Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Advanced Television Systems	)	
and Their Impact upon the	)	MM Docket No. 87-268
Existing Television Broadcast	)	
Service	)	

SIXTH REPORT AND ORDER

Adopted: April 3, 1997 ; Released: April 21, 1997

By the Commission: Chairman Hundt and Commissioners Quello, Ness and Chong issuing separate statements.

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I. INTRODUCTION

1. In this Report and Order, the Commission adopts a Table of Allotments for digital television (DTV),[1] rules for initial DTV allotments, procedures for assigning DTV frequencies,[2] and plans for spectrum recovery. The new DTV Table accommodates all eligible existing broadcasters, replicates existing service areas, and ensures sound and efficient spectrum management. The Table will also provide for early recovery of 60 MHz of spectrum (channels 60-69) and recovery of an additional 78 MHz of spectrum at the end of the transition period, for a total recovery of 138 MHz of spectrum. As we stated in the Sixth Further Notice of Proposed Rule Making (Sixth Further Notice) that we issued last July, our overarching goals in this phase of the proceeding are to ensure that the spectrum is used efficiently and effectively through reliance on market forces and to ensure that the introduction of digital TV fully serves the public interest.[3]

II. BACKGROUND

2. The Commission first addressed proposals relating to the development of channel allotments for DTV service the 1992 Second Further Notice of Proposed Rule Making (Second Further Notice) in this proceeding.[4] In that action, the Commission presented proposals for the policies, procedures and technical criteria to be used in allotting and assigning channels for DTV service. Included in that action was a sample DTV Table of Allotments.

3. On July 25, 1996, we adopted the Sixth Further Notice in this proceeding to revisit our earlier proposals and to respond to technical and system developments with regard to digital broadcast television technology. In the Sixth Further Notice, we proposed policies for developing the initial DTV allotments, procedures for assigning DTV frequencies, and plans for spectrum recovery. We also proposed technical criteria for the allotment of additional

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[1] Digital TV refers to any technology that uses digital techniques to provide advanced television services such as high definition TV (HDTV), multiple standard definition TV (SDTV) and other advanced features and services.

[2] As used herein, the terms "frequency" or "channel" generally refers to the 6 MHz spectrum block currently used to provide a single NTSC television service or to the equivalent 6 MHz spectrum block to be used for DTV services. In each case, the NTSC and DTV channel numbers used herein correspond to the same frequency bands. For example, NTSC channel 2 and DTV channel 2 both correspond to the frequency band 54-60 MHz. It should be noted, however, that whereas an NTSC frequency or channel is used to provide a single television program service, digital technology permits DTV frequencies or channels to be used to provide a wide variety of services, such as HDTV, multiple SDTV programs, audio, data and other types of communications.

[3] See Sixth Further Notice of Proposed Rule Making, MM Docket No. 87-268, 11 FCC Rcd 10968 (1996).

[4] See Second Further Notice of Proposed Rule Making, MM Docket No. 87-268, 7 FCC Rcd 5376 (1992).

DTV frequencies and provided a draft DTV Table of Allotments. This draft Table was based on the principles of full accommodation for all eligible existing broadcasters, replication of existing broadcast service areas, and sound spectrum management, and used the technical and interference characteristics of the ATSC DTV Standard. We also proposed procedures by which broadcasters in a community could request alternative allotments in their market, both before and after adoption of a DTV Table. Our proposals in the Sixth Further Notice were based on the assumptions that 6 MHz DTV channels will be assigned to existing broadcasters, and that there will be a transition period after which broadcasters will return one of their two 6 MHz channels.[5]

4. In the Sixth Further Notice, we also observed that given the efficiencies of the DTV technology it is possible to reduce the amount of spectrum currently allocated for television broadcasting without reducing the number broadcast television stations. We indicated that this approach may permit the eventual recovery of 138 MHz of spectrum at the end of the transition period.[6] We also indicated that it may be possible to recover 60 MHz of this spectrum almost immediately from the band 746-806 MHz, i.e., UHF channels 60-69, while protecting the relatively few full-service analog and digital broadcast stations in that spectrum. The draft Table included in the Sixth Further Notice therefore attempted to minimize the number of DTV channels that would be located on channels 60-69. We also indicated that if we decide to recover channels 60-69 early, we would initiate a separate proceeding to decide how this spectrum should be used.

5. We also requested comment on an alternative spectrum allotment/assignment plan for DTV service suggested by the Association of Maximum Service Television, Inc. (MSTV), on behalf of parties within the broadcast industry.[7] This filing also included a preliminary DTV Table of Allotments and Assignments. Under this alternative approach, each broadcaster would be provided with a 6 MHz DTV channel without preference to any specific channels. Since all channels would be available, such an approach could theoretically provide for some degree of improved service area replication and interference performance. On the other hand, this option would place more DTV stations on channels that are less desirable for broadcast operations and would make spectrum recovery more difficult. We requested comment with regard to these two options.

6. In the Sixth Further Notice, we stated that in order to provide DTV allotments for

[5] The appropriate duration of a transition period from NTSC to DTV service was not a subject of the Sixth Further Notice. That issue is being addressed in the Fifth Report and Order in this proceeding, which we are adopting today concurrent with this action. See Fifth Report and Order in MM Docket no. 87-268, adopted April 3, 1997, FCC 97-116.

[6] See Sixth Further Notice, at para. 25-26.

[7] See "Broadcasters' Proposed ATV Allotment/Assignment Approach," submitted by MSTV in this proceeding on January 13, 1995.

existing full service stations, it likely will be necessary that we require a significant number of low power TV (LPTV) stations and TV translator stations to make changes in their operation, including the possibility of ceasing operation.[8] In this regard, we proposed to continue the secondary status of LPTV and TV translator stations. At the same time, we also recognized the benefits that low power stations provide to the public and therefore stated that we would seek to minimize the impact of DTV on LPTV and TV translator operations. We proposed a number of technical and administrative measures to mitigate the impact on low power stations and also requested additional suggestions for reducing the impact on low power stations. In addition, we noted that our rules currently provide for sharing of frequencies between television and land mobile service in a number of urban areas, the Gulf of Mexico offshore region and Hawaii. We therefore proposed minimum spacing criteria between DTV and land mobile operations in these areas. We also observed that our existing border agreements with Canada preclude activation of land mobile stations on existing land mobile channels 15 and 16 in Detroit and channels 14 and 15 in Cleveland and therefore proposed to make these channels available for DTV service in those markets. Finally, we requested comment and suggestions regarding conditions that should be applied in congested areas where the proposed DTV-land mobile spacing criteria cannot be met.

7. More than 450 parties representing the interests of full service television stations, low power television (LPTV) and TV translator stations, the viewing public, land mobile interests, including members of the public safety community, and equipment manufacturers submitted comments and/or reply comments in response to the Sixth Further Notice.[9] These parties expressed a wide range of views and positions with regard to our various proposals. In addition, as part of their comments, the Joint Broadcasters submitted two alternative DTV Tables.[10] One of these is a "Modified Table" that the Joint Broadcasters submit improves on

[8] Our statement that it will be necessary to displace some LPTV and TV translator stations was based on our determinations in previous actions in this proceeding. See Second Report and Order/Further Notice of Proposed Rule Making (Second Report/Further Notice) 7 FCC Rcd 3340 (1992) at paras. 39-45; and Second Further Notice, at para. 41.

[9] The parties submitting comments and reply comments are listed in Appendix A.

[10] The Joint Broadcasters indicate that their comments express the views of a large number broadcast television stations and networks, including the five major networks (ABC, CBS, FOX, NBC, and PBS) and four trade associations (MSTV, NAB, ALTV and AAPTS). Joint Broadcasters' comments, p. 1. The Joint Broadcasters state that while their comments represent the consensus of their signatories on allotment/assignment principles, some of these parties may differ on some points and some may file separate comments to address specific DTV allotments and other issues. Their filing indicates that AAPTS and PBS (as well as those public TV stations whose names do not appear separately on the list of parties participating the Joint Broadcasters' filing) endorse the policy arguments in the joint comments, but do not endorse adoption of the Modified Table. These parties believe that adjustments beyond individual channel and facility changes to the Modified Table are needed to protect public television station's interests, particularly the incorporation of minimum power levels. Fox takes exception to the Joint Comments on certain issues. It supports fewer low VHF allotments during the transition, the use of a 10 dB noise figure exclusively for all bands in developing the Table, relaxation of the exact co-location requirement for adjacent channel assignments in special cases, and certain changes to the

the draft Table by modifying its technical assumptions and making increased use of channels 2-6 and 52-69. They state that their Modified Table would reduce interference to NTSC and DTV service, increase service replication, reduce displacement of low power TV stations and increase flexibility for stations to make channel and station adjustments over time. The other table is a "Baseline Table" that the Joint Broadcasters state revises the draft Table to reflect technical concerns relating to planning factors, use of adjacent channels, use of channels 3 and 4 in the same market, allotments in the Canadian and Mexican border areas, and corrections to the engineering data base used to develop the DTV Table. Motorola also submitted, as part of its comments, an alternative Table that reflects its efforts to enhance the opportunity for early recovery of channels 60-69.[11] Motorola also states that the Joint Broadcasters' Modified Table greatly reduces the usefulness of early recovery of channels 60-69 without improving the spectrum environment for broadcasters. It submits that the Modified Table provides insignificant improvements as compared to either the FCC's draft Table or its own Table.[12]

III. ALLOTMENT AND ASSIGNMENT PRINCIPLES

A. Full Accommodation

8. In the Sixth Further Notice, we proposed that our primary allotment objective be to accommodate all eligible existing broadcasters with a channel for DTV service. We also stated that, subject to any changes resulting from our Fourth Further Notice, parties eligible for a DTV channel will be the following: a) all full-service television broadcast station licensees; b) permittees authorized as of October 24, 1991; and c) all parties with applications for a construction permit on file as of October 24, 1991, who are ultimately awarded full-service broadcast station licenses.[13] We also noted that we would follow the criteria for initial eligibility provided by the Telecommunications Act of 1996 (Telecom Act).[14] We indicated

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Modified Table. Joint Broadcasters' comments, p. 2, footnote 2. Fox filed separate comments on these issues.

[11] Motorola comments, p. 9.

[12] Motorola reply comments, p. 8.

[13] We addressed the issue of eligibility for initial DTV channels in the Fourth Further Notice of Proposed Rule Making and Third Notice of Inquiry (Fourth Further Notice), MM Docket No. 87-268, 10 FCC 10541 (1995). Therein, we maintained our earlier proposal, in the Second Further Notice, to limit eligibility for DTV channels to broadcasters that meet the above criteria. See Fourth Further Notice, at paras. 27-32; see also Second Further Notice, at para. 9.

[14] In the Sixth Further Notice, we noted that Section 201 of the Telecommunications Act of 1996 (Telecom Act) amends the Communications Act to add a new Section 336 which provides, inter alia, that "[i]f the Commission determines to issue additional licenses for advanced television services, the Commission ... should limit the initial eligibility for such licenses to persons that, as of the date of such issuance, are licensed to operate a television broadcast station or hold a permit to construct such a station." Telecommunications Act of 1996,

that we believed that we would, in fact, be able to accommodate all eligible broadcasters with a temporary channel for DTV service. In the event that a shortage of allotments might occur, however, we proposed to rank eligible parties in the following order: 1) licensees and permittees with constructed facilities having program test authority; 2) other permittees; and 3) all parties with an application for a construction permit pending as of October 24, 1991.[15] In the Fifth Report and Order in this proceeding, we adopted eligibility criteria that conform with the guidance set forth in Section 201 of the 1996 Telecommunications Act.[16] We therefore limited the initial eligibility for DTV licenses to "persons that, as of the date of such issuance, are licensed to operate a television broadcast station or hold a permit to construct such a station or both."

9. Comments. The commenting parties generally support our proposal to provide an allotment in the initial DTV Table for all eligible broadcasters. For example, the Joint Broadcasters submit that full accommodation is important to achieving the goal of implementing DTV service without disrupting the public's free over-the-air television service. They also state that full accommodation will ensure that full service broadcasters are able to provide the new digital TV service and so preserve and improve the nation's broadcast service. The Joint Broadcasters note that full accommodation has been the foundation of their filings in this proceeding since 1987.[17] On the other hand, Abundant Life Broadcasting (ALB), a LPTV licensee, argues that we should consider awarding temporary second channels to fewer than all full service TV licensees.[18] ALB is concerned that our full accommodation proposal would result in the displacement of LPTV stations. It questions whether the public interest requires all stations to have DTV allotments in markets where there are more than 5 or 6 full service stations.

10. A number of parties suggest modifications to our proposed eligibility criteria. For example, the Association of America's Public Television Stations (AAPTS), in its separate comments, states that we should review the applications for NTSC channels that were filed between the DTV eligibility cut-off date and the NTSC application cut-off date and determine

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Pub. l. No. 104-1-4, Section 201, 110 Stat. 56 (1996), and 47 U.S.C. § 336(a).

[15] This ranking proposal was previously presented in the Memorandum Opinion and Order/Third Report and Order/Third Further Notice of Proposed Rule Making in this proceeding, (Third Report/Further Notice), MM Docket No. 87-268, 7 FCC Rcd 6924 (1992), at paragraph 10. In the Fourth Further Notice, we also indicated that in the event that we were not able to accommodate all eligible existing broadcasters with an DTV channel, there are other options to allow broadcasters to participate in DTV service, such as switching directly to DTV service at some point during or at the end of the transition period. See Fourth Further Notice, at footnote 24.

[16] See Fifth Report and Order, at Section III.B.

[17] Joint Broadcasters' comments, pp. 4 and 11-12.

[18] ALB comments, pp. 2-3.

whether it is possible to pair DTV channels with any of those NTSC channels.[19] Several parties, such as Davis Television Topeka, LLC, et al., Innovative Television, Inc., and Las Tres Palmas Corporation request that we provide a DTV allotment to applicants for construction permits (CPs) for new stations.[20] Cordon and Kelly argues that we should substitute DTV allotments for the analog NTSC channels applied for by its clients.[21] Also, Gwendolyn A. Christopher is concerned that if we limit DTV frequencies to only full service stations, we would impose an impediment to the "truly" small telecommunications businesses like LPTV, contrary to the diversity goals of Section 257 of the 1996 Telecommunications Act.[22]

11. Decision. We continue to believe that our primary allotment objective should be to develop a DTV Table that provides a channel for all eligible broadcasters. This approach will promote an orderly transition to the new service by ensuring that all eligible full service broadcasters are able to provide digital service. Our decision to accommodate all eligible broadcasters is also consistent with the provisions of the 1996 Telecommunications Act regarding initial eligibility for DTV licenses. We disagree with those parties that suggest we provide allotments for fewer than all full service licensees in order to avoid the displacement of low power TV stations. We note that low power television and TV translator operations are authorized only on a secondary basis. We have consistently maintained this approach towards low power service. Our decisions with regard to this issue have, in fact, been upheld on judicial review in Polar Broadcasting v. F.C.C..[23] However, because we recognize the benefits low power stations provide to the public, we are also implementing a number of measures to mitigate the impact of DTV implementation on low power stations, so that the great majority of these operations should be able to continue to operate. Accordingly, the DTV Table of Allotments adopted herein provides an allotment for all eligible broadcasters, as defined above. We have considered and addressed the comments concerning eligibility for a DTV allotment in our decision on DTV eligibility in the Fifth Report and Order, supra.

B. Digital TV Service Areas

12. In the Sixth Further Notice, we proposed to allot DTV channels using a "service replication/maximization" concept suggested by a variety of broadcast industry interests and

[19] AAPTS comments, p. 29-30.

[20] Davis comments, p. 2; Innovative comments, p. 1; Las Tres Palmas comments, pp. 2-3.

[21] Cordon and Kelly comments, pp. 2-3.

[22] Section 101 of the Telecom Act amended the Communications Act of 1934 to add a new section 257. See Section 101 of the Telecommunications Act of 1996, supra, and 47 U.S.C. § 257. Christopher comments, pp. 3-4.

[23] See Polar Broadcasting v. F.C.C., 22 F.3d 1184 (D.C. Cir. 1994) (table).

representatives.[24] Under this approach, we would attempt to identify digital TV allotments that, to the extent possible, will allow all existing broadcasters to provide DTV service to a geographic area that is comparable to their existing NTSC service area.[25] Consistent with the comparable coverage objective, we would use the service replication approach to match DTV frequencies with existing NTSC frequencies to create channel pairings/assignments. The goal of this approach would be two-fold: 1) to provide DTV coverage comparable to a station's current coverage area and, 2) to provide the best correspondence between the size and shape of the proposed DTV channel's coverage area and the station's existing coverage. In this regard, we also proposed to specify for each DTV allotment a maximum permissible effective radiated power (ERP) and antenna height above average terrain (HAAT) that would, to the extent possible, provide for replication of the station's existing service area. Furthermore, we proposed to allow stations to maximize or increase their service area, in accordance with our proposed limits on maximum allowable station facilities, where such an increase would not create additional interference.[26] We also requested comment on whether we should specify a minimum ERP for full service DTV stations in the same manner as we specify for NTSC stations in Section 73.614. We further requested comment on whether it might be more desirable instead to allot DTV channels using an approach that maximizes the service areas of all DTV stations.[27] This approach would tend to equalize the coverage areas of all stations within a market and reduce the current disparities among stations.

13. In the draft DTV Table included with the Sixth Further Notice, we proposed to specify an effective radiated power (ERP) and an antenna height above average terrain (HAAT) for each DTV allotment.[28] The values of these parameters for each station were chosen so as to describe initial DTV allotments that would allow existing broadcasters to provide DTV service to a geographic area that replicates, to the extent feasible, the service area of their existing NTSC station. The antenna HAAT specified for each DTV allotment was the same as antenna HAAT of its associated NTSC station. The ERP for each allotment

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[24] For example, this approach was suggested by the Commission's Advisory Committee on Advanced Television Service (Advisory Committee), the Broadcast Caucus, the Association of Maximum Service Television, Inc. (MSTV), the National Association of Broadcasters (NAB) and others.

[25] The methodology used to calculate NTSC service area is based on studies and methodologies developed by industry and our Advisory Committee. This methodology is described below in the discussion of our DTV allotment methodology. See Final Report and Recommendation of the Advisory Committee on Advanced Television Service, November 28, 1995.

[26] Under this proposal, stations would be permitted to increase their power and antenna height up to that permitted for maximum facilities, as discussed below.

[27] The Commission earlier had proposed to adopt the service area maximization approach in the Second Further Notice of Proposed Rule Making in this proceeding. See Second Further Notice of Proposed Rule Making in MM Docket No. 87-268, 7 FCC Rcd 5376, at paras. 11-16.

[28] See Sixth Further Notice, Appendix B.

was then calculated to provide service area replication up to a maximum ERP of 5 megawatts. We also proposed in the draft DTV Table the following minimum values for ERP: 1 kW for lower VHF channels, 3.2 kW for upper VHF channels, and 50 kW for UHF channels. This would allow smaller stations, if they desire, the ability to expand their existing coverage as they transition to DTV.

14. Comments. Many of the commenting parties that address this issue support the basic service replication concept.[29] These parties agree with our tentative conclusion that this approach would foster the transition to DTV, while simultaneously preserving viewers' access to off-the-air TV service and the ability of stations to reach the audiences they now serve. The Joint Broadcasters submit that the first priority in allotting DTV channels should be to replicate service areas of all stations to the maximum degree possible, in order to avoid disenfranchising viewers. They further state that maximization of service areas should be a secondary goal. The Joint Broadcasters submit that smaller stations should have the opportunity to expand their service areas up to the largest station in the market so long as they do not cause interference to neighboring stations. They believe that this ordering of priorities is the most efficient and equitable way of achieving a seamless transition that best fulfills viewers' expectations while recognizing broadcasters' investment in their core business.[30] Joint Broadcasters state that pairing of DTV and NTSC channels should be on the basis of coverage and interference characteristics, with no attempt to enlarge DTV coverage at the expense of NTSC service.[31]

15. AAPTS, IBC, Malrite Communications Group, Inc. (Malrite), Silver King Communications, Inc. (Silver King), and Univision Communications, Inc. (UCI) state that the service replication principle should be coupled with a maximization principle.[32] These parties generally submit that both during and after the transition, every DTV licensee should be permitted to expand its digital service area up to the maximum service area it could attain with the maximum height and power allowed for its NTSC facilities, provided the increase would not cause interference to another station. UCI states that allowing such modifications would not only allow licensees to provide greater levels of service to a larger portion of the public, but would also enable stations to individually address any as yet unknown propagation peculiarities of the DTV signal.[33] AAPTS also states that it may be impractical in some

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[29] Parties supporting this approach include the Joint Broadcasters, the Electronic Industries Association and the EIA Advanced Television Committee, in joint comments (EIA), the Independent Broadcasting Company (IBC), KUPN-TV, the Southeastern Ohio Television System (SOTS), Univision Communications, Inc. (UCI), and others.

[30] Joint Broadcasters' comments, p. 5.

[31] Joint Broadcasters' comments, p. 11.

[32] AAPTS comments, pp. 8-9; IBC comments, p. 2;

[33] UCI comments, p. 9.

instances due to costs considerations for some stations, including noncommercial stations, to build DTV facilities with the maximum height and power specified in the DTV Table. As an alternative, it suggests that stations be permitted to use boosters or translators to serve any portion of their DTV coverage areas that could be served with maximum facilities.[34]

16. A number of parties representing broadcast engineers and broadcast stations currently operating on UHF channels express concern with regard to the approach used for specification of DTV power levels in the draft Table.[35] These parties observe that in attempting to replicate the service areas of existing VHF stations whose DTV operations would be on UHF channels, the draft Table specifies differences in ERP levels between UHF DTV channels in many markets are much greater than for current UHF service.[36] For example, SHBC notes that the power levels specified for many UHF DTV allotments that replicate the service areas of UHF NTSC stations are only 50 kW, while the power levels for UHF DTV channels that replicate the service of VHF NTSC stations are often several megawatts. These parties generally argue that these power differences would increase the existing disparities between UHF and VHF stations. KSCI-TV also submits that the very high power levels specified in the draft Table would lead to interference with NTSC and other DTV stations.[37] SHBC states that more review is needed to determine if the high UHF power levels listed on the draft Table are actually needed and if the lower power levels listed for many stations will achieve realistic performance.[38]

17. AFCCE, KSCI-TV, and Pappas Telecasting Companies (Pappas) further argue that the very high ERP levels specified for many stations are impractical.[39] For example, AFCCE notes that the draft Table proposes to allow some DTV UHF stations to operate with as much as 5 MW average power, and that this would require a transmitter that could operate at a peak power of 20 MW or more. It states that, based on consultations with several major television transmitter manufacturers, this is nearly four times larger than the largest UHF-TV transmitters being manufactured today and would not be practical given the limitations of

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[34] AAPTS comments, pp. 8-9.

[35] Parties expressing concern with regard to the approach used to specify power levels for DTV allotments include the Association of Federal Communications Consulting Engineers (AFCCE), du Treil, Lundin and Rackley (DLR), Fireweed Communications Corporation (Fireweed), Holston Valley Broadcasting (HVB), Kentuckiana Broadcasting, Inc, (Kentuckiana), KSCI-TV, LeSEA Broadcasting, Inc. (LeSEA), the Los Angeles Broadcasters for a Common Transmitter Site (LABCTS), the TV Chief Engineers (TCE), Scripps Howard Broadcasting Company (SHBC) and Sunbelt Communications Company (Sunbelt).

[36] AFCCE comments, pp. 5-6; DLR comments, pp. 2-3; HVB comments; p. 5; SHBC comments, pp. 2-3.

[37] KSCI-TV comments, p. 1.

[38] SHBC comments, p. 2-3.

[39] AFCCE comments, p. 4; KSCI-TV, comments, pp. 1-2; Pappas comments, p. 10.

existing TV transmitter technology. AFCCE and the California Department of General Services (CDGS) also submit that the very high power levels and co-location of transmitters could lead to problems for stations in meeting the RF exposure regulations.[40]

18. Some of these parties suggest alternative approaches for replicating the service areas of VHF stations on UHF DTV channels. In particular, AFCCE submits that a more reasonable approach to the allotment process would be to define a grade of service within or to the radio horizon (about 45 miles) and a second grade of service beyond the radio horizon based on a different set of planning factors.[41] Under this plan, the principal difference between the two grades of service would be the assumption that receivers (antennas) located beyond the radio horizon would employ a low noise amplifier (LNA) to overcome the significant penalties associated with distance and over-the-horizon propagation and achieve the same degree of replication as now proposed. The actual power authorized for a DTV station would be the higher of: 1) the power needed to provide the specified field strength at the radio horizon using the Longley-Rice F(50,90) model without an LNA assumption, or 2) the power needed to replicate the station's existing NTSC Grade B contour with the specified field strength based on Longley Rice F(50,90), capped at a maximum of 500 kW (for UHF), assuming the use of an LNA.

19. KSCI-TV and the LABCTS recommend that DTV power be limited to that needed to provide a quality signal to an area limited by the radio horizon.[42] They state that during the transition, all DTV stations in a market should be authorized the same ERP value, adjusted for free air attenuation of the higher frequencies. The TCE states that the most equitable approach to maximization of service would be to uniformly increase the percentage of service area for all stations up to the point where interference is caused to signals from neighboring cities.[43] They therefore recommend that we abandon the replication/maximization paradigm in lieu a 107 km Grade B radius model. DLR suggests a plan under which each eligible station would be assigned a second channel for DTV use during the transition and each station would be authorized transmitting facilities for its proposed DTV channel based on the station's current Grade A contour.[44] After the transition, stations would return to their existing NTSC channel for final DTV operation and ultimate replication of their existing NTSC coverage. Fireweed submits that the power required for DTV operation should not be greater than is currently required for NTSC service. It submits that VHF stations should be permitted to operate small temporary DTV stations on UHF channels and then convert back to

[40] AFCCE comments, p. 5; CDGS comments, p. 3.

[41] AFCCE comments, p. 6.

[42] KSCI-TV comments, p. 2; LABCTS comments, p. 2.

[43] TCE comments, p. 2.

[44] DLR comments, pp. 2 and 4.

their original channels. Citadel Communications Corporation, Ltd. (Citadel) suggests a similar approach.[45]

20. Other parties, such as HVB and Pappas, state that more moderate power levels of perhaps 1000 kW would achieve about the same coverage at reasonable capital and operational costs. HVB also submits that lower power levels would eliminate the large areas of interference that would be caused by stations operating at higher power.[46] Pappas states that this maximum power limit, with an antenna height of 2000 feet, would reduce crowding in the DTV Table and make it easier to accommodate the proposed 50 kW minimum power standard.[47] Media General, Inc, and Park Acquisitions, Inc. (Media General/Park) and Pappas states that in order to minimize interference and best serve the public during the transition, it may be better to start with reduced DTV power, such as a 500 kW maximum for UHF.[48] Media General/Park submits that this lower level would be appropriate until additional information is available on appropriate power levels.

21. AAPTS, Maranatha Broadcasting Company (Maranatha), Pappas, and Rural support our proposal to provide a minimum of 50 kW for UHF DTV operations.[49] AAPTS submits that the establishment of minimum power levels would permit existing stations with very small service areas to replicate their existing coverage, and also will improve their coverage to some extent. AAPTS states that this would narrow the coverage gap between stronger and weaker stations and ameliorate the VHF/UHF disparity. Pappas submits that the strict replication plan submitted by the Joint Broadcasters, with power levels less than 50 watts for many stations, would impede the ability of a large number of UHF stations to serve the public adequately. Pappas states that many UHF stations have not constructed their maximum facilities, and that the principle reason for this is that until very recently, high-power UHF broadcast equipment capable of operating with sufficient efficiency to justify its installation in many small markets was simply not available. It submits that by potentially freezing the DTV allotments for such stations into limited coverage operations, the Joint Broadcasters' plan would thwart those broadcasters' efforts to provide programming to a greater number of viewers. Pappas also argues that the Joint Broadcasters' plan will negatively impact emerging networks. It states that most stations affiliated with these networks are UHF stations and that by failing to provide UHF stations with at least minimally adequate levels of power, the Joint Broadcasters' plan would harm the viability and

[45] Citadel comments, pp. 5-6.

[46] HVB comments, pp. 5-8.

[47] Pappas comments, pp. 21-22.

[48] Media General/Park comments, p. 4; Pappas comments, p. 4.

[49] AAPTS comments, pp. 6-7; Maranatha comments, p. 4; Pappas comments, pp. 18-20; Rural comments, p. 2.

development of those networks. Rural is concerned that because of the limited amount of spectrum available for DTV, the ERP values adopted with a DTV Table will serve as a ceiling on station growth. It states that minimum power levels would ensure that small stations are treated fairly.

22. In its reply comments, the Broadcasters Caucus (Caucus) acknowledges the concerns expressed by other broadcasters with regard to the power levels proposed for DTV operation.[50] It agrees that if the relative close-in and indoor antenna reception coverage of NTSC VHF channels moving to DTV UHF channels (V's-to-U's) would be better than that of NTSC UHF channels moving to DTV UHF channels (U's-to-U's), the relative competitive posture of analog VHF and UHF stations would not be replicated in the DTV environment. The Caucus submits that after many discussions, members of the broadcasting industry have greatly narrowed the gap on this issue and have nearly mapped out an interim plan to manage the uncertainties over the first several years of the DTV roll-out, until more definitive field data is available. Based on these discussions, it suggests a plan, which it states is supported by representatives of the U-to-U community within and outside of the Caucus, under which: 1) industry would commit to field and other research to study the extent to which the relative competitive posture of existing UHF and VHF stations is replicated with respect to Grade A and Grade B coverage and taking into account indoor direct connected antennas and reliability of reception, 2) the Commission would proceed with the Joint Broadcasters' allotment/ assignment approach and include in this decision language recognizing the objectives and issues to be addressed in the field tests. It further recommends that we adopt a five-step plan for addressing the DTV power issue:[51]

1) Allow stations to improve their indoor antenna reception by increasing their overall power beyond the power levels specified in the DTV Table and target such power within their current Grade A service area, provided no interference is caused to other stations operating on the same or first adjacent channel.
2) Implement the principle of service maximization. The Caucus states that this would allow at least 700 of the existing UHF stations to increase their power. It also states, however, that most stations in major markets may not be able to take advantage of the maximization principle.
3) Allow U-to-U stations in any given market to double their power, not to exceed two-thirds of the power level of the lowest V-to-U in the same market or level "X," from that specified in the Modified Table for the initial two-year period that begins with the adoption of the DTV Table, provided that no new material interference is caused to NTSC stations. At the end of two years, we would determine, taking into account the field data to be developed by the broadcast industry and interference concerns, whether and how to adjust the U-to-U power

[50] Broadcasters Caucus reply comments, pp. 13-16.

[51] Id., pp. 13-16.

levels in the future so as to replicate in the DTV environment the relative competitive posture of U-to-U and V-to-U stations. The Caucus states that this proposal would be premised on our adoption of the 7 dB receiver noise figure planning factor proposed by the Joint Broadcasters.

4) Implement a phased-in approach to power for all DTV stations for a two-year period from the adoption of the DTV Table. Under this provision, DTV stations would be licensed at the powers specified on the Modified Table, but would operate at no more than level "X" for this two-year period (unless operating under the conditions specified in the next step). During this first two-year phase, all stations would have protected service areas out to their replicated coverage area. In order to enable the collection of field data, a certain number of V-to-U stations participating in the testing process would be permitted to operate at more than level "X," up to the levels specified in the Modified Table.
5) Recognize the importance of finding solutions to the problem of any failure to replicate the relative competitive posture of analog VHF and UHF stations in the new DTV environment and consider the recommendations of the organizations conducting research on this matter. It states that should the field tests show that fixes are necessary, we should adopt appropriate solutions, including power increases or decreases for DTV stations as necessary, individual DTV station facility changes and the assignment of unassigned channels if available.

The Caucus states that broadcasters could not achieve a consensus on the "X" level of power, and that they reached a stalemate at a difference of 3 dB. It indicates that some organizations, including ABC, CBS, NBC and MSTV, proposed a 1000 kW level and others, including ALTV, AAPTS/PBS, Sinclair, Tribune and Viacom, proposed a 500 kW level.[52]

23. The Joint Broadcasters argue that rather than establish minimum power levels, we should adopt minimum DTV service areas that use a combination of power and tower height parameters to achieve the minimum service contours.[53] They state that such minimum service areas should be determined after more study and should assure all stations of a reasonable service area without impinging on the ability of all stations to at least replicate their NTSC service. In its reply comments, the Broadcasters Caucus further states that we should incorporate a minimum DTV service area of 65 km (40 miles) into the DTV Table. It states that this proposal would allow 14% of existing stations (primarily in the UHF band) to increase their service areas. The Caucus also submits that the interference that would result from a 65 km minimum service area would be minimal.[54]

24. A number of parties, including the Joint Broadcasters, KUPN-TV, Costa del Oro,

[52] Id., p. 13.

[53] Joint Broadcasters comments, pp. 44-45.

[54] Broadcasters Caucus reply comments, pp. 16-17.

Inc. (Costa), UCI and others, express concern that if we base service replication on the May 13, 1996, data base we used in preparing the draft Table, stations that received an authorization to modify their technical facilities (power, antenna height, and/or location) after that date would receive a DTV allotment that only represents their former facilities.[55] These parties submit that the DTV allotment for a station whose application for modification was granted after May 13, 1996, should be based on replication of the station's new service area. For example, KUPN-TV states that this change would ensure that stations making a good faith effort to improve their Grade B service would not be hampered in their transition to DTV.[56] Some of these parties argue that using the May 13, 1996, data base would be particularly unfair to stations that filed their application for modification before the date of adoption of the Sixth Further Notice.[57] In this regard, UCI states that if we use the May 13, 1996, data base as the standard against which service replication will be measured, it will not receive digital replication capability for any of the NTSC contours for which it has applied since 1994, even though the applications for the changes to achieve these new contours were filed prior to the adoption of the Sixth Further Notice.[58] Costa argues that there is no reason why viewers should suffer NTSC or DTV service losses due to the selection of a cut-off date after a station has filed an application for facilities change.[59] These parties submit that at a minimum we should include grants of applications for facility changes that were filed prior to the Sixth Further Notice in the data base used to determine existing service areas.

25. A number of broadcasters disagree with our proposal to base DTV service areas on replication of the service areas of existing stations.[60] These parties, who represent primarily the interests of existing UHF stations, generally express concern that the service replication plan would perpetuate the existing competitive disparities between UHF and VHF

[55] These parties include Costa, Crossville TV Limited Partnership (Crossville), Grant Communications Group (Grant), Hutchens Communications, Inc. (Hutchens), the Joint Broadcasters, KUPN-TV, Lin Television Corporation, et al. (The Modifiers), Media Venture Management, Inc. (MVM), Second Generation of Iowa, Ltd. (Second Generation), Silver King, Sonshine Family TV Corporation (Sonshine), UCI, Valley Channel 48, Inc. (Valley), and VCY America.

[56] KUPN comments, p. 1.

[57] Parties that support basing replication on a station's new service area if the application for modification was filed before adoption of the Sixth Further Notice include Grant, the Joint Broadcasters, KUPN-TV, the Modifiers, Sonshine Family TV Corporation (Sonshine), UCI, and VCY America.

[58] UCI comments, p. 4.

[59] Costa comments, p. 3.

[60] Parties opposing the service replication plan include BET Holdings (BET), Blade Communications, Inc. (Blade), Cannell Cleveland, L.P. (Cannell), DeSoto Broadcasting, Inc. (DeSoto), Grant Broadcasting Group (Grant), KLGT-TV, LeSea, Lewis Broadcasting (Lewis), Sunbelt Communications Company (Sunbelt), TV-52, Inc. (TV-52), Wabash Valley Broadcasting Corporation (Wabash), the Western New York Public Broadcasting Association, and WLEX-TV and Word Broad Broadcasting Network (WBN).

stations. For example, Blade, DeSoto and Grant submit that limiting DTV coverage to an area comparable to a station's existing NTSC coverage would prolong inequities that result from the more favorable propagation characteristics of VHF signals compared to UHF signals.[61] In statements generally representative of this group, Grant argues that with the implementation of DTV service, we have the opportunity to remove these inequities. It states that such action would serve not only UHF broadcasters, but also the public interest in that it would result in a wider variety of free television choices for viewers. DeSoto and WBN are concerned that the strategy of allotting first and maximizing later would provide no guarantee, or reasonable expectation, that a station will be able to maximize its service area.[62] BET also submits that if we equalize service areas, new entrants that acquire spectrum through acquisition will be able to more effectively enter the DTV market.[63]

26. Most of the broadcasters opposing the service replication approach ask that we ensure that stations in a market have comparable technical facilities. For example, Cannell argues that all UHF stations in a market should be allowed the same maximum power, so long as this would not result in interference. Grant and DeSoto submit that if we decide to base DTV service areas on service replication, then we should build in flexibility to permit stations with smaller service areas to maximize their coverage once the transition to and development of DTV is completed.[64] Aries Telecommunications Corporation (Aries), Lewis, and TV-52 support our earlier proposal to maximize the service areas of all DTV stations as a means to resolve the current disparities between stations, particularly with respect to the inequalities that currently exist between VHF and UHF stations.[65] Aries and Lewis also state that broadcasters would be motivated to construct DTV facilities if they perceive an opportunity to improve an inferior market position.

27. The Community Broadcasters Association (CBA) argues that we should not attempt to replicate the full service areas of existing stations.[66] It is concerned that replication of stations' existing service areas would result in greater impact on LPTV and TV translator stations. CBA observes that accommodating both full power and low power television will be most difficult during the transition, when the demand for broadcast spectrum will be highest. It therefore recommends an alternative approach under which the second channels would only replicate stations' existing Grade A contours. CBA submits that replication of a station's

[61] Blade comments, p. 4; DeSoto comments, p. 2; Grant comments, p. 3.

[62] DeSoto comments, p. 3.

[63] BET comments, p. 10.

[64] DeSoto comments, p. 3; Grant comments, p. 3.

[65] Aries comments, p. 2; Lewis comments, p. 3; TV-52 comments, p. 2.

[66] CBA comments, p. 8.

Grade A contour would provide service to all or nearly all of the viewers in the its market area. Under CBA's approach, the second channels would be "loaner" channels for interim DTV operations; stations would revert back to their existing channels at the end of the transition, when it should be easier to accommodate both full power and low power stations.

28. The Joint Broadcasters, on the other hand, continue to oppose the Commission's earlier proposal to allot DTV channels using an approach that maximizes the service areas of all DTV stations.[67] They state that such an approach would disenfranchise significant numbers of viewers of the larger NTSC stations and would actually have the effect of reducing the service areas of a majority of the nation's television stations. The Joint Broadcasters argue that these considerations would result in a disincentive for broadcasters to implement DTV service, rather than roll out service as quickly as possible.

29. Decision. We continue to believe that our service replication proposal, with some modifications, is the appropriate approach for implementation of DTV. We believe that providing DTV allotments that replicate the service areas of existing stations offers important benefits for both viewers and broadcasters. This approach will ensure that broadcasters have the ability to reach the audiences that they now serve and that viewers have access to the stations that they can now receive over-the-air. At the same time, we recognize, as pointed out by many of the commenting parties, that the service replication approach proposed by the broadcast community and presented in the Sixth Further Notice could lead to increased disparities among stations. The basic compromise plan set forth in the reply comments of AAPTS, the Broadcasters Caucus and others, addresses many of these concerns. We believe that many aspects of the compromise would be useful in developing a more equitable service replication approach.

30. In considering the DTV power issue, we believe that it is important to adopt an approach that provides for a high degree of service replication by all stations, while at the same time ensuring that all stations are able to provide DTV service competitively within their respective markets. We therefore believe that it is appropriate to develop the DTV Table based on a minimum power level of 50 kW and a maximum power level of 1000 kW.[68] We find that a 50 kW minimum power level will ensure that stations have a sufficient service area to compete effectively in the provision of DTV services and is consistent with the maximization concept supported by the industry. We further believe that this minimum power approach, along with maximization, will provide more opportunities for stations, in particular existing UHF stations, to provide larger DTV service areas than the minimum service area

[67] Joint Broadcasters comments, pp. 12-13.

[68] These minimum and maximum power levels are for allotment purposes only for DTV facilities on UHF frequencies. The minimum DTV levels for VHF facilities are: 1 kW for lower VHF channels and 3.2 kW for upper VHF channels. All power levels specified in the DTV Table are the maximum permitted ERP taking into account existing antenna patterns. Actual service and operating requirements for DTV stations are addressed in the Fifth Report and Order in this proceeding.

approach suggested by the Joint Broadcasters and the Broadcasters Caucus. We also expect that the results of the broadcasters' studies will show that 1000 kW is sufficient to provide a very high degree of service replication for almost all stations. Accordingly, we believe that 1000 kW is an appropriate maximum power level for use in development of the DTV Table. We also believe that the 1000 kW power limit may help to reduce the impact on low power TV stations and poses less potential for interference among full service stations. This power level will also allow us to provide a more equitable distribution of opportunities for maximization of service areas to full service DTV stations of all sizes. Furthermore, as indicated below, we are considering whether to maintain use of the lower VHF channels for DTV service. If service replication proves difficult for existing VHF stations operating on UHF channels with 1000 kW, those stations may have the option to revert to their VHF channels, if such channels prove feasible for DTV operation. In addition, if future field testing and studies show that higher power is needed to provide a satisfactory level of replication or changes in the treatment of interference are warranted, we will be able to evaluate those results at our planned two-year review and consider whether adjustments are needed.[69] In order to allow broadcasters to study this matter, we will entertain requests for a limited number of stations to experiment at power levels higher than those specified for individual allotments in the DTV Table.

31. With regard to permitting stations to maximize or increase their service areas by operating with additional power or higher antennas than specified in the DTV Table, we agree that stations should be able to maximize their facilities provided that no new interference is caused to other stations.[70] We therefore will permit stations to request an increase in their operating power and/or height of antenna from that specified in the DTV Table, up to the maximum permissible limits on DTV power and antenna height set forth below or up to that needed to provide the same geographic coverage as the largest station within their market. Such requests must be accompanied by a technical showing that the increase would not result in new interference or statements agreeing to the change from any co-channel or adjacent channel stations that might be affected.[71] If such requests are approved by the Commission, the larger service area resulting from an authorized power or antenna height increase will be protected in the same manner as the initial replicated service area.

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[69] See Fifth Report and Order for description of our two-year review. We note that in ex parte submissions Viacom, et alia, recommend that we consider an upward adjustment of the minimum DTV power level based on modification of permissible interference levels. See letter dated March 26, 1997, to the Honorable Reed E. Hundt, Chairman of the Federal Communications Commission.

[70] In this regard, we would entertain requests for increases in power by DTV stations above the 1000 kW level where such additional power would be required to provide service to the station's Grade B contour and would not result in additional interference. For stations with DTV power below 1000 kW, we would entertain requests for additional power to allow them to serve an area up to the Grade B contour of the largest station in the market provided that such increases in power would not result in additional interference.

[71] The maximum permissible power and antenna combinations are discussed in section VII-A, below. These limits are set forth in Section 73.622(f) of the rules in Appendix E.

32. For purposes of service replication, the service or coverage area of a DTV allotment is the predicted noise-limited service area, contained within the Grade B contour of the NTSC station associated with that allotment, less any area where interference from other DTV or NTSC operations may occur.[72] DTV service areas are calculated using the parameters specified in the DTV Table, including maximum ERP, HAAT, and the actual antenna patterns of the associated NTSC stations. This definition of service area shall also be used for purposes of determining whether a "maximization" of facilities or other type of modification causes interference to a DTV allotment.[73]

33. With respect to comments requesting that we update the May 13, 1996, engineering data base, we concur and, as stated previously, the Table included in the Sixth Further Notice was a draft. It has always been our intention to use the most current station data available in developing the DTV Table. Accordingly, the DTV Table of Allotments adopted herein is based on a data base that is current as April 3, 1997.[74] This data base includes new station parameters corresponding to modifications of facilities granted to date, and to the extent possible, provides for replication of modified facilities that were granted on a conditional basis. As discussed in the Fifth Report and Order, broadcasters will be allowed to begin DTV operations at power levels less than those needed for achieving full service area replication. That is, broadcasters will be allowed to operate at power levels lower than those specified for their operation in the DTV Table. This will afford them an opportunity to increase their power over time and thereby "grow into" the power level needed for full service area replication, as specified in the DTV Table. We plan to review this policy two years after the adoption of this Report and Order.

[72] The definition of the Grade B contour of an NTSC station is set forth in § 73.683 of the rules, 47 CFR § 73.683.

[73] Where a modification or maximization of the values for an individual allotment contained in the TV Table adopted herein is approved, the new service area resulting from such modification or maximization beyond the associated station's Grade B contour shall be protected. The new service area shall be calculated in accordance with the procedures specified in the Fifth Report and Order. This procedure shall also be used for determining the service areas of TV stations that are provided larger service areas through the minimum power level provisions in the TV Table.

[74] See Sixth Further Notice, at paras. 2 and 88.

C. Spectrum for DTV

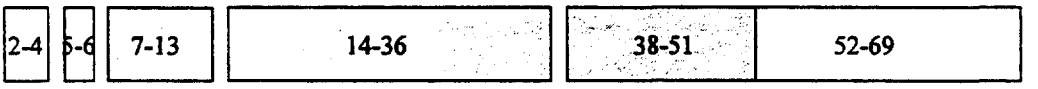
34. In the Sixth Further Notice, we stated that the primary goal of this proceeding is to ensure that the implementation of DTV is accomplished in a manner that serves the public interest. We also stated that it is important to provide the new digital TV stations with the spectrum that is the most appropriate and technically suitable for their operation. In addition, we stated that given our obligation to manage the spectrum efficiently in the public interest and the increased number of stations that the TV spectrum can accommodate, we believe it is important that the recovery of spectrum that is not needed for DTV continue to be a key component of its implementation of DTV service. In this regard, we stated that we remain committed to the recovery of the channels temporarily assigned for the transition and to ensuring that the spectrum is used efficiently.

35. We stated that believe that an approach that uses portions of both the VHF and UHF TV spectrum for DTV service appears desirable. Based on studies by our staff in developing DTV allotments, we indicated that a core region of 270 MHz between channels 7 and 51 may be the most appropriate location for DTV broadcasting; that this region would be sufficient to accommodate all existing broadcasters; and that it would provide additional DTV frequencies for new entrants. We therefore asked for comment on two spectrum plans. Under the first, our "core spectrum" option, all future digital TV service would be located in a core region of the existing VHF and UHF broadcast spectrum, namely the spectrum at VHF channels 7 to 13 (174-216 MHz), and the spectrum at UHF channels 14-51 (470-698 MHz).[75] Figures 1 and 2 below show the existing NTSC television channels and the proposed spectrum to be used for digital television:

Figure 1 - Current NTSC TV Channels

[75] These bands correspond to the existing TV channels between VHF channel 7 and UHF channel 51. TV channel 37 (608-614 MHz) is currently used for radio astronomy research. In order to protect sensitive radio astronomy operations, TV Channel 37 currently is not used for NTSC broadcast television and also would not be used for DTV service.

Figure 2 - Proposed DTV Spectrum (Shaded Areas)



36. Under this core spectrum plan, we would attempt to provide all existing broadcasters with access to a 6 MHz channel for digital broadcasting within the core digital TV spectrum, i.e., channels 7 to 51. Because of the limited availability of spectrum and the need to accommodate all existing facilities with minimal interference among stations, however, during the transition some broadcasters would be provided DTV channels outside of this area. These broadcasters would have to move their DTV operations to a channel in the core spectrum when one became available. Broadcasters whose existing NTSC channels were in the core spectrum could move their DTV operations to their NTSC channel at some time in the future. Broadcasters whose DTV transition channel and existing NTSC channel were both outside of the core area could obtain a new DTV channel when channels in the core spectrum are recovered.

37. We also indicated that this plan would allow the spectrum outside the core region to be recovered without a full channel repacking that would force many broadcasters to move to new channels twice. Specifically, this option would permit the eventual recovery of 138 MHz of spectrum nationwide. This spectrum would be obtained from the lower VHF channels, i.e., channels 2-6 (54-72 MHz and 76-88 MHz), and upper UHF channels, i.e., 52-69 (698-806 MHz). We observed that one advantage of this option was that it could facilitate the early recovery of a portion of the TV spectrum. For example, we stated that it may be possible to recover 60 MHz of spectrum almost immediately from the band 746-806 MHz, i.e., UHF channels 60-69, while protecting the relatively few full-service analog and digital broadcasters in that spectrum. In this regard, we noted that only 97 of the almost 1600 television licensees operate on channels 60-69. In the draft DTV Table of Allotments included with the Sixth Further Notice, we attempted to minimize the number of DTV channels that would be located on channels 60-69.[76] The draft DTV Table was based on a "core spectrum" design that minimized -- but that did not eliminate -- digital allotments at channels 60-69. Where necessary to avoid undesirable interference, the draft Table used channels 60-69. The draft Table did so roughly 30 times.

[76] There are also a number of LPTV and TV translator stations that operate on a secondary basis on these channels.

38. We also requested comment on the alternative spectrum allotment/assignment plan for DTV service suggested by MSTV. The plan suggested by MSTV was based on principles that are similar to our proposals. That is, the MSTV preliminary Table was based on full accommodation of all broadcasters, attempts to provide stations with DTV coverage comparable to their existing NTSC coverage, and uses service replication to assign DTV channels. The principle difference between our draft DTV Table and MSTV's preliminary Table was with regard to the use of spectrum. While the two approaches use both VHF and UHF channels, the MSTV proposed approach does not attempt to concentrate all DTV operations within a core area of the spectrum.[77] Under this alternative approach, each broadcaster would be provided with a 6 MHz DTV channel without preference to any specific channels. Since all channels would be available, such an approach could theoretically provide for some degree of improved service area replication and interference performance. We also observed that such an approach might also have less impact on low power TV and TV translator stations. On the other hand, we noted that there were disadvantages with this plan. For example, this option would place more DTV stations on channels that are less desirable for broadcast operations; the MSTV Table included over 350 allotments on channels 60 and above.[78] We requested comment with regard to these two options. Commenting parties were also invited to address whether the different plans would have different effects on specific segments of the broadcasting industry such LPTV and TV translator stations and the emerging networks.

39. We also requested comment on specific issues relating to the "core area" option. We asked that comments address whether our proposed choice of the spectrum for the core area was appropriate and whether there are any other considerations relating to this choice that should be addressed. In particular, we requested comment on our tentative conclusion that the upper UHF frequencies are less desirable for broadcasting purposes and more appropriate for other uses. Similarly, we requested comment on our assessment that VHF channels 2-6 are less suitable for digital broadcasting because of high levels of noise.

40. We further requested comment on what mechanisms and criteria we should use to determine the channel that will become the permanent DTV spectrum for each existing station. We tentatively proposed to allow broadcasters with both NTSC and DTV frequencies in the core DTV spectrum to choose one of those channels for their permanent DTV

[77] The MSTV proposal also contains a number of other differences. One difference, for example, is in the manner in which non-commercial vacant allotments are treated. MSTV did not consider commercial vacant allotments -- it stated that in most cases vacant allotments would have to be eliminated. It did, however, attempt to provide a replacement NTSC and DTV channel for all non-commercial vacant allotments. It was successful in finding a replacement NTSC channel for non-commercial vacant allotments in about two-thirds of all cases. MSTV was also successful in finding a replacement DTV channel in all but one case. The actual channels for these vacant allotments are not shown on the draft Table submitted by MSTV. LPTV and TV translator stations were not considered in the MSTV Table.

[78] This represents over 20 percent of the new DTV allotments.

spectrum. Under this plan, broadcasters would be required to make their spectrum choices within a specific period of time, e.g., three to five years, after the implementation of DTV service begins. Once these choices were made, the Commission would identify new DTV allotments that would be available for relocation of stations initially operating on frequencies outside the core area or for new DTV assignments.

41. We requested comment on whether we should adopt special transition provisions for broadcasters with NTSC channels or DTV allotments outside the core area. For example, where such a broadcaster's existing NTSC channel is outside the core should we allow the broadcaster to cease NTSC operation and permit early transition to a DTV channel in the core? In addition, where a broadcaster's existing NTSC channel is in the core and its DTV allotment is outside the core, we asked whether we should allow the broadcaster to convert its NTSC channel to DTV operation, rather than activate its "temporary" out-of-core DTV allotment. Finally, where a broadcasters' existing NTSC channel and DTV allotment are both outside the core area, we asked for comment on whether we should allow such broadcasters to wait to begin DTV operations until spectrum becomes available in the core area? This would allow some broadcasters to avoid making a second transition to convert to DTV. We specifically ask whether the above special transition approaches should apply to broadcasters with NTSC or DTV frequencies on channels 60-69.[79]

42. In considering the spectrum issues relating to DTV implementation, we also observed that digital licensees may be willing to temporarily reduce the power of their digital signals to avoid interference to analog signals. We proposed to permit such agreements, including those that involve compensation. In addition, we noted that in some cases interference to NTSC stations can be minimized or eliminated by increasing the transmitter power or antenna height of the affected NTSC station. We proposed to permit such changes provided that they do not cause more than *de minimis* interference to neighboring DTV operations, and we proposed to permit agreements including compensation under which a DTV licensee would temporarily agree to accept a slightly elevated level of interference so that reception of an NTSC station is improved.

43. Comments. Most parties with broadcasting interests oppose proposals that would reduce the spectrum that is available for television broadcast purposes. These parties argue that no spectrum should be recovered prior to the end of the transition to DTV service. They argue that using all the channels without preference will provide increased flexibility for DTV implementation and mitigate interference and service area concerns. Parties representing LPTV and TV translator interests state that using all the spectrum would minimize the impact of DTV on their operations. The public safety community and most other land mobile interests, on the other hand, support the core approach and argue that spectrum recovery is needed to meet important communications needs, such as public safety.

[79] Cf. Fourth Further Notice, at para. 60.

44. The Joint Broadcasters, in their comments, oppose the core spectrum approach. They submit that we should adopt their Modified Table, subject to further adjustments.[80] They state that their Modified Table demonstrates that use of the full television band reduces interference to existing NTSC and to new DTV stations and improves opportunities for replication and maximization.[81] The Joint Broadcasters argue that a channel plan that uses that entire band will provide for more flexibility during the transition to DTV. They state that experience is needed to identify the optimal spectrum into which DTV stations may be re-packed, thereby vacating contiguous spectrum for other uses.[82] They also argue that the core approach would result in increased interference and would impact service replication.[83] They assert that the core approach would increase new interference to NTSC by 18%, and that interference to DTV service would be 28% less under a full band plan.[84] In addition, they claim that under their plan, 95% of stations would achieve 95% replication or better as compared to 91% of stations achieving 95% replication under a core approach. They argue that these service differences are important and contend that the Commission has held that the loss of service to even a relatively few viewers has been definitive in past relocation, deintermixture and maximum spacing decisions.[85]

45. The Joint Broadcasters also argue that eliminating the core and spectrum recovery

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[80] Joint Broadcasters comments, pp. 42-43, and 46-47.

[81] To provide a basis for comparing our proposed spectrum plan with their full spectrum approach, the Joint Broadcasters used the draft DTV Table to create a "Baseline Table" that incorporates the core spectrum plan and their recommendations for modifying the assumptions methodology used in allotting channels. The Joint Broadcasters' used the May 13, 1996, data base used in generating their Baseline Table. They did not update or otherwise make corrections to that data base. Joint Broadcasters comments, pp. 23-24. The Joint Broadcasters submit that, under their Baseline Table, new interference to NTSC service and interference to DTV service would be reduced and that a slightly smaller number of stations would receive a DTV channel that would achieve 95% or better replication. Joint Broadcasters comments, pp. 22-23.

[82] Joint Broadcasters comments, p. 7.

[83] The Joint Broadcasters base their comparison on the differences between their Modified Table and a Baseline Table that is a modified version of the draft DTV Table that incorporates the Joint Broadcasters recommendations for changes in the technical methodology used in making allotments. Joint Broadcasters comments, p. 26.

[84] The Joint Broadcasters state that in determining the significance of improvements from one alternative DTV Table to another, it is important to settle on the method for comparing interference and coverage data. They recommend the method used by the Advisory Committee to evaluate competing DTV transmission systems. Under this method, interference performance is compared relative to how each alternative measures up against an ideal overall plan that would achieve 100% replication of NTSC service and create no new interference to NTSC service. Thus, if plan X creates 2% new interference, and plan Y creates 1% new interference, the difference between plans is 100%, not 1%. Joint Broadcasters comments, p. 25.

[85] Joint Broadcasters comments, pp. 28-31.