexible use, both licensed and unlicensed.

- Maximizing broadcaster participation in the auction, including by making the auction process as transparent and easy-to-understand as possible.

- We'll keep a firm focus on engineering and economics. This will be a fact-based, data-driven proceeding, drawing on the expertise of the world's leading economists, auction design experts, and engineers, both inside and outside the agency.

- We'll recognize the need for humility. This is an incredibly fast-moving space and an extremely complex policy initiative. We are committed to engaging with all stakeholders, learning from the public record we'll be building, aiming for simplicity, and adjusting our proposals as necessary to ensure the auction succeeds.

- And we'll remain committed to U.S. leadership in mobile infrastructure and innovation.

We intend to implement incentive auctions consistent with these goals and principles, within the constraints imposed by the Spectrum Act and recognizing Congress's objective of funding the FirstNet broadband network for our first responders It won't be easy, but today's proposal puts us well on our way.

The new incentive auction concept poses a long-list of new challenges, but this proposal already makes clear that smart and elegant solutions are possible. The proposals on auction design and band plan demonstrate this.

The proposed band plan consists of 5 MHz "building blocks" to allow for the greatest amount of flexibility and efficiency, including allowing for additional downlink blocks that could be auctioned on an unpaired basis.

In developing this proposal, we're optimizing for the new mobile data world. We see opportunities here, as well as challenges – opportunities for a next-generation band plan, one that can serve as a model for the world, and advance the goal of internationally-harmonized spectrum.

In addition to unleashing licensed spectrum, we also propose to free up a significant amount of unlicensed spectrum for Wi-Fi-like uses.

Today's proposal would create the world's first nationwide unlicensed spectrum band suitable for robust wireless broadband, on contiguous low-band frequencies.

Surprisingly, there's been some disagreement on this. But this is a time to be embracing and extending WiFi-like uses of spectrum, as we take unprecedented steps to free up a very substantial amount of spectrum for licensed use. Unlicensed spectrum has a powerful record of driving innovation, investment, and economic growth – hundreds of billions of dollars of value creation for our economy and consumers. Why would we turn our back on WiFi-like innovation, particularly when we can unleash both licensed and unlicensed spectrum?

Along with licensed spectrum, unlicensed spectrum is a vital part of today's – and tomorrow's – spectrum ecosystem. We estimate that today approximately one third of mobile traffic is offloaded to Wi-Fi, as carriers increasingly develop new methods to manage capacity on their networks.

A balanced approach makes sense for our country, and it's what the Spectrum Act contemplates.

People depend on unlicensed spectrum every single day: to connect wirelessly to their home and business Internet networks; to stream news and movies onto their tablets; to connect their hands-free Bluetooth devices; to monitor inventory using RFID tags.

Our proposal today takes White Spaces spectrum innovation to the next level. We've already seen successful uses of unlicensed white spaces spectrum for Smart Grid monitoring, "Smart City" monitoring, distance learning, and to provide additional bandwidth to enable better healthcare.

Our proposal on unlicensed spectrum will create a powerful new platform for innovation – a world-leading platform at a time when many other countries are actively working to leapfrog the U.S. This is a win for innovation, a big opportunity for our country. I'm proud that we're moving to seize the opportunity, and I look forward to input from all stakeholders on aspects of this proposal.

Incentive auctions are also an opportunity for broadcasters – both those that will take advantage of a once in a lifetime financial opportunity, and those that will choose to continue to be a part of an even healthier broadcast marketplace.

And broadcasters will also reap benefits from a more robust mobile ecosystem. In fact, broadcasters are uniquely positioned to benefit from mobile broadband because of their focus on video content creation. I hear from more and more broadcasters that seek to reach their audience wherever it is.

A headline at this year's NAB Show said it well: "Convention Embraces Multiplatform World." And from my own experience in both broadcasting and Internet businesses, I couldn't agree more with this approach. Robust mobile networks will help broadcasters deliver and monetize their content on tablets and other mobile devices. Because of their experience with video, broadcasters are in a great position to lead content into the 21st century, and incentive auctions will help.

We are committed to outreach and education to all broadcasters, including through our new Broadcaster LEARN Program, which is designed to inform and empower broadcaster decision-makers as they participate in our comment process and consider the business decisions that incentive auctions create.

As I mentioned, a key goal of our auction proposal is simplicity, and we'll continue to work with broadcasters, wireless carriers and all stakeholders to improve the proposal and put in place the most effective auction design ever developed. We'll also work to promote the important statutory goal of diversity.

* * *

I was here at the FCC in the days of the first spectrum auctions. I remember how the auction design evolved from a simple oral outcry – like a cattle auction –- to the sophisticated, computer-driven simultaneous ascending auction format that has been used in a wide range of commodity auctions around the world.

I recall all too well that people worried the new auction would be too complex. But due to the incredible work of FCC staffers like Evan Kwerel and Greg Rosston and outside experts like Paul Milgrom, the auction turned out to be a major success.

Fortunately, Evan and Greg and Paul are engaged in this proceeding as well.

Innovation requires risk taking and new thinking. I challenge all stakeholders will approach the creation of these new incentive auctions with the same daring spirit that led to the creation of the original spectrum auctions two decades ago.

Finally, thank you to Gary Epstein, Ruth Milkman, John Leibovitz, Julie Knapp, Bill Lake, Rebecca Hanson, Evan Kwerel, Bill Scher, Brett Tarnutzer, Rob Alderfer, Amy Levine, Stuart Benjamin and the rest of the team who have worked to make incentive auctions a reality. I also want to recognize additional team members that initially developed the incentive auctions concept as part of the National Broadband Plan – including Blair Levin, Erik Garr, Carlos Kirjner, Phil Belaria, Adam Gerson, Brian Weeks and many others.

STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL

Re: *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket 12-268*

I will start by thanking the incentive auction team for their thoughtful and diligent work on what is perhaps the Commission's most difficult undertaking since I took office. I am excited that our agency is on the cutting edge of history and I commend you for your tireless efforts and creativity because we simply don't know where the facts will lead us.

I also thank Chairman Genachowski for his leadership and his willingness to accommodate edits and suggestions to improve the notice and to provide a meaningful opportunity for interested parties to submit comments. We agree that working together is especially important given the unique characteristics and complexities of the project. There are many proposals and an even greater number of questions posed. At this early stage, some ideas appear to be better than others. Nonetheless, I'm pleased that we included questions designed to capture comments regarding *all* practicable ideas.

We have completed our work on this stage of the process and the time has come to seek comment from stakeholders on the myriad issues we have flagged thus far. As we move forward, I will follow a number of important ideas quite closely. Among them are (but not limited to):

- Whether the proposed five megahertz channel blocks would result in a band plan that reserves too much spectrum for unlicensed use, contrary to Congress's explicit intent;

- Or, whether auctioning spectrum in six megahertz channels, that is, on a broadcast channel-by-channel basis, would be more intuitive and thus lead to a more efficient and fruitful auction;

- Whether the Commission will attempt to adopt rules or policies that run contrary to the directives of the statute either directly or indirectly;

- Whether adopting six megahertz guard bands (as proposed) is necessary to prevent harmful interference given the technological improvements that may come over the horizon after we adopt rules;

- Whether the proposals for determining future broadcast channel assignments and reverse auction winners would result in a process that is as objective and transparent as it must be;

- Whether issues related to the coexistence of Lower 700 MHz A Block operations and those of neighboring TV channel 51 are resolved *prior* to the auctions;

- Whether imposing spectrum caps prior to the auction would exclude specific potential bidders thus producing the net result of frustrating Congress's directive that the Commission attempt to raise at least $7 billion for a nationwide, interoperable public safety network; and

- Whether the Commission would be able to finish its work without undertaking a further notice and comment. This being – literally – *the most complex spectrum auction in world history*, I think we should keep all of our options open, including measuring twice before making the cut, as carpenters say.

As we know, the law mandates that the Commission accomplish a number of important goals. I have advocated that success will come more easily if we proceed with an eye toward regulatory humility, simplicity and restraint. In the past, regulatory efforts to over-engineer spectrum auctions have caused harmful, unintended consequences. I remain hopeful that our new rules will be *minimal*, intuitive and "future proof" to pave the way for uses that we cannot imagine today as technology and consumer choices evolve.

We start a lengthy process today that is sure to be filled with many unforeseen twists and turns. I am eager to contribute to the Commission's ongoing effort and will greatly appreciate the thoughts and insights of all involved.

STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN

Re: *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268*

We often talk about leaving this world, and this country, better than we found it; reducing the national debt, lowering our carbon footprint, preserving and striving for peace between nations, and so on. What we are affirming in this room, today, improving our mobile and broadcast industries, I believe, should be added to the list.

I have been hearing about the looming spectrum crunch for as long as I've been here. And even as a casual observer of one's surroundings, you can't help but notice that everyone we know and see in coffee shops, at sporting events, and on subways, is using mobile broadband for various purposes.

This insatiable demand for mobile services forces the industry to work hard at ensuring that their networks can keep pace. Now, we've reached a point where government can and must lend a constructive hand to ensure the platforms, that many now take for granted, keep moving efficiently. We are quickly outraged when the smallest delay in service affects our experiences. And while getting angry at the DMV remains at the top of everyone's list, being unable to log-on to Facebook in a Wi-Fi hotspot, is making a steady climb towards first place.

However, we will not be able to take this giant leap forward without patience, positive engagement, and great assistance, from the outstanding engineers and professionals in the broadcast industry. At the beginning of this process and during our early discussions on repacking and voluntary auctions, there was no small amount of anxiety from broadcasters. And while some anxiety remains, today, as I have said all along, the word *voluntary* is the most important word contained in all of the pages that comprise this document.

In the press release issued when staff circulated this NPRM, Chairman Genachowski made two points I wish to underscore. First, voluntary incentive auction authority gives us the ability to strengthen both our mobile and broadcast industries. Second, to "maximize the opportunities of spectrum [which this new authority creates], depends on the active engagement of the public and all stakeholders."

Both points should be guiding principles as we continue in this proceeding. The incentive auction authority Congress gave us also presents novel challenges. The Commission must comply with the statutory language and carefully consider all relevant issues necessary to properly design three key aspects of the unprecedented voluntary incentive auctions: the reverse auction, the repacking of remaining broadcast TV licensees, and the forward auction. Each of these has its own set of difficulties, so we need the engagement of all relevant parties to design the auction properly and make the most of this opportunity.

Gary Epstein, Ruth Milkman, Julie Knapp, Bill Lake, and Bill Scher, have made much time in their busy schedules to brief me on the NPRM and the Incentive Auction Rules Option attached to the item. I am confident the staff is doing their best to provide parties with meaningful opportunities to participate in a process that can improve both the mobile and broadcast industries. It is also clear that considerable time and effort went into trying to simplify the incentive auction process and remove as many computational challenges as possible from broadcasters who may be interested in relinquishing spectrum. If we need to make changes to add more clarity to the process, the staff has shown that they are open to all recommendations.

I generally support all the preferred proposals in the NPRM. But there are a few I believe deserve special mention. I was particularly pleased to see proposals that would preserve sufficient spectrum for unlicensed operations. Promoting continued innovation in the unlicensed service industry is important to our National economy and to maintaining leadership in the mobile broadband services market. It is estimated that unlicensed spectrum, generates between 16 and 37 billion dollars each year, for the U.S. economy. In November of last year, the Consumer Federation of America found that Wi-Fi offload, resulted in wireless carriers, not having to construct 130,000 cell sites. This resulted in annual cost savings of more than 25 billion dollars.

Finding sufficient spectrum for unlicensed services is also important to companies, who have already spent considerable capital and other resources, trying to develop networks and devices that comply with the TV White Space rules we adopted, in September 2010. Successful TV White Space business models increase the chances that some Americans who live in low-income rural and urban areas, will receive the affordable competitive options for mobile broadband services that most Americans already enjoy.

I was pleased to see that the NPRM seeks comment on bidding credits, which could create opportunities, for small businesses to acquire wireless spectrum in the forward auction process. I also appreciate that we are seeking comment on whether those small business credits are sufficient to create opportunities for businesses owned by women and minorities. At most of my appearances, and in meetings in my office, small business owners and prospective owners, explain to me just how difficult it is to succeed in a down economy. And while the economy is rapidly improving, these innovative entrepreneurs, and hard-working people find it nearly impossible to get access to capital or find worthwhile inroads to credit.

What we do, today, will further assist us in realizing growth opportunities for these individuals and their ideas. We should be very proud of that. Small businesses are the powerful little engines that run America, and I am glad to have a hand in their growth potential.

I was also happy to see questions on what the Commission should do to ensure interoperability in the band plan for the forward auction. The current lack of interoperability, in the lower 700 MHz band, is impeding the deployment of competitive options for consumers. To ensure that this incentive auction yields the greatest possible benefits for consumers, we must consider whether we should mandate interoperability in the spectrum we repurpose for mobile services.

Thank you, Gary for your presentation. I especially appreciate your efforts to identify each of the 70 staff members who worked on this NPRM. I also want to thank my wireless legal advisor, Louis Peraertz. You should all feel great; for this is truly an impressive item.

STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL

Re: *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268*

Wireless services are revolutionizing the way we live and work. The number of devices using our airwaves is increasing at astounding speed. But this is more than the proliferation of wireless phones and tablet computers. Consider that within the next decade machine-to-machine devices communicating wirelessly may number as high as 50 billion. The much-vaunted Internet of Things is around the bend, and the ways we connect, communicate, and conduct our commerce will never be the same.

So today, at the direction of a forward-thinking Congress, the Commission embarks on the complex but critical task of conducting wireless incentive auctions. Incentive auctions are a new tool that Congress provided this agency to address the near-term demands on our airwaves. If we get them right, we will facilitate the voluntary return of spectrum from commercial licensees and promote its efficient reuse. If we get them right, we will ease congestion on our airwaves and expedite development of new wireless services and applications. And if we get them right, we will drive digital age innovation, spur job creation, and grow the wireless economy.

Past is prologue. But history matters, and I believe a brief recitation of where we have been with wireless auctions will help us understand where we are going.

For nearly two decades, the Commission's path-breaking spectrum auctions have led the world. The agency has held more than 80 auctions; it has issued more than 36,000 licenses; and it has raised more than $50 billion for the United States Treasury. The Commission's simultaneous multiple round ascending auctions have been a model for governments and commercial wireless providers across the globe.

We are now again poised to be the world's pioneer. We have an opportunity to show how this new kind of auction—incentive auctions—can facilitate the smart and efficient use of our wireless resources. The right mix of law, economics, and engineering will yield not only more spectrum, but more consumer opportunity to benefit from a growing range of wireless services that will enhance our commercial and civic life.

Today's Notice of Proposed Rulemaking is merely the start. Big choices and hard work lie ahead. Yet going forward, I believe that there are four central building blocks to a successful incentive auction: simplicity, fairness, balance, and public safety.

Simplicity is key. Incentive auctions are an undeniably complex undertaking. But at every structural juncture, I believe that a bias toward simplicity is crucial. Simplicity will yield more interest in the opportunities these auctions provide for broadcasters, and in turn, this will yield more spectrum. Station owners operating small- and medium-sized businesses should be able to understand their options without hiring high-priced auction experts. Auction design is one component, but outreach to this community to explain this process is another. As a result, I have encouraged the Chairman to develop material that describes in straightforward terms the proposed auction process and highlights for stakeholders the most relevant portions of what we produce today. I am convinced that the agency should also engage in more direct outreach through workshops here and outside of Washington. I believe that the Chairman shares my concerns and I thank him for committing to this kind of material and outreach.

Fairness is essential. This is especially true with regard to the treatment of broadcasters that do not participate in the auction. Fairness demands that we consider how to accomplish repacking by minimizing unnecessary disruption and maximizing the ability of the public to continue to receive free over-the-air television. We must be faithful to the law, which requires efforts to preserve the coverage area and population of each licensee, as well as coordination along the border with Mexico and Canada. At the same time, we ask that broadcasters make a fair assessment of the opportunities this auction provides the industry. By offering incentives to share channels and incentives to relocate from the UHF to VHF band, this auction can mean new resources for broadcasters to develop new programming and deploy new services. These are propositions that can strengthen broadcasting, by providing new models for station ownership, by providing new funding sources for local content, and by providing new ways to use technology to make efficient use of our airwaves. Fairness also requires notice. So as I have said before, I would ask that the agency develop a timeline for all of its upcoming auctions.

Balance is necessary. Heading into this auction, the Commission has a hefty task. It must balance Congressional mandates with the intricacies of auction design. It must balance a range of industry concerns, and it must consider how consumers will benefit from the choices we make. This is challenging to do, as these interests are intertwined and if we are honest, at times in tension. As a result, we need a holistic approach. The sum is greater than the parts. None of the three legs of this endeavor—the reverse auction, the repacking, or the forward auction—can stand on its own. For instance, the interference rules we consider will not only impact broadcast services, but also how much spectrum will be available for auction, which in turn will impact the revenues raised.

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. As noted above, the Commission's prior auctions for licensed spectrum have yielded more than $50 billion in revenue. But it is important to keep the broader economic picture in mind. If you have ever used a Wi-Fi connection to get online, a television remote control to turn on the game, or a garage door opener when you head home, you have benefited from the use of unlicensed spectrum. In fact, unlicensed spectrum generates between $16-37 billion annually for the U.S. economy. Moreover, unlicensed spectrum is an important tool for relieving congestion on commercial wireless networks. Today, more than one-third of data traffic is offloaded onto Wi-Fi networks. To this end, I am pleased that the Commission asks how to best utilize unused spectrum in the current broadcast television bands for unlicensed operations. In our increasingly mobile and connected world, a balanced approach that includes both licensed and unlicensed spectrum is the key to unlocking the full economic benefits of wireless broadband.

Finally, public safety is fundamental. We must remember that in the Middle Class Tax Relief and Job Creation Act, incentive auctions are part and parcel with enhancing public safety. This legislation has purposes that are broader than those tasked to this agency. The auction revenues the Commission raises are designated to support the first nationwide, interoperable, wireless broadband public safety network. After far too many years, we are at long last beginning to address the 9/11 Commission's call to enable communications connectivity among local, state, and federal first responders. The auction revenues also contemplate funds for public safety research, support for next generation 911 service, and deficit reduction. We cannot divorce the choices this agency makes in developing these auctions from the broader purposes in this legislation and the public safety needs of the American people.

So these are the values that will inform my thinking about these auctions. Simplicity will yield more spectrum opportunity. Fairness is essential in our treatment of broadcasters. Balance is required in our approach to the law and the mix of licensed and unlicensed opportunities. And public safety is fundamental. But of course, we also need to remember that it is consumers who must emerge as the real beneficiaries of this auction. As President Obama has stated, "expand[ing] wireless broadband access

will trigger the creation of innovative new businesses, provide cost-effective connections in rural areas, increase productivity, improve public safety, and allow for the development of mobile telemedicine, telework, distance learning, and other new applications that will transform Americans' lives." Amen. Let's get to work.

Thank you to the many individuals throughout the agency who contributed to this effort, in the Wireless Telecommunications Bureau, in the Media Bureau, in the Office of General Counsel, the Office of Engineering and Technology, and on the Incentive Auction Task Force.

STATEMENT OF
COMMISSIONER AJIT PAI
APPROVING IN PART AND CONCURRING IN PART

Re: *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268*

In 1939, Winston Churchill famously described Russia as "a riddle, wrapped in a mystery, inside an enigma." Seventy-three years later, I believe that this is an apt description of the challenges we confront in implementing our legal obligation to hold incentive auctions. It has often been said that this will be the most complicated set of spectrum auctions ever held by any country. In fact, it has been repeated so often that it has probably become a cliché. But this Notice of Proposed Rulemaking (NPRM) makes clear the magnitude of the task in front of us.

There are many pieces of the puzzle that have to fit together for this enterprise to end in success, including a reverse auction, a forward auction and a repacking plan. Doing any one of these things individually would be a significant undertaking for the Commission. Doing all of them in conjunction is a daunting proposition indeed.

If we at the Commission make the right decisions, each piece of the puzzle will fit together seamlessly. We will free up badly needed spectrum for mobile broadband, which will promote infrastructure investment, economic growth, and job creation. We will preserve a vibrant and free, over-the-air broadcast service, including by providing needed funding for those that wish to stay in broadcasting but choose to channel share or move to Very High Frequency (VHF) spectrum. And we will raise financial resources to help build a nationwide public safety broadband network, reduce the federal budget deficit, and advance next-generation 911 service. If, on the other hand, we do not get this right, we could end up with a Rube Goldberg contraption that will produce a failed auction.

Fortunately, the Commission has assembled an immensely talented team to work on this proceeding. They have put in long hours to produce this NPRM, and I would like to thank each of them for their service. In particular, given my past work in the Office of General Counsel, I would like to recognize Bill Scher of OGC for his leadership on this project. Based on my prior experience with Bill, I am not surprised that he has conducted himself with such distinction working on this item.

But yeoman staff effort alone will not be enough to produce rules that will lead to a successful incentive auction. Rather, it is critical that we receive a wide range of input from all affected stakeholders. Given the complexity and prominence of this matter, rarely has the "comment" part of "notice and comment" rulemaking been more important. How will the proposals that we are making today work in the real world? Are there alternatives that will lead to a more successful outcome? You need to tell us. And we need to listen.

This morning, I will vote to approve in part and concur in part with this NPRM. As that suggests, I agree with some proposals contained in this item and not necessarily with others. But I think we all agree that today's NPRM serves as an invaluable starting point for an important public conversation. It frames numerous issues for discussion and commences a rulemaking process that we are compelled, by law and by the marketplace, to launch.

Unfortunately, this NPRM does not ask all of the questions that need to be asked. While I appreciate the willingness to include some of my suggestions in the NPRM, I am disappointed that this item does not include other critical questions that I believe we must pose. I will therefore ask them here, in the hope that parties will respond to them in the record.

First, the forward auction as proposed stops as soon as it generates proceeds sufficient to pay successful bidders in the reverse auction, cover the Commission's administrative costs, and cover the

estimated costs of reimbursements required by the statute.[1] This is essentially like ending a traditional auction as soon as the reserve price is met. In other words, the NPRM envisions an auction with no net revenues. This means no money for the First Responder Network Authority (FirstNet) to build out a nationwide, interoperable public safety broadband network;[2] no money for state and local first responders;[3] no money for public safety research;[4] no money for deficit reduction;[5] and no money for next-generation 911 implementation.[6] Congress mentioned each of these items in the Spectrum Act, which makes it difficult to square that legislation with an auction that yields no net revenues. I thus ask stakeholders how we can amend the auction design and incorporate closing conditions that might maximize the net revenues raised by the auction. For example, traditional auction theory suggests that an auction should remain open until no bidders come forward. This is because ending an auction while there are still willing bidders may allocate spectrum to bidders that value it less and leave revenues on the table. How can we design the auction so that it does not close prematurely?

Second, the Spectrum Act provides that non-participating television broadcasters and cable operators must be compensated for costs incurred during the repacking process.[7] At the same time, it limits the Broadcaster Relocation Fund to $1.75 billion.[8] The NPRM acknowledges that this fund may be insufficient to compensate broadcasters and cable operators for their reasonably incurred costs,[9] but it does not seek comment on how this limitation affects when we close the auction. So I will ask: Does the Spectrum Act require us to include this limitation as a closing condition? If not, should we require that the estimated costs of repacking television broadcasters and cable operators be less than that sum as a closing condition? Either way, what impact, if any, would such a condition have on the efficiency of the broadcast incentive auction?

Third, I hope stakeholders will help us flesh out the appropriate size of guard bands. I agree with the NPRM that six megahertz guard bands are sufficient to shield against interference between television broadcasting and the Long Term Evolution (LTE)-based services likely to be offered using the newly licensed spectrum. But it also may be *more* than sufficient given the power and out-of-band emission limits we place on this newly licensed spectrum, not to mention the availability of improved filters. Because the Spectrum Act directs that "guard bands shall be no larger than is technically reasonable to prevent harmful interference between licensed services outside the guard bands,"[10] I think we must ask the obvious question of whether a smaller guard band would be "technically reasonable." For example, would a five megahertz or four megahertz guard band suffice? And if so, would adopting six megahertz guard bands run afoul of the Spectrum Act?

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[1] NPRM at paras. 67–69.

[2] Spectrum Act § 6413(b)(1), (3).

[3] Spectrum Act § 6413(b)(2).

[4] Spectrum Act § 6413(b)(4), (7).

[5] Spectrum Act § 6413(b)(5).

[6] Spectrum Act § 6413(b)(6).

[7] Spectrum Act § 6403(b)(4).

[8] 47 U.S.C. § 309(j)(8)(G)(iii)(I).

[9] NPRM at para. 345.

[10] Spectrum Act § 6407(a).

Fourth, the NPRM assumes that we need not license and auction the guard bands,[11] but I am not sure this is consistent with the Spectrum Act. At several points, the Spectrum Act appears to contemplate that all reallocated spectrum will be licensed and auctioned. Our general incentive auction authority, for example, only lets the Commission "encourage a licensee to relinquish voluntarily some or all of its licensed spectrum usage rights *in order to permit the assignment of new initial licenses*."[12] Our broadcast incentive auction authority is a subset of that authority and allows us to share proceeds with broadcast licensees "in order to make spectrum available for assignment through a system of competitive bidding."[13] Similarly, the Spectrum Act requires a forward auction in which "the Commission assigns licenses for the use of the spectrum that the Commission reallocates."[14] Do these provisions require the Commission to license and auction all spectrum reallocated from the television broadcasting service, including guard band spectrum? What would the value of the guard band spectrum be if licensed and auctioned?[15]

On the other hand, the Spectrum Act also states that we "may permit the use of such guard bands for unlicensed use."[16] Is that provision best read as allowing the Commission to authorize unlicensed use of guard bands instead of licensed use (as the NPRM seems to assume)? Or is there another way to reconcile these provisions, perhaps by licensing and auctioning the guard bands but allowing unlicensed use therein on a non-interfering basis?[17] Could we license the guard bands and auction it to a band manager for unlicensed use?[18] If we must comply with a license-and-auction requirement, are there other means to encourage flexible unlicensed use of the guard bands?[19]

Fifth, I hope stakeholders will help us explore alternative approaches to channel sharing. For example, should we require all parties to a channel-sharing arrangement to file pre-auction applications and participate in the auction? This would allow each party to submit its bids for sharing, which may reduce the need for pre-auction negotiations on the precise value of sharing for each party (negotiations that may be difficult under the Commission's normal prohibited-communications rule). And since reverse-auction participants could be expected to incorporate any relocation costs into their bids, it may increase the transparency of the repacking process by allowing the Commission to better understand the total cost of a particular channel-sharing arrangement. On the other hand, requiring both parties to

[11] To be clear, I am pleased that the NPRM seeks comment on other approaches to guard band spectrum, including whether we should license and auction it. But my primary concern is fulfilling Congressional intent, and thus I believe questions addressing our legal authority under the Spectrum Act are necessary.

[12] 47 U.S.C. § 309(j)(8)(G) (emphasis added).

[13] Spectrum Act § 6403(a)(1).

[14] Spectrum Act § 6403(c).

[15] In Auction 33, six megahertz of non-contiguous guard band spectrum raised more than $500 million at auction. See FCC, Auction 33, Upper 700 MHz Guard Bands, http://go.usa.gov/YatQ. Here, the Commission would likely have two six megahertz guard bands available for auction, which could also be paired to create a 6 + 6 pairing in each market. What value would bidders likely place on these guard bands, paired or unpaired?

[16] Spectrum Act § 6407(c).

[17] Notably, in discussing guard bands and unlicensed use, the Spectrum Act specifically requires that unlicensed service use a database to ensure non-interference with licensed services. Spectrum Act §§ 6407(d), (e).

[18] *Cf.* Spectrum Policy Task Force Report, ET Docket 02-135, at 63 (Nov. 2002) (suggesting that the FCC make unlicensed spectrum available through a band manager or frequency coordinator).

[19] *See, e.g.*, A Market-Based Approach to Establishing Licensing Rules: Licensed versus Unlicensed Use of Spectrum, FCC Office of Strategic Planning Working Paper 43 (Feb. 2008).

participate (with potentially differing bids) may make a descending clock auction more difficult to implement. What are the costs and benefits of this option? Are there any other issues that we should consider regarding channel sharing agreements that may affect who should apply to participate in the reverse auction?

Similarly, I wish the NPRM had raised the question of whether we might encourage channel sharing by low-power broadcast stations in markets where they are likely to be displaced. Although such sharing may not be an option if, for example, two low-power broadcasters operate in different geographic areas, it seems like a worthy question to ask.

Sixth, I would have preferred that the NPRM more directly address the unique situation that translators face. These low-power television stations convey broadcasts to rural communities that would otherwise be unserved. What we can do within the constraints of the Spectrum Act so that this vital communications link for rural America is not broken?

Seventh, I am disappointed that the NPRM does not seek input on a realistic schedule for completing this proceeding. For example, in order to begin the incentive auction by June 30, 2014, which I believe should be our goal, by when do we need to issue final rules and auction procedures? If we develop a timetable for completing each of the steps that must be taken prior to the incentive auction, there is a much greater chance that we will make progress in a timely fashion.

These are just some of the questions that I wish had been asked. But I would be remiss not to mention items I proposed that the NPRM does include, most notably questions about relocating channel 51 broadcasters,[20] bidding on specific frequencies,[21] prioritizing paired spectrum,[22] and generally simplifying the incentive auction. I view all these questions as part of a larger challenge: How do we ensure that all wireless providers—including small businesses with limited experience in complicated auctions—have a full and fair opportunity to participate?

* * *

In the final analysis, the questions that we pose and the proposals that we make in today's NPRM are important. But they are not as important as the feedback we will receive. If the incentive auction is going to be a success, we need to listen to the input of stakeholders, and we can't be afraid of asking the hard questions.

While there are plenty of challenges in front of us, I remain optimistic that we can conduct a successful incentive auction. And as we go forward in this proceeding, I believe that there are four principles that will be critical to our success. First, we must be faithful to the statute passed by Congress. It is our job to implement this legislation, not to rewrite it to conform to our policy preferences. Second, we must implement the law in a manner that is fair to all stakeholders. This is especially important because the incentive auctions will fail unless both broadcasters and wireless carriers choose to participate. Third, we need to keep our rules as simple as possible. The incentive auction is inherently complicated; we don't need to introduce unnecessary complexities. Rules that are perfect in theory may turn out to be disastrous in the real world if market participants don't understand them or don't like them. And fourth, we need to complete this proceeding in a reasonable timeframe. We haven't conducted a major spectrum auction since 2008, and there is an urgent need to make additional spectrum available for mobile broadband. Prolonging uncertainty for broadcasters isn't in their interest either. So it is my hope that we will be able to conduct a successful incentive auction in mid-2014.

[20] *See* NPRM at para. 165.

[21] *See id.* at para. 64.

[22] *See id.* at para. 182.

I will end as I began, with a quote from Churchill, one that sums up where we find ourselves today. "[T]his is not the end. It is not even the beginning of the end. But it is . . . the end of the beginning." With this morning's vote, we complete the first step in the rulemaking process. This is a significant accomplishment, but the hardest work remains ahead of us. I look forward to joining with my colleagues and the diligent Commission staff in the time to come in pursuit of our common goal.