

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

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In the Matter of)
)
Review of the Commission's)
Rules and Policies)
Affecting the Conversion)
To Digital Television)
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MM Docket No. 00-39J

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**REPORT AND ORDER
AND
FURTHER NOTICE OF PROPOSED RULE MAKING**

Adopted: January 18, 2001

Released: January 19, 2001

By the Commission: Chairman Kennard and Commissioners Ness, and Tristani issuing separate statements; Commissioner Furchtgott-Roth concurring in part, dissenting in part, and issuing a statement.

Comment date: April 6, 2001
Reply Comment date: May 7, 2001

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I. INTRODUCTION

1. With this Report and Order we resolve several issues crucial to the rapid conversion of the nation's broadcast television system from analog to digital. Among these issues are: when to require election by licensees of their post-transition DTV channel; whether to require replication by DTV licensees of their NTSC Grade B service contours; whether to require enhanced service to the principal community served by DTV licensees; and how we should process mutually exclusive applications. We believe that the resolution of these issues will provide licensees with a measure of certainty that will enhance their ability to plan facilities, order equipment and arrange for construction of their facilities, all of which will speed the transition to digital service.

2. In this Report and Order we will impose a channel election requirement, requiring commercial television stations with two in-core channels (*i.e.*, channels 2-51) to elect their post-transition digital channel by December 31, 2003. This will allow us to more quickly identify channels available to accommodate DTV licensees with out-of-core transition channels and new entrants. We will resolve in a subsequent rule making both priority as to channel assignment (*e.g.*, should stations that must move to a new channel have the highest priority and get the first selection of channels that are returned) and processing issues as well as the question of whether any channels should be placed off-limits, not available for use by DTV licensees. Additionally, while full replication by DTV licensees of the NTSC service area was an important Commission objective in developing the DTV Table of Allotments and remains a key goal, we will not impose a full replication requirement. Instead, we have determined that, after December 31, 2004, whatever portion of a commercial broadcaster's NTSC Grade B contour is not replicated with its digital television signal will simply cease to be protected in the Table of Allotments. We believe that this will provide broadcasters with the incentive to continue service to most of their current viewers without the need for a Commission rule. We will, however, impose a city-grade service obligation that will require licensees to encompass their communities of license with a stronger signal than that with which they had, or will have, to commence DTV operations. In this Order, we also adopt DTV application cut-off procedures and address how we will resolve any mutual exclusivities that arise. We also address in the Report and Order portion of this document a host of technical issues and determine that at this time there is no persuasive information to indicate that there is any deficiency in the 8-VSB modulation system of the DTV transmission standard that would cause us to revisit our decision to deny Sinclair Broadcasting Group, Inc.'s, petition and to add COFDM to the current 8-VSB DTV standard or to grant Univision Communications Inc.'s Petition for Expedited Rule Making to that same effect. We also decline to adopt technical performance standards for DTV receivers.

3. In the Further Notice of Proposed Rule Making contained herein we explore the issues and concerns raised by parties regarding DTV reception capability, and we propose to require that certain types of new television sets have the capability to demodulate and decode over-the-air DTV signals by a date certain. We also seek comment on how best to implement such a requirement, including alternatives for phasing-in DTV reception capability in a manner that would minimize costs for both manufacturers and consumers. Finally, we propose to adopt labeling requirements with respect to television receivers that are not capable of receiving over-the-air broadcast television signals but, instead, are intended for use only with cable television reception.

II. BACKGROUND

4. In the Commission's digital television proceeding (MM Docket No. 87-268) we repeatedly

indicated our intent to hold periodic reviews of the progress of the conversion to digital television and to make such mid-course corrections as were necessary to ensure the success of that conversion.¹ In the Fifth Report and Order we stated that we would conduct such a review every two years in order to “ensure that the introduction of digital television and the recovery of spectrum at the end of the transition fully serves the public interest.”² We commenced this, the first, periodic review, with a Notice of Proposed Rule Making, adopted March 6, 2000.³ In that Notice we stated that the conversion is progressing and that television stations are working hard to convert to digital television. We invited comment on several issues that we considered essential to be resolved in order to ensure that progress continued and that potential sources of delay were eliminated.⁴

5. To that end we sought comment on, for example, whether the Commission should require each DTV station to match the Grade B service area of its paired analog NTSC station and, if so, how we should determine whether a DTV station is replicating that facility (e.g., area replication, population replication). Such service replication was a principle on which our DTV Table of Allotments was based.⁵ Additionally, we asked whether we should adopt a city-grade service requirement and, if so, what that level of service should be.⁶ We indicated our concern that the lack of an explicit replication requirement and a city-grade service requirement “may encourage some licensees to locate their proposed DTV facilities at a substantial distance from their NTSC facilities and their communities of license.”⁷ Also, we sought comment on establishing a deadline for election by DTV stations of their post-transition channel.⁸ We indicated that it seemed reasonable to require this election no later than

¹ Memorandum Opinion and Order/Third Report and Order/Third Further Notice of Proposed Rule Making in MM Docket No. 87-268, 7 FCC Rcd 6924, 6964-66 (1992)(“Third Report/Further Notice”); Fourth Further Notice of Proposed Rule Making in MM Docket No. 87-268, 10 FCC Rcd 10541, 10548-49 (1995)(“Fourth Further Notice/Third Inquiry”); Fifth Report and Order, 12 FCC Rcd 12809, 12856 (1997)(“Fifth Report and Order”), on recon., Memorandum Opinion and Order on Reconsideration of the Fifth Report and Order, 13 FCC Rcd 6860, on further recon., Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders, 14 FCC Rcd 1348 (1998), recon. dismissed, DA 99-1361, released July 12, 1999, recon. dismissed FCC 00-59, released February 23, 2000.

² Fifth Report and Order, supra at 12856.

³ Notice of Proposed Rule Making in MM Docket No. 00-39, 15 FCC Rcd 5257 (2000)(“Notice”).

⁴ Id. at 5258.

⁵ Sixth Report and Order in MM Docket No. 87-268, 12 FCC Rcd 14588, 14605 (1997), on recon., Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, 13 FCC Rcd 7418 (1998), on further recon., Second Memorandum Opinion and Order, 14 FCC Rcd 1348 (1998). (“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 now receive over-the-air.”).

⁶ We noted that the required city grade community service contours for NTSC stations are 27, 21 and 16 dB higher than the Grade B service contours for channels 2-6, 7-13, and 14-69, respectively. Adding these amounts to the DTV service field strength values resulted in the following signal strength contours: 55 dBu, 57 dBu, and 57 dBu for channels 2-6, 7-13, and 14-69, respectively. Notice, supra at 5268.

⁷ Id. at 5263.

⁸ Id. at 5270.

2004, and suggested May 1, 2004, as a possibility. Also, we solicited comment on the appropriate criteria for determining who is allowed to participate in the election process, whether any category of participants should have blanket priority over other participants, and which channels are available.⁹

6. In addition, we invited comment on application processing procedures. We asked, *inter alia*: whether we should establish DTV application cut-off procedures, particularly with regard to DTV area expansion applications; how we should resolve conflicts between DTV applications to implement "initial" allotments; and the order of priority between DTV and NTSC applications.¹⁰ With respect to cut-off procedures, we noted that a cut-off process could minimize the number of mutually exclusive ("MX") situations that develop by requiring conflicting applications filed after a cut-off deadline to protect earlier filed, cut-off applications.¹¹ We also indicated the need for a decision on the extent to which pending petitions for new NTSC channel allotments and applications should have protection from later-filed DTV applications. We noted that such a decision is important "to allow orderly processing and reasonable certainty that an NTSC applicant or petitioner's grant is valid."¹²

III. PROGRESS REPORT

7. For the most part, the buildout of digital facilities has continued to progress, although the commenters have noted a few problem areas, and it is critical that any problems not be permitted to derail the transition. As of November 15, 2000, 98% of TV licensees and permittees in all markets have filed DTV construction permit applications. The remaining 2% who have requested extensions of time to file generally indicated that they had pending rule making petitions requesting changes to their DTV channel or tower site problems. A total of 842 applications for DTV construction permits have been acted on by the Commission, and 132 of those stations are on the air pursuant to those permits. This compares with 316 construction permit applications that have been acted on and 92 stations on the air with those permits as of February 23, 2000, as discussed in the Notice. Forty-six other stations are on the air with special or experimental DTV authority for a total of 178 stations nationwide broadcasting in DTV. The remaining 1,010 pending applications are either awaiting additional information or Mexican, Canadian or other clearances or are technically more difficult to process because they require an interference analysis (applications that do not meet the "checklist" criteria for streamlined processing). These applications are being processed expeditiously through the use of newly developed software programs and we expect to complete processing of all such applications by January 2001, except for those that have remaining international issues to be resolved.

8. The DTV build-out dates have passed for the top 30 market network affiliate stations. Thirty-seven of the 40 DTV stations in the top ten markets are on the air. In each of these markets, at least two DTV facilities are on the air and in eight of these markets the four affiliates of the largest commercial networks are all on the air. Six requests for extensions of time to complete construction in these markets are pending. In markets 11-30, 65 of the 79 network affiliate stations are on the air. Nineteen stations have requested extensions of time to complete their construction in these markets. Some stations in the top thirty markets that are requesting extensions of time to construct are also on the

⁹ Id. at 5271.

¹⁰ Id. at 5271-77.

¹¹ Id. at 5272.

¹² Id. at 5276.

air with DTV special temporary authority. The Commission expects to address the issue of extensions soon in a separate document.

9. In the Notice, we invited comment generally on whether the digital transition is proceeding in such a way as to serve the public interest. We asked whether factors such as the pace of DTV receiver sales or the availability of financing for digital facilities reflect the state of the digital transition.¹³ With respect to financing, an NAB survey of broadcasters attached to its comments appears to indicate that this is not a substantial problem. Of the broadcasters that responded, while some broadcasters noted that they were experiencing financing difficulties, 79% stated that they had not had difficulties in obtaining financing for the DTV transition.¹⁴

10. With respect to receiver sales, receiver availability and sales are increasing. According to Phillips Electronics North America Corporation, DTV sales in 2000 are expected to quadruple those in 1999.¹⁵ Thomson Consumer Electronics notes that the consumer can choose from among more than 150 DTV products at steadily increasing performance levels and steadily decreasing prices.¹⁶ In early 2000, the Consumer Electronics Association found: 118 HDTV displays (monitors) available to consumers, each of which may be combined with set-top boxes to provide HDTV and is capable of 1080i or 720p displays; 24 set-top boxes capable of receiving over-the-air DTV standard signals in all ATSC formats used; 28 receivers consisting of high definition displays (1080i) integrated with digital over-the-air decoders; and 24 monitors capable of displaying 480p (not HDTV).¹⁷

11. However, consumer electronics manufacturers argued that wider availability of more digital programs, particularly high definition programs, is necessary to speed the transition.¹⁸ For example, Philips reports that more such programming is urgently needed. It asserts that, while consumer response to HDTV has been "extraordinarily enthusiastic," the quantity of such programming broadcast has been "significantly less than reasonably expected."¹⁹ Broadcasters respond that equipment manufacturers are not producing many sets capable of over-the-air reception at all and what receivers are being produced do not meet customer expectations.²⁰ We agree that the wide availability of digital programming, and particularly high definition programming, will help speed the transition to DTV. Therefore, to help the trend continue and intensify, we urge broadcasters to continue to increase the amount of digital and high-

¹³ Id. at 5261.

¹⁴ Comments of NAB at 10. According to NAB, the response rate to the survey was 38.1%.

¹⁵ Comments of Philips at 18.

¹⁶ Comments of Thomson at iii-iv, 21.

¹⁷ Comments of CEA at 6.

¹⁸ Comments of CEA at 7-10, Philips at 18, Thomson at iii-iv, 21.

¹⁹ Comments of Philips at ii.

²⁰ Comments of Joint Broadcasters at 20. The Joint Broadcasters Comments represent the views of the Association for Maximum Service Television, Inc., the Association of Local Television Stations, the Association of America's Public Television Stations, Chris-Craft Industries, Inc., the National Association of Broadcasters (NAB), the National Broadcasting Company, Inc., Public Broadcasting Service, Tribune Broadcasting Company, and the Walt Disney Company, on behalf of itself and its wholly-owned subsidiary ABC, Inc.

definition programming. We note, based on press reports, that Thomson has agreed to underwrite CBS' broadcast of Super Bowl XXXV, as well as the broadcast of four American Football Conference playoff games, in high definition.²¹

IV. DISCUSSION –REPORT AND ORDER

A. Channel Election

12. In the Notice, we noted that we had decided in the DTV Sixth MO&O²² that, after the transition, DTV service would be limited to a “core spectrum” consisting of current television channels 2 through 51. Although some stations received transition channels out of the core, and a few had both their NTSC and DTV channels outside the core,²³ we believe there will be sufficient spectrum so that at the end of the transition all DTV stations will be operating on core channels. Nevertheless, as we indicated in the Notice, it now appears that there will be more out of core stations that must be accommodated with a core channel than we initially anticipated because new applicants will be allowed to convert their single NTSC channels to DTV operation and those on channels outside the core will be provided a post-transition channel inside the core.²⁴ Also, as noted in the Notice, the recent establishment of primary Class A TV stations may limit availability of core channels in some areas. This makes forward planning for the transition all the more important and influences our decision to mandate early election of DTV channels. Accordingly, the Notice suggested a May 1, 2004, election date, but asked for comment on whether the election date should be earlier.

13. For the purposes of our analysis of this issue, there are three categories of licensees. First, there are those with both their NTSC and DTV channels within the core. Second, there are those licensees with one of their stations in the core and the other outside of it. Third, there are those with both their NTSC and DTV channels outside the core.²⁵ Although most broadcasters commenting on this issue resisted the idea of an early channel election,²⁶ believing that our mandating an election deadline at the current time would be premature, some broadcasters supported an early election.²⁷ Additionally, the

²¹ Broadcasting & Cable, August 21, 2000, p. 14.

²² Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, 13 FCC Rcd 7418 (1998).

²³ There are 17 such stations. See Notice, at 5269.

²⁴ Notice, supra at 5270. There are a number of such “new applicant” NTSC stations authorized on channels outside the core, and dozens more could be authorized under procedures announced in the filing window Public Notice DA 99-2605, released November 22, 1999. Id.

²⁵ There are currently 17 stations that have both their NTSC and their DTV channels outside the core.

²⁶ See, e.g., Comments of Assoc. of America's Public Television Stations and PBS (“APTS/PBS”) at 4-5, 17-18; Comments of California Oregon Broadcasting, Inc.; Comments of Cordillera Communications, Inc., at 8; Comments of Fox Television Stations and Fox Broadcasting Company at 4-5; Comments of Joint Broadcasters at 3-5; Reply Comments of Association for Maximum Service Television, Inc., at 20-21.

²⁷ See, e.g., Comments of KSLs, Inc., at 2-4 (the process needs to begin now with out of core stations having the first choice of selecting NTSC channels); Comments of KM Communications, Inc., at 4-6 (channel election deadline and fair election procedures should be established now so that all potentially affected stations may plan for the post-transition period); Comments of National Public Radio at 3; Comments of WLNY-TV at 2-5 (continued....)

Association of Public-Safety Communications Officials-International, Inc. (APCO), strongly supports a May 1, 2004, or earlier, binding channel election to free up channels 60-69 for public safety use in several large markets.²⁸

14. We have determined to mandate a December 31, 2003, election deadline for the first group of commercial television stations. These are stations that have both their NTSC and DTV operations on in-core channels. This is more than one and a half years after the last commercial station construction deadline (i.e., May 1, 2002), giving these stations ample time in which to decide which of their two core channels would be most suitable for use in digital broadcasting. Setting this channel election deadline will enable us to determine at an early date, on a market-by-market basis, what channels will be available for stations having two out-of-core channels and for other users and will assist in our clearing of this spectrum. Although we initially proposed that all stations not be required to make their election before May 1, 2004, we believe that the transition process will be sufficiently along by December 31, 2003, to allow commercial broadcasters to make an informed channel selection decision. An earlier election decision will provide commercial broadcasters with more time in which to construct the replication capability prior to our December 31, 2004, "use or lose" date, also being adopted herein.²⁹ Additionally, the deadline will allow almost a year-and-a-half of DTV operation for stations before any station has to make a channel election. The choice of this election deadline for this category of stations strikes an appropriate balance between the need for stations to have a sufficient amount of time in which to gain experience in DTV operation and allowing stations that will have to move -- particularly from out-of-core to in-core -- to plan for the DTV channel conversion by December 31, 2006. Finally, it is our intent that early final channel election will help speed the transition by making the final local channel alignments clear.

15. Non-commercial stations that have both their NTSC and DTV operations on in-core channels will have until the end of 2004 to elect their channels, or more than one and a half years after their construction deadline (i.e., May 1, 2003). This later deadline allows noncommercial stations to have at least a full year of experience with their DTV operation before having to choose their post-transition channels and, accordingly, accommodates the needs of public television. As noted above, commercial broadcasters will have the same period of operational experience before having to make a channel election.

16. We will resolve in future DTV periodic reviews a decision on whether and when stations with one or both of their channels out of the core will have to make an election. Only after those with two in-core channels have made their election will other licensees be able to make an informed choice. Indeed, stations in some circumstances may not necessarily be permitted to select their post-transition DTV channels. We presume that, except in extraordinary circumstances, stations that have one in-core and one out-of-core channel will remain on their in-core channel after the transition. We will resolve issues relating to the particulars of the election process and procedure to later periodic reviews or publish

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(channel election should be required at the earliest possible date with full power stations with 2 out of core channels having to make the earliest election and having the highest priority in securing in core DTV channels from the relinquished channels; Reply Comments of KM Communications, Inc., at 4-7 (channel election should have to be made as early as the end of this year with all potentially affected broadcasters, including Class A and LPTV stations, being allowed to participate in the process).

²⁸ Comments of APCO at 2-3.

²⁹ See ¶¶ 22-24, *infra*.

them in Public Notices issued with sufficient time to allow for licensees to familiarize themselves with them.³⁰ We will also resolve later the issue of whether any channels should be off limits. In all cases, including stations with both channels in-core, we reserve the right to select the final channel of operation in order to minimize interference and maximize the efficiency of broadcast allotments in the public interest. We intend to review the channel elected to ensure that its use furthers these goals.

17. Under the Community Broadcasters Protection Act of 1999 (CBPA), the Commission is prohibited from granting a Class A license to a low power television station operating on a channel within the core spectrum that includes any of the 175 additional channels that were referenced in paragraph 45 of the Commission's Feb. 23, 1998 Memorandum Opinion & Order on Reconsideration of the 6th Report and Order (MM Docket No. 87-268).³¹ In that Order, the Commission expanded the DTV core spectrum to cover, in total, channels 2-51, and we observed that this expansion would add approximately 175 additional channels to the core. The CBPA, as we noted in the Notice, also requires the Commission to identify these 175 channels within 18 months of the Act's enactment.³² We thus invited comment as to whether, based on the new obligations imposed by this legislation, we are required to impose an earlier election date than May 1, 2004. After enactment of the CBPA, we concluded in our Report and Order establishing a Class A television service that we are currently in compliance with the requirement of section (f)(6)(B) of the CBPA that we protect the 175 channels, because these channels are now encumbered by existing NTSC or DTV allotments.³³ While a portion of these channels will become available for other parties once the broadcast licensees make their elections and begin to discontinue operations on one of their paired channels at the end of the DTV transition, we will have the opportunity closer to that stage to ensure that the CBPA's channel protection requirement continues to be met. In any event, we are establishing herein an election deadline for commercial stations that is earlier than that originally proposed. Moreover, our decision should, to some extent, satisfy the concerns of commenters such as KM Communications,³⁴ who requested an earlier election, and should foster a better

³⁰ As indicated above, there are only 17 stations with both their analog and DTV transition channel outside of the core.

³¹ See The Community Broadcasters Protection Act of 1999, Pub Law 106-113, 113 Stat. 1501 (1999)(CBPA). Section 5008(f)(6)(B) of the CBPA, Appendix I), states, "The Commission may not grant under this subsection a class A license to a low-power television station operating on a channel within the core spectrum that includes any of the 175 additional channels referenced in paragraph 45 of its February 23, 1998, Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order (MM Docket No. 87-268). Within 18 months after the date of the enactment of the Community Broadcasters Protection Act of 1999, the Commission shall identify by channel, location and applicable technical parameters those 175 channels." In the Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, we stated, "Our analysis indicates that expanding the core will add approximately 175 additional channels, and that many of these new channels will be in top markets, including at least three new channels each in congested and highly-valuable New York, Los Angeles, San Diego, San Francisco, and Detroit." Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, supra at 7436

³² Id.

³³ Report and Order in MM Docket No. 00-10, 15 FCC Rcd 6355, 6397 (2000). We also noted that these channels will become available for other parties once full-power stations discontinue operation on one of their paired channels at the end of the DTV transition.

³⁴ KM Communications, Inc., argues for a deadline earlier than 2004 both because it believes that identification of the 175 channels is required by the CBPA and because such an early election, in its view, would assist all potentially affected stations to plan for their futures.

planning environment for broadcasters and the public and, therefore, benefit the transition.

B. Replication

18. We established replication as a goal in the creation of the initial DTV Table of Allotments.³⁵ By this we meant that each DTV channel allotment was chosen to best allow its DTV service to match the Grade B service contour of the NTSC station with which it was paired.³⁶ We believed, and continue to believe, that this approach provides important benefits to both viewers and broadcasters and “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.”³⁷

19. Most commenters opposed a replication requirement, believing it to be premature and, particularly in the case of public television stations, an onerous financial burden.³⁸ Additionally, some believe that imposing a replication requirement now would disrupt the construction of stations,³⁹ run counter to the Commission’s prior statements encouraging the use of common antenna sites,⁴⁰ and delay the development of DTV.⁴¹ Should the Commission wish to impose such a requirement, they argue, it should await the end of the transition period to do so.⁴² Several assert that the only penalty for failure to replicate should be a loss of protection of DTV allotments beyond the station’s actual contours.⁴³

³⁵ Sixth Report and Order in MM Docket No. 87-268, 12 FCC Rcd 14588 (1997) (“Sixth Report and Order”), on recon. Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, supra, on further reconsideration, Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders, 14 FCC Rcd 1348 (1998), recon. dismissed, DA 99-1361, released July 12, 1999, recon. dismissed FCC 00-59, released February 23, 2000.

³⁶ Sixth Report and Order, supra at 14605.

³⁷ Id.

³⁸ See, e.g., Comments of Association of American’s Public Television Stations/Public Broadcasting System (“AAPTS/PBS”) at 8-9; Comments of California Oregon Broadcasting Inc., at 2; Comments of Cordillera Communications, Inc., at 9; Comments of Freedom Communications, Inc., at 3; Comments of Hubbard Broadcasting, Inc., at 2-3 (Hubbard believes that the Commission should not adopt a full-replication requirement for construction of non-core DTV facilities because they must be abandoned on the conversion date); Comments of Joint Broadcasters at ii, 2, and 6-7; Comments of Merrill Weiss Group at 7, 13; Comments of Pegasus Communications Corporation at 6; Comments of Mike Simons at 2-3; Comments of USA Broadcasting, Inc., at 9-11; and Comments of WRNN-TV at 1-4.

³⁹ Comments of Merrill Weiss Group at 7-8; Comments of Pegasus Communications Corporation at 16; Comments of Costa De Oro Television, Inc., et al., at I, 6 and 8.

⁴⁰ Comments of Comments of Merrill Weiss Group at 15; Comments of Costa De Oro Television, Inc., et al., at 3, 8-9.

⁴¹ Comments of Merrill Weiss Group at 16; Comments of Pegasus Communications Corporation at 9.

⁴² Comments of Cordillera Communications, Inc. at 9; Comments of Costa De Oro Television, Inc. et al. at 8; Comments of Joint Broadcasters at 4.

⁴³ Comments of Consumer Electronics Association at 27; Comments of Costa De Oro Television, Inc., et al., at 13-14; Comments of Merrill Weiss Group at 14; Comments of USA Broadcasting, Inc., at 10.

20. Thus far we have not mandated replication. We instead have allowed broadcasters to build facilities sufficient to emit a DTV signal strong enough to ensure that the predicted DTV service contour covers the community of license.⁴⁴ We explicitly did not require broadcasters to achieve full replication when they begin DTV transmission.⁴⁵ Instead, responding to broadcaster comment indicating that an initial full replication requirement would require a longer construction schedule, we opted for a more easily satisfied initial service requirement in order to accelerate the construction timetable and to alleviate the burdens that it placed on broadcasters. We nonetheless noted that during the first two-year review, we would consider whether to modify the build-out requirement to require a full-replication facility as well as adjustments to the protection of the full-replication facility.⁴⁶

21. After considering the comments, and balancing the arguments for and against, we have decided not to require replication. We expect that DTV broadcasters will eventually choose to replicate their NTSC service areas to serve their viewers. However, we will not require such replication because we want to give broadcasters a measure of flexibility as they build their DTV facilities to collocate their antennas at common sites, thus minimizing potential local difficulties locating towers and eliminating the cost of building new towers. Some broadcast commenters have taken advantage of these measures, which we suggested in the Fifth Report and Order,⁴⁷ and it would be unfair to them and might delay construction to require them to change these plans, if necessary, to achieve full replication. Additionally, some licensees are not operating on their core channels and it would be inefficient to require them to construct full-replication facilities on the channel that they will soon vacate. As a number of commenters argue, imposing a replication requirement now would inflict an onerous financial burden on many TV licensees that would have to construct new DTV facilities to accomplish replication. Also, in the absence of a Commission-mandated replication requirement, and with our providing licensees a certain amount of transmitter location flexibility,⁴⁸ some licensees may have built their initial DTV facilities in locations that are unsuitable for full replication at this early stage. Finally, as Joint Broadcasters point out, the migration to final DTV channels is by no means complete. To require NTSC service replication by DTV stations under these circumstances would indeed be premature, would cause excessive additional expense to both commercial and noncommercial broadcasters alike, and could delay the transition.⁴⁹ Finally, we are not requiring replication in order that broadcasters can have more flexibility to collocate their transmitters and make other necessary adjustments. As pointed out in the comments, the use of common sites can also minimize environmental degradation.⁵⁰ While in the Notice we stated our concern that lack of an explicit replication requirement and of a city-grade service requirement might have negative consequences for the DTV transition if licensees move their DTV facilities to a substantial distance from their NTSC facilities and communities of license, we have been convinced by the comments that the benefits of flexibility outweigh these concerns. To the extent that

⁴⁴ 47 CFR § 73.625(a)(1). See also Fifth Report and Order, *supra* at 12847.

⁴⁵ Fifth Report and Order, *supra* at 12847.

⁴⁶ *Id.* at 12839-40, n.161.

⁴⁷ See, e.g., Fifth Report and Order, *supra* at 12847.

⁴⁸ Sixth Report and Order, *supra* at 14634-35.

⁴⁹ See, e.g., Comments of Pegasus Communications Corporation at 9-11.

⁵⁰ Comments of Costa De Oro Television, Inc. *et al.* at 8.

such flexibility results in a faster roll-out of DTV, it would result in better service to the public. Having afforded digital broadcasters the flexibility they requested in this area, we expect that they will redouble their efforts to assure that the build out continues expeditiously and that, barring circumstances beyond their control, construction deadlines are met.

22. While we wish to assure broadcasters a measure of flexibility in constructing their DTV facilities, we continue to want to assure that viewers do not lose service and we take seriously our mandate to speed the transition and to ensure that the spectrum is used efficiently. We have determined that the best way to accomplish this objective without imposing undue cost and delay on broadcasters, and to minimize environmental effects,⁵¹ is not to expressly require full replication of NTSC coverage with DTV service. However, to provide an incentive to them to do so, we will, as proposed by several commenters, and as discussed in the Notice at paragraph 26,⁵² cease to give interference protection to their unreplicated service area as of December 31, 2004. Thus, by December 31, 2004, commercial DTV licensees must either be on-the-air replicating their April 1997 NTSC Grade B service area as of that date or lose interference protection to the unreplicated portion of this service area outside the noise-limited signal contour. By losing such protection, other broadcasters will be free to maximize their service areas, or to expand the service area of existing full or low-power stations, in order to restore any service lost by viewers as a result of the lack of full replication.

23. In the Notice, we expressed our concerns that a failure of DTV licensees to replicate their NTSC services areas might undermine the goals of our simulcasting requirements and that a large scale move of DTV stations to larger urban markets would pose a problem under Section 307(b) of the Communications Act, 47 U.S.C. § 307(b), as it might represent a de facto reallocation from smaller, more rural areas to larger urban areas. As we noted, we expect that most DTV licensees will replicate their NTSC service areas, and we have decided that an express requirement is unnecessary in this regard. DTV licensees have incentives to replicate to serve their established viewers. Thus, we do not expect such a large migration. Also, this incentive will be strengthened because, after December 31, 2004, we will cease to protect the unreplicated portions of DTV broadcasters' NTSC service areas. Thus, as noted above, whatever service is lost can be potentially replaced by other broadcasters, whether they be existing broadcasters that expand their coverage or LPTV or Class A stations, or new entrants.

24. We view this as part of a three-stage approach to the transition to DTV. The first stage will end May 1, 2002, by which time all commercial television stations must commence digital service. Noncommercial stations will have until May 1, 2003, to complete this stage. The second stage will end at the close of 2003, when channel election will be required for all commercial stations or the close of 2004, for noncommercial stations. The final stage will occur on December 31, 2004, at which time commercial DTV licensees will lose interference protection to those portions of their NTSC service area that they do not replicate with their DTV signal. Noncommercial DTV licensees will not lose such protection until December 31, 2005.

⁵¹ See, e.g., Comments of Canyon Area Residents for the Environment at 2-3; Comments of Costa De Oro Television, Inc., et al. at 8.

⁵² Comments of Consumer Electronics Association at 27; Comments of Costa De Oro Television, Inc., et al. at 13; Comments of Fox Television Stations, Inc., and Fox Broadcasting Company at 2-4 (Also, Fox supports a replication requirement but urges a longer time period before replication is required by smaller market stations); Comments of Joint Broadcasters at 7 n. 16; Comments of Merrill Weiss Group at 14; Comments of USA Broadcasting, Inc. at 10-11.

C. City Grade Coverage

25. In the Fifth Report and Order we allowed DTV licensees to build initial facilities that only placed the required DTV service level over their principal community of license. In turn, the required DTV service level was based on the level of service that they would provide at the edge of their authorized service areas (i.e., at the edge of their NTSC Grade B contours) were they operating with full allotted DTV power and maximum DTV antenna height.⁵³ In the Notice in this proceeding, we proposed to require that a DTV station's principal community be served by a stronger signal than that specified for the general DTV service contour.⁵⁴ We stated that by requiring DTV broadcasters to provide a minimum, higher, level of service over their community of license we would limit the extent to which they can migrate from their current service contour.⁵⁵ Additionally, we expressed the belief that a stronger principal community coverage requirement would improve the availability and reliability of DTV service in the city of license and provide an extra measure of protection from interference to DTV service in that community.⁵⁶ Finally, we believed that requiring a higher level of service to encompass the community of license would result in better service elsewhere within the area currently receiving NTSC service.⁵⁷

26. Commenters were split on this issue. Some, such as the Association of Federal Communications Consulting Engineers, Fox, and KM Communications, Inc., support a city grade service requirement, even if a different one from that proposed by the Commission.⁵⁸ Others, however, contend that such a requirement would be burdensome and oppose any city grade obligation at this time or see no evidence of the need for one beyond the existing threshold requirement.⁵⁹ Additionally, they argue that

⁵³ Section 73.625(a)(1) of the Commission's Rules requires that the DTV transmitter location must be placed so, that on the basis of effective radiated power and antenna height above average terrain employed, the following minimum F (50,90) field strength in dB above one uV/m will be provided over the entire principal community to be served: Channels 2-6 – 28 dBu; Channels 7-13 – 36 dBu; and Channels 14-69 – 41 dBu.

⁵⁴ Notice at 5267.

⁵⁵ Id.

⁵⁶ Id.

⁵⁷ Id. at 5267-68.

⁵⁸ Comments of Association of Federal Communications Consulting Engineers at 2-3, 6 (AFCCE believes a principal community coverage requirement is reasonable but contends that the proposed values may need to be adjusted; it believes, however, that field strength is not a good predictor of DTV service and, therefore, only a "coverage" standard based on a simplistic field strength assumption is warranted at the present time); Comments of Fox Television Stations, Inc. and Fox Broadcasting Company at 2-3; Comments of KM Communications, Inc. at 3-4 (KM, however, believes that the field strength values proposed in the Notice were too strict and suggests lesser values.); Comments of WLNY-TV, Inc., at 7 (WLNY-TV, however believes that the coverage requirement should apply only to a station's permanent, in-core DTV channel.)

⁵⁹ See, e.g., Comments of Blade Communications, Inc. at 2; Comments of Costa De Oro Television, Inc., et al. at i-ii, 14-15; Comments of Donald G. Everist at 4 (Everist, however, recommends that any new city grade contour requirement that is established only be applied to DTV facilities that move beyond the 5-km "checklist" site tolerance); Freedom Communications, Inc. at 4; Comments of Joint Broadcasters at 1, 5-8; Comments of Jovon Broadcasting Corp. at 2; Comments of Lenfest Broadcasting, LLC at 3, 5-6; Comments of Merrill Weiss Group at 17 (Merrill Weiss Group also believes that if the Commission does adopt a principal community (continued....))

many licensees have prepared their permit applications and business plans relying on the Commission's determination that a 41dBu field strength is sufficient to provide DTV service.⁶⁰ Finally, some argue that until questions concerning the DTV transmission standard are settled, and the ability of receivers to handle multipath distortion are resolved, the Commission should refrain from requiring a stronger signal over a station's city of license.⁶¹

27. For the reasons we discussed in the Notice, we will impose a principal community coverage requirement that is stronger than the DTV service contour requirement that we adopted as an initial obligation in the Fifth Report and Order. As we discussed, such a requirement will improve the reliability of service to the community of license. However, we recognize the broadcasters' need for flexibility and will require a set of signal strengths lower than we proposed in the Notice. We believe an appropriate balance is achieved by requiring a DTV city grade contour that is 7 dB stronger than the DTV service contour values for the pertinent channel. This is significantly less burdensome than the proposed values which would have been at least 16 dB stronger. The values we are adopting are as follows:

Channels	Field Strength (dBu)
2-6	35
7-13	43
14-69	48

The required level of service must be achieved by December 31, 2004, for commercial stations and December 31, 2005, for noncommercial stations, the same dates by which stations must either replicate their NTSC service areas or lose protection to the unreplicated areas.

28. We base the 7 dB increment on two factors relating to improving the availability of service in the city of license. First, as with NTSC TV city grade requirements, we conclude that the percent of locations receiving service should be more than the fifty percent criteria that is the standard for the NTSC Grade B service contour, as well as for the DTV service contour. For NTSC TV, the Grade A service contour is based on service being available at the best 70 percent of the locations along that contour. NTSC city grade service has not been defined in terms of modified planning factors or better than Grade A service, but the city grade values are stronger than Grade A service values. Increasing the DTV service availability to the best 70 percent of the locations requires about a 4 dB increase in field

(Continued from previous page)

coverage requirement, it consider offsetting factors if it is not complied with, such as better replication, use of a common antenna site and an improved interference situation); Comments of Paxson Communications Corp. at 2, 7; Comments of Pegasus Communications Corp. at 6-8 (Pegasus contends that broadcasters should be allowed the flexibility to maximize their DTV facilities and relocate their transmitters in order to provide DTV service to more people and to increase the use of common antenna sites); Comments of USA Broadcasting, Inc., at 2; Comments of WRNN-TV at 1, 3-4.

⁶⁰ Comments of USA Broadcasting, Inc. at 11.

⁶¹ Comments of Pegasus Communications Corporation at 16.

strength, if all other assumed planning factors remain the same. We believe it is also appropriate to assume that locations inside a station's community of license should not require a very high-gain receiving antenna normally necessary for fringe-area reception. For NTSC TV service, the assumed antenna gain for Grade B service is five or six dB more than the assumed antenna gain for Grade A service. Where a lower-gain antenna is assumed, correspondingly stronger field strength is required for service to be provided. DTV antenna assumptions are generally that higher gain antennas will be used than have been assumed for NTSC TV reception. Conservatively, we assume that a DTV receiving antenna for use in a station's city of license can be at least 3 dB lower gain than the assumed receiving antenna for the edge of the station's service area.

29. The improved availability we are providing for is consistent with recognizing that the DTV signal is substantially different from the NTSC signal. The NTSC signal strength degrades over distance from the transmitter, with picture quality declining accordingly. As we pointed out in the Notice, however, in DTV there are virtually no gradations in picture quality that are dependent on signal strength.⁶² If the signal strength is above a certain threshold it will produce an excellent picture.⁶³ The degree to which the signal exceeds that threshold requirement does not matter; the picture quality will not change and would not change even if we were to require that the community of license be provided with a more robust signal than that currently required. The higher signal level requirement should increase the number of locations where a good signal is present.

30. We recognize that, as pointed out by Merrill Weiss Group, some stations have spent time and money developing solutions to their coverage issues (e.g., placing the required level of signal over their community of license, avoiding co-channel and adjacent channel interference) that may result in their not being able to encompass their principal communities with the increased city-grade signal level proposed in the Notice. In some of these cases interference has been reduced through collocation that may preclude licensees from being able to encompass their communities of license with the proposed signal level. We believe the less burdensome requirement we are adopting will not force many licensees to increase their power or move their antenna resulting in increased cost. Accordingly, we believe that it is in the public interest to require a higher level of principal community coverage than is currently in effect. The new, scaled-down requirement will continue to allow most broadcasters the flexibility they have requested in building their DTV facilities and we expect that they will construct expeditiously to assure that consumers and viewers have the benefit of a rapid transition to digital television.

31. Our enhanced principal community signal strength standard also helps prevent the migration of licensees from their community of license, thus furthering the purposes of Section 307(b) of the Communications Act.⁶⁴ Their public interest obligations run to their communities of license.⁶⁵ These requirements remain undiluted by our decision herein.

D. Noncommercial Stations

32. Although we did not solicit comment on this issue in the Notice, and we stated that it is too

⁶² Notice, *supra* at 5266.

⁶³ If the signal strength does not reach that threshold, the receiver's screen will freeze or go blank.

⁶⁴ 47 U.S.C. §307(b).

⁶⁵ 47 CFR §§ 73.3526(e)(11) and 73.3527(e)(8).

early to address the needs of public television stations in converting to DTV,⁶⁶ AAPTS/PBS request special treatment for noncommercial educational television stations. AAPTS/PBS ask that we expand the scope of the proceeding and address specific proposals to benefit public television licensees that they had made earlier in the proceeding. Specifically they ask the Commission to allow PTV stations that meet economic hardship standards to make an overnight (“hard”) switch to DTV rather than requiring them to build a second facility.⁶⁷ Stations, AAPTS/PBS continue, should be allowed to elect the “hard switch” option by the end of the construction period for noncommercial stations (i.e., May 1, 2003). AAPTS/PBS also urge the Commission to allow public television licensees with two stations in a market to build only one DTV facility and to switch their continuing NTSC station to DTV on an overnight basis.⁶⁸ Additionally, they ask the Commission to require successful bidders for channels 60-69 to reimburse public television stations in that spectrum for the costs of moving to in-core channels. Funds from this would come either from a general pool of funds collected from auctioning the spectrum, from the commercial entities that acquire the spectrum in the affected market, or in another manner decided by the Commission.⁶⁹ Finally, AAPTS/PBS urge the Commission to allow public television stations with both their NTSC and DTV channels outside of the core to wait until the end of the transition, when their permanent channel is assigned, to build their DTV facilities.⁷⁰

33. In the Fifth Report and Order in our DTV proceeding, we noted our commitment to noncommercial educational television and acknowledged the difficulties they would face in transitioning to DTV and which would require special relief measures.⁷¹ In recognition of these difficulties we stated that noncommercial stations will need and warrant special relief to assist them in the transition to DTV. To assist them, we provided them with a longer construction period than any other category of DTV applicant. In this Report and Order, we have provided them with a longer period than commercial broadcasters before they will have to elect a DTV channel. Further, they will receive interference protection of their unreplicated Grade B contour service areas until a later date than will commercial broadcasters. We continue to believe, however, that it would be premature to attempt to resolve the issues raised, or grant the type of relief sought, by AAPTS/PBS in their comments. Furthermore, we believe that it would be beyond the scope of the Notice in this proceeding to do so. As we get closer to the construction and election deadlines for noncommercial educational broadcast stations we will be in a better position to determine what further relief might be required by such stations and whether the scope of that relief needs to be on an industry-wide basis or only on a station-by-station or market-by-market basis.

⁶⁶ Notice at 5262.

⁶⁷ Comment of AAPTS/PBS at 31-32. The criteria AAPTS/PBS suggest are: 1) those stations whose average annual cash revenue for the previous four years was \$2 million or less; 2) those who can demonstrate that the cost of building a basic pass-through facility is greater than its average annual cash revenue for the previous four years; and 3) those who can demonstrate that they have been unable to raise sufficient funds to build their DTV station or lack the resources to operate two stations simultaneously.

⁶⁸ Id. at 34.

⁶⁹ Id. at 33.

⁷⁰ Id. at 7, 34-35. AAPTS/PBS indicate that there are six such public television stations.

⁷¹ Fifth Report and Order in MM Docket No. 87-268, *supra* at 12852.

E. Mutually Exclusive Applications

34. In the Notice, we also addressed certain issues with respect to mutually exclusive (MX) DTV applications.⁷² These issues are important so that we can continue rapidly to process the DTV applications that are pending. We also seek to establish fair, certain, and orderly processes for applicants. We explained that applications filed by television licensees seeking to implement their DTV allotment must protect all other DTV allotments from predicted interference as indicated in the Sixth MO&O and Section 73.623 of the Commission's Rules.⁷³ Many DTV applicants do not seek to expand the coverage area of their DTV allotment and therefore do not increase the interference that the applied-for-station would be predicted to cause. These applications are treated as "checklist" applications that conform to their allotments and accordingly are subject to streamlined processing that allows them to be granted without analysis of predicted interference. Because they are designed to simply implement an existing DTV allotment, these "checklist" DTV applications are not mutually exclusive with other DTV applications.

35. However, many applications have been filed by licensees seeking to expand or "maximize" their DTV allotments (referred to herein as "expansion applications"). These applicants have requested facilities that would expand their coverage area, subject to the requirement that they not exceed the maximum facilities permitted by the rules. Such expansion applications must protect DTV and NTSC stations, including authorized construction permits, licensed stations and DTV allotments. An MX situation arises when two or more such DTV applications would cause prohibited interference with the facilities specified in the other application(s). In the Notice, we explained that, if the first-filed application is granted before the second application is filed, then the second application would have to protect the first, which would then constitute an authorized DTV facility.⁷⁴ However, we further explained, that if the second application is filed before the first is granted, then the two applications would be mutually exclusive, and a method would be needed to resolve such cases.⁷⁵

36. In addition, as noted by the Joint Broadcasters, applicants seeking to implement their DTV allotment, are permitted flexibility under our de minimis interference allowance to cause predicted interference to another station's population provided that such proposals may not result in more than an additional 2 percent interference to the other station's population.⁷⁶ Also under the rule, two or more applications together may not cause another station to receive interference to more than 10 percent of its population. As a result, the Joint Broadcasters state, the de minimis interference allowance may give rise to mutually exclusive "daisy chains" of applicants.⁷⁷

37. To resolve these and other mutual exclusivity issues, we sought comment in the Notice on the following issues: (1) whether to establish DTV application cut-off procedures; (2) how to resolve

⁷² Notice at 5271-5277.

⁷³ Id. at 5271-72; 47 C.F.R. § 73.623.

⁷⁴ Id. at 5272.

⁷⁵ Id.

⁷⁶ See 47 C.F.R. § 76.623(c)(2).

⁷⁷ Joint Broadcasters Comments at 10.

conflicts between DTV applications to implement “initial” allotments; and (3) the order of priority between DTV applications and NTSC applications.⁷⁸ We address these DTV application processing issues below.

38. DTV Cut-off Procedures. In the Notice, we proposed adopting a cut-off procedure for DTV area-expansion applications that would require conflicting DTV applications filed after a cut-off date to protect the earlier-filed, cut-off application.⁷⁹ We stated that such a cut-off procedure would minimize the number of mutually exclusive situations that develop. We explained that such cut-off procedures have been used in the past when processing other categories of broadcast service applications. Under such a method, a “cut-off” public notice was released that established the date after which competing or otherwise mutually exclusive applications were not allowed to be filed. Furthermore, we noted that under our current processing rules, we announce the acceptance of DTV applications without establishing a cut-off date.⁸⁰ We proposed that, with respect to DTV expansion applications, we could augment our existing public notice announcing the acceptance of DTV applications by adding a cut-off date provision which would announce that MX applications must be filed within a period of time. Applications filed after the cut-off date would not be considered MX, and would have to protect the earlier-filed application. We also sought comment on the appropriate duration for a cut-off period. We suggested that a 30-day period be established, which would be similar to the approach established for DTV UHF facilities modification applications proposing to increase effective radiated power levels beyond 200 KW where interested parties have 30 days to file oppositions. Alternatively, we proposed a day-to-day cut-off approach whereby applications would be considered cut-off on the close of business on the date they are filed.

39. Based upon the record in this proceeding, we conclude that the fairest and most expedient method for determining cut-off protection for DTV expansion applications is to take a bifurcated approach. With respect to all currently pending DTV expansion applications, we establish cut-off protection as of the date of the adoption of this Report and Order. Therefore, all DTV expansion applications pending as of the adoption date of this Report and Order are cut off and will be protected against later-filed DTV applications. Later-filed DTV applications must protect applications in this cut-off group. We find that this approach, which received the support of the majority of the commenters, will create a definitive pool of applicants from which both the applicants and the Commission staff can begin to resolve mutual exclusivity issues.⁸¹ As the Joint Broadcasters and AAPTS/PBS observe, use of a single cut-off date for all pending DTV applications will minimize the number of MX situations and facilitate applicants’ planning with respect to their proposals.⁸² A single cut-off date also provides a measure of fairness to all applicants that filed DTV expansion applications prior to the adoption of the Report and Order by allowing all of them to be considered as part of one cut-off group. Because most

⁷⁸ Notice at 5271.

⁷⁹ Id. at 5272-73.

⁸⁰ As we noted in the Notice, we have previously indicated that we would treat an initially eligible station’s DTV construction permit application as a “minor change” meaning that we would not consider these initial applications as requests for new stations, but rather a modification of facilities. See Fifth Report and Order, at 12839-40 and n. 159.

⁸¹ See Joint Broadcasters Comments at 13; AAPTS/PBS Comments at 22

⁸² Id.

television licensees have filed their DTV expansion applications, providing cut-off protection to all pending DTV applications will adversely affect only the limited number of licensees that will be filing such DTV applications in the future. Finally, selection of the adoption date of the Report and Order as the cut-off date will prevent a possible rush of hasty and possibly defective DTV filings filed merely to preserve rights that might occur if we were to announce a later cut-off date.

40. Fox and KM Communications, Inc., proposed that we apply first-come, first served processing to the pending DTV applications.⁸³ Under their approach, all pending DTV applications would be cut-off on the day they were filed. Fox maintains that the Commission has used such an approach for FM minor change applications and recently extended its first-come, first-served processing system to AM, noncommercial/educational FM, and FM translator services.⁸⁴ However, we decline to adopt such an approach. First, we recognize that there was an extended period of time over the past several months during which we permitted DTV applications to be filed without indication that applicants needed to expedite their filings or lose out on an opportunity to expand their DTV allotments. It would be unfair to retroactively apply first-come, first served processing to those applicants, such as noncommercial and smaller market licensees, that, as permitted, followed our staggered DTV implementation schedule and waited until their later deadlines to file their applications.⁸⁵ In addition, we find that such an approach would not achieve the expected results. We have previously found first-come, first-served processing to be a desirable method of application processing because it avoids a large number of MX applications while also providing applicants with a level of certainty that their filing will not conflict with undiscovered earlier-filed applications. However, in this case, since so many of the pending DTV applications were filed in large batches on the same day because of Commission-mandated DTV deadlines (November 1, 1999, and May 1, 2000 being the prime examples), these applications would remain MX, with the intended benefits of first-come, first-served processing not being realized.

41. As for future DTV expansion applications filed after the adoption date of this Report and Order, we will adopt the proposal in the Notice and we will consider such applications cut-off as of the close of business on the day they are filed. Under this day-to-day cut-off approach, conflicting later-filed applications would have to protect the earlier-filed, cut-off application. Unlike the case with the large number of currently pending DTV applications, we find that the benefits of this type of application processing can be realized with respect to the anticipated relatively small number of future DTV applications. Adoption of day-to-day cut-off processing for new DTV expansion applications will not only help to avoid a larger number of mutually exclusive applications the processing of which could delay expediting DTV service to the public and provide certainty for future applicants, but will also encourage potential applicants to file quickly for improved facilities and thus help speed the introduction of DTV service to the public.

42. We decline to adopt a moratorium on the filing of new DTV expansion applications, as suggested by some commenters.⁸⁶ While these commenters support our proposal to establish a date-specific cut-off date for pending DTV expansion applications, they propose that the Commission should

⁸³ Fox Comments at 7-12 and KM Comments at 7-8.

⁸⁴ Fox Comments 8-10 (citing 1998 Biennial Regulatory Review – Streamlining of Radio Technical Rules in Parts 73 and 74 of the Commission’s Rules, 14 FCC Rcd 5272 (1999)).

⁸⁵ See AMST Reply Comments at 3-4.

⁸⁶ Joint Broadcasters Comments at Attachment A; AAPTS/PBS Comments at 22.

adopt a moratorium on the filing of new applications or modifications to pending expansion applications, until all mutual exclusivities in the cut-off pool of applications have been resolved. Since many licensees filed their DTV expansion or maximization applications by May 1, 2000, the date set by the CBPA after which such applications would have to protect on new Class A television stations, we find it unlikely that a large number of additional stations will be filing DTV expansion applications.⁸⁷ Furthermore, the procedures we adopt herein for resolving the pending MX applications will result in an expedited resolution of such applications and the addition of a small number of additional DTV applications will not detract from that effort as suggested by these commenters.

43. Resolving Mutually Exclusive DTV Applications. In the Notice, we raised the issue of how to resolve MX DTV applications.⁸⁸ We sought comment on three different approaches. First, where we have two or more MX DTV expansion applications, we proposed granting all such applications regardless of the interference that could be caused in areas beyond the DTV allotment service areas.⁸⁹ We stated that such an approach might prove to be an effective system to provide DTV service to the public at the earliest date. We also considered whether to resolve MX applications using the approach currently used for DTV new station applications; namely, we would encourage pending MX applications to resolve their mutual exclusivity by “engineering solutions....and other means,”⁹⁰ and then dismiss those applications that remain MX after such a settlement period.⁹¹ Alternatively, we sought comment on whether to use competitive bidding (auctions) to resolve applications that remain MX after the settlement period.⁹² We sought comment on whether our competitive bidding authority under Section 309(j) of the Communications Act permitted us to use auctions to resolve such applications.

44. Having considered all of the alternatives and the comments submitted in this proceeding, we find that the best approach to resolving MX DTV expansion applications is to follow our existing DTV new station application procedure. First, we will continue to identify and grant all checklist, non-checklist, and maximization applications that are not predicted to create or receive impermissible levels of interference. The staff will identify via public notice those groups of MX applications that are related either by direct or indirect mutual exclusivities. The applicants will then be permitted a period of time, as discussed below, to resolve their MX situation through engineering solutions or settlement. The applications that remain MX following this settlement period would then be dismissed.⁹³ We agree with

⁸⁷ See 47 U.S.C. § 336(f)(7). Of course, new conflicting applications or modifications filed after the cut-off period would be precluded by operation of the cut-off rules.

⁸⁸ Notice at 5273-75.

⁸⁹ Id. at 5273.

⁹⁰ See 47 U.S.C. § 309(j)(6)(E).

⁹¹ Notice at 5273-74.

⁹² Id. at 5274-75.

⁹³ We will not adopt the proposed “safety valve” proposed by the Joint Broadcasters. However, in this regard we will consider on a case-by-case basis waivers of the de minimis interference limits (between applications) in cases of particular hardship where MX applicants demonstrate that their DTV applications were filed because they were required to relocate their proposed facilities for zoning or technical reasons. Joint Broadcasters Comments at Attachment A, p. 3.

those commenters that recognized that this type of private resolution of MX situations affords the parties greater flexibility than Commission imposed solutions, and avoids the burdens of costly and more time consuming regulatory proceedings.⁹⁴

45. We agree with the Joint Broadcasters and other commenters that granting all MX applications would not be a viable solution. Such an action could result in mutually destructive interference and substantial portions of the service areas of two or more stations could be compromised.⁹⁵ In addition, third party stations could be affected when two or more stations push them above the 10 percent interference limit. This could also cause delays in the initiation of DTV service if licensees disagree over a solution to alleged interference and experience extended stalemates in implementing their facilities and might embroil the Commission in an increasing number of interference disputes. Finally, as AAPTS/PBS notes, allowing stations to resolve interference problems among themselves could result in larger, more prosperous stations using their leverage against smaller, less well-funded operations, such as noncommercial educational stations.⁹⁶

46. Furthermore, we decline to use auctions to resolve MX DTV applications would not serve the public interest. As we noted in the Notice, Section 309(j)(2)(B) precludes the use of auctions for "initial licenses or construction permits for digital television service given to existing broadcast licensees to replace their analog television service licenses"⁹⁷ We stated in the Notice that, while we are precluded from Section 309(j) from auctioning initial DTV replacement licenses, it does not appear that a digital area-expansion application would constitute such a replacement. Some commenters, however, pointed out that many initial applications request area-expansion.⁹⁸ Furthermore, even those DTV expansion applications that seek to modify a DTV construction permit or seek a construction permit to change an existing DTV facility could be viewed as components of the replacement of analog television service. Therefore, it would take a time consuming, case-by-case approach to determine whether individual DTV applications were subject to auction. Given the extended length of time for such analysis, the strain on staff resources, and the difficulty in making such a determination, we find that use of auctions would not be a workable solution to resolving MX DTV groups. In addition, there are other public interest reasons why we believe that auctions would not be the best method for resolving DTV mutual exclusivity. The use of auctions could encourage applicants to take steps to avoid siting their DTV facilities in proximity to the DTV facilities of other licensees in order to avoid an MX situation and possible auction. This would undermine our stated goal of encouraging the collocation of DTV facilities and sharing of facilities.⁹⁹ Finally, we agree with the Joint Broadcasters that auctions of DTV expansion

⁹⁴ AAPTS/PBS Comments at 23.

⁹⁵ See Joint Broadcasters Comments at 11.

⁹⁶ AAPTS/PBS Comments at 21. Such a problem would not exist under our approach because, if the parties do not come to an agreement within a set period of time, both their applications will be dismissed. Therefore, there is an incentive for the parties to work together to resolve the problem. In contrast, if we granted all applications and then permitted parties to work out their interference disputes, parties with greater financial resources or market power could potentially exert leverage over parties that are less well-funded to accept their terms.

⁹⁷ 47 U.S.C. § 309(j)(2)(B).

⁹⁸ See Joint Broadcasters Comments at 16; Fox Comments at 12-13.

⁹⁹ See Fifth Report and Order at 12834-35; Sixth Report and Order at 14634-35.

applications could be difficult to administer since they could involve “daisy chains” of direct and indirect MX groupings and may cause delay to the overall DTV implementation process.¹⁰⁰

47. As for the length of the settlement period, the Joint Broadcasters suggest that parties be given the choice of negotiation or third-party mediation to resolve their MX applications. Parties choosing negotiation would be given 60 days to resolve their conflict, while parties choosing third-party mediation would be given 90 days. Parties would then have 30 days to submit amendments to their applications or their settlement agreements, providing an overall 90 or 120 days for the settlement process. While we adopt the overall 90 day period of time suggested by the Joint Broadcasters for completion of settlements, engineering or otherwise, we disagree that an extended period of time of 120 days should be permitted to accommodate third-party mediation. In order to further expedite the processing of pending DTV applications and ensure the rapid construction of DTV facilities, we will limit the settlement period to 90 days during which applicants must either find an engineering solution or otherwise propose a settlement that would resolve their mutual exclusivities. These settlement periods will be announced by the staff in future public notices. While we encourage applicants to utilize all means possible to resolve their mutual exclusivities, including third-party mediation if they desire, we will not permit additional time for parties using such measures. We conclude that a 90-day settlement period strikes a fair balance between permitting applicants ample time and opportunity to resolve their mutual exclusivities and expediting the processing of pending DTV expansion applications.

48. As noted above, in addition to permitting applicants in MX groups to propose engineering solutions to resolve their mutual exclusivities, we will also permit applicants to enter into settlement agreements whereby one or more applicants may agree to change their proposed facilities or dismiss their expansion application altogether in exchange for compensation.¹⁰¹ In an effort to provide additional flexibility and to hasten the settlement process, we will waive the provisions of Section 73.3525(a)(3) of the Rules which limit the monetary settlement of pending applications to the legitimate and prudent expenses of the applicant.¹⁰² All other provisions of Section 73.3525 of the Rules will continue to be applied to these settlements. We find that the public interest will be served by waiving the monetary limitation because it will result in the resolution of more MX DTV groups, the grant of a greater number of DTV expansion applications, and expedited DTV service to the public. It is unlikely that any of the parties with pending DTV applications filed such applications with the intent of extracting a settlement from another party or holding up the processing of the other party’s DTV application. Therefore, we find that no harm will result from waiving our settlement limitations for this limited filing period. We also remind DTV applicants seeking engineering solutions or settlements to resolve their MX groups, that all such engineering solutions and settlements must be submitted in writing for staff review pursuant to Section 73.623(g) of the Commission’s Rules. As Section 73.623(g) of the Rules provides, concerning negotiated agreements on DTV interference, “applications submitted pursuant to the provisions of this

¹⁰⁰ Joint Broadcasters Comments at 17.

¹⁰¹ But see Public Notice, Wireless Telecommunications Bureau Waives Limitations on Payments in Settlement Agreements Among Parties in Contested Licensing Cases, DA 99-745 (rel. April 16, 1999) whereby the Commission excluded from settlement agreements applications dismissed pursuant to the Paging Second Report and Order, 12 FCC Rcd 2732 (1997); and 39 GHz Report and Order, 12 FCC Rcd 18600 (1997) (Commission decided to implement transitions to auctions and geographic area licensing, which was found to further the public interest objectives of efficient spectrum use, expeditious licensing, and rapid delivery to the public of new technologies and services; thus, the subject applications were dismissed).

¹⁰² See 47 C.F.R. § 73.3525(a)(3).

paragraph will be granted only if the Commission finds that such action is consistent with the public interest.”¹⁰³

49. Finally, we recognize the comments of the Joint Broadcasters that adoption of a cut-off procedure and method for resolving MX DTV applications necessarily means that we must revise our existing maximization procedures as adopted in the Second MO&O in the DTV rulemaking proceeding.¹⁰⁴ In that decision, we adopted a procedure whereby DTV maximization applications with power levels above 200 kilowatts would be placed on public notice and interested parties would be given 30 days to object to an expansion proposal by stating that the proposed change would impact upon their future plans to maximize their own DTV operations.¹⁰⁵ The applicant and objecting party would then have 30 days to resolve the conflict and, in the event they are unable to do so, the DTV above 200 KW maximization application would be dismissed. The Joint Broadcasters are apparently concerned that, left untouched, the maximization procedures set forth in the Second MO&O would be inconsistent with the cut-off and MX procedures we are adopting herein. We agree, and we replace the maximization procedures set forth in the Second MO&O with our new cut-off and MX procedures. Accordingly, the temporary 200 kW cap on power increases for UHF DTV stations is no longer necessary and is removed.

50. Application Processing/Protection Priority. In the Notice, we invited comment on whether we should adopt processing priorities between DTV expansion applications and NTSC applications and rulemaking petitions.¹⁰⁶ We noted that on several occasions we have stated that the future of television is DTV.¹⁰⁷ However, we indicated that there are still pending a number of applications for new NTSC stations and petitions for rulemaking seeking the allotment of new NTSC stations. We sought comment on the extent to which these NTSC petitions and applications could have protection from later-filed DTV applications and at what point such protection should be afforded.¹⁰⁸

51. We proposed following a system of priorities similar to that adopted by the Commission in the Class A rulemaking proceeding implementing the CBPA.¹⁰⁹ Specifically, the Commission concluded that Class A stations would be required to protect: (1) existing analog NTSC stations and construction permits authorized on or before November 29, 1999 (the date the CBPA was enacted), and (2) NTSC applicants that have completed all processing short of grant as of that date, and for which the identity of the successful applicant is known.¹¹⁰ We defined this last set of NTSC applicants as post-auction applications, applications proposed for grant in pending settlements, and any singleton applications cut-

¹⁰³ 47 C.F.R. § 73.623(g).

¹⁰⁴ See Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Order, 14 FCC Rcd 1348, 1370-1 (1998) (Second MO&O).

¹⁰⁵ Id.

¹⁰⁶ Notice at 5275.

¹⁰⁷ Id.

¹⁰⁸ Id. at 5276.

¹⁰⁹ See Report and Order in MM Docket No. 00-10, 15 FCC Rcd 6355 (2000) (Class A Report and Order).

¹¹⁰ Notice, supra at 5273.

off from further filings.¹¹¹ We stated that Class A stations did not have to protect full-service applications that were not accepted for filing by November 29, 1999, or pending rulemaking petitions for new or modified NTSC channel allotments. In the Notice, we sought comment on whether a similar system should be adopted as between DTV and NTSC stations, and, if so, what the priorities should be as between DTV and NTSC applications and stations.¹¹² We noted that a number of applications for new or modified NTSC stations were pending and that some of these applications were the subject of competitive bidding in prior Commission auctions.

52. After consideration of the comments, we adopt a system of priorities similar to that proposed in the Notice, and we give priority to DTV expansion applications over all NTSC applications except NTSC applications that fall into one of the following three categories: post-auction applications,¹¹³ applications proposed for grant in pending settlements, and any singleton applications cut-off from further filings.¹¹⁴ These NTSC applications must have been accepted for filing in order to be protected from DTV expansion applications. In the future, when a party files a DTV expansion application, it must determine whether there are NTSC applications on file in any of the three above categories and provide interference protection to them. As for pending DTV expansion applications and NTSC applications, if an earlier-filed DTV expansion application conflicts with an NTSC application in one of the these three categories, we will consider these applications MX and follow our above-outlined procedures for MX applications – that is, we will require that the parties resolve their MX within 90 days or we will subsequently dismiss both applications. Additionally, we will require NTSC applications to protect facilities proposed by DTV applicants even if the DTV application was filed while the NTSC application is pending. We believe that our goal should continue to be expedited implementation of DTV service. We find that the above system of priorities will further that goal, while at the same time recognizing the need to continue to provide viable NTSC service until the DTV transition is complete and not disrupting the settled expectations of these NTSC applicants that may have relied on existing procedures in the reasonable belief that their applications would receive protection.

53. We asked in the Notice what processing priorities should apply between applications for minor changes to authorized NTSC facilities and DTV service area expansion applications.¹¹⁵ There may also be situations where an NTSC application, not in one of the above-listed three categories, is granted on the same day that a DTV expansion application is filed. Ordinarily, the DTV expansion application would take priority over the NTSC application but in this case the NTSC application, having been granted, has become a construction permit which would deserve protection from the DTV application. Because it would be difficult to monitor such “cross-path” filings and unfair to the NTSC applicant to expect them to give up their construction permit, we will not rescind the grant of the NTSC construction permit. Rather, we will condition the grant of all future NTSC minor change applications on acceptance

¹¹¹ Id.

¹¹² Id. at 5276-77.

¹¹³ We define “post-auction” applications as the long form application (FCC Form 301) filed by the winning bidder following the completion of a broadcast auction. See 47 C.F.R. § 73.5005.

¹¹⁴ We estimate that there are approximately 20 applications in these three categories. The cut-off singleton applications remain pending for a variety of legal and technical reasons.

¹¹⁵ Notice, supra at 5276-77.

of interference from any proposed DTV facility which was filed on or before the NTSC grant date.

54. With respect to pending petitions for rule making for new or modified DTV allotments, where a Notice of Proposed Rulemaking has been adopted and the comment deadline on the petition for rule making has passed, we will consider such petitions as "cut-off" as of the comment deadline. In that case, if there is an earlier-filed pending DTV expansion application that conflicts with the petition, we will consider the petition and application(s) as MX and, once again, follow our above outlined procedures for MX applications. Pending DTV expansion applications that are filed after a DTV petition is cut-off on its comment deadline will have to protect the facilities proposed in the DTV petition. If the pending DTV petition has not yet been cut-off as of the adoption date of this Report and Order, then, because we will have cut off all pending DTV expansion applications, we will consider the petition and any conflicting DTV expansion applications as MX and use our above-outlined procedures to resolve them.

55. With respect to future petitions for rulemaking that are filed for new or modified DTV allotments, we will continue our current practice of providing cut-off protection to such petitions on their comment deadline. Therefore, in the future, when an interested party files a DTV expansion application, it must provide protection for any DTV rulemaking petition for which the comment deadline has passed. Also in the future, new DTV petitions will be required to protect all earlier-filed DTV expansion applications, given our newly adopted day-to-day cut-off procedure for such application.

F. Technical Issues

56. In this section, we address several comments that request action on technical issues. These include questions concerning amending the Commission's DTV Standard, the use by DTV licensees of distributed transmission systems and boosters, the suitability of the Commission's current computer program used for DTV application processing, the use of updated census population data and a host of other issues of a technical nature.

57. ATSC DTV Standard. The Advanced Television Systems Committee (ATSC) is the organization that developed the "ATSC DTV Standard," most of which we adopted as our DTV broadcast standard in the Fourth Report and Order in the DTV proceeding.¹¹⁶ In comments, ATSC reports that, since adoption of the Fourth Report and Order, it has made several changes to the Doc. A/53 standard including removing constraints associated with the "program paradigm," updating references to the underlying MPEG standards, replacing references to obsolete ATSC standards for Electronic Program Guide and System Information with a reference to a new ATSC Doc. A/65 for Program and System Information Protocol (PSIP), and requiring a signal when colorimetry other than that defined by

¹¹⁶ See Fourth Report and Order in MM Docket No. 87-268, 11 FCC Rcd 17771 (1996) ("Fourth Report and Order"). Section 73.682(d) of our rules requires that broadcast DTV transmissions comply with standard ATSC Doc. A/53 dated September 9, 1995, except for its constraints on video formats. The ATSC DTV Standard contains a provision mandating eighteen video transmission formats for the DTV system. These formats are described by criteria such as aspect ratio, frame rate, vertical and horizontal resolution and type of scanning (i.e., progressive or interlaced) used. The Commission adopted the ATSC Standard except for a table describing these formats. It did not adopt that table so broadcasters and equipment manufacturers would be able to select the formats they would offer and consumers would be free to choose products with the formats most important to them without the inhibitory affect of mandating specific formats and to encourage choice and competition. Fourth Report and Order, supra at 17789.

standard SMPTE 274M is used.¹¹⁷ The PSIP specification provides for the transmission of system information and program guide data for broadcast DTV stations, enabling the identification of service channels and digital bit streams, and allowing receivers to generate electronic program guides. It also provides for selection through the program guide function of the type and language of closed captioning to be viewed and transmission of program ratings information to allow parents to use 'v-chip' technology. ATSC also indicates that it is considering an increase in the maximum allowable audio bit rate.

58. ATSC urges the Commission to revise the rules to reference the latest version of the ATSC DTV Standard A/53 and to require use of the ATSC PSIP Standard A/65. ATSC further requests Commission action to assure that "major channel numbers" in the PSIP are used properly, the assignment of transport stream identifier (TSID) parameters is properly administered, and that closed captioning and content advisory information conforms with the PSIP Standard.¹¹⁸ Finally, ATSC suggests the Commission encourage use of additional supplementary ATSC standards, including those concerning conditional access and data broadcasting.¹¹⁹

59. National Association of Broadcasters, in Appendix B to its Comments, supports updating the rules to require compliance with the current version of Standard A/53. NAB suggests that it would be helpful and less complex if the Commission also adopts the PSIP Standard A/65A dated March 29, 2000, and indicates its belief that a few elements of this standard are essential. Specifically, NAB requests that the Commission at least require conformance with A/65A regarding the assignment of "major channel numbers," the information needed for viewers to select among multiple closed captioning services, and the placement of parental content advisory information (when a broadcaster voluntarily provides it). NAB notes that all MPEG-2 DTV signals (including U.S., Canadian and potentially Mexican broadcast signals, and programming provided through cable systems) require a TSID value, which Standard A/65A requires to be unique. NAB indicates that an industry group created a series of TSID numbers for U.S. DTV broadcasters, but urges the Commission to coordinate TSID numbers with Canada and Mexico and to require that broadcasters use the appropriate value.

¹¹⁷ See Advanced Television Systems Committee Amendment No. 1 to Doc. A/53, March 16, 2000; Program and System Information for Broadcast and Cable, Advanced Television Systems Committee, Doc. A/65, December 23, 1997; and Program and System Information for Terrestrial Broadcast and Cable (Revision A), Advanced Television Systems Committee, Doc. A/65A, May 31, 2000. These documents are available on the Internet at www.atsc.org.

¹¹⁸ "Major channel number" is part of the DTV bit stream specified in the PSIP standard and used to identify the terrestrial broadcast station (or cable or satellite source) providing the DTV program(s). Where a station is transmitting multiple programs, it uses "minor channel numbers" to distinguish among them. Within each television market, each programming source (terrestrial DTV broadcast stations as well as cable or satellite DTV channels) must have a unique "major channel number" so DTV receivers can be tuned to the desired stations and programs. In addition, the PSIP standard uses a "TSID" to uniquely identify transport streams, again to allow DTV receivers to tune between programs arriving from different sources.

¹¹⁹ See Conditional Access System for Terrestrial Broadcast and Amendment No.1, Advanced Television Systems Committee Doc. A/70, July 17, 1999, Amendment No. 1, May 31, 2000. (This amended the ATSC standard to allow terrestrial DTV broadcasters to field pay services using a conditional access system.) See also the ATSC Data Broadcast Standard, Advanced Television Systems Committee, Doc. A/90, July 26, 2000, which defines a Standard for data transmission compatible with DTV multiplex bit streams and allows the data to be associated with a DTV program.

60. In reply comments Fox urges the Commission to require DTV licensees to employ the PSIP standard in their DTV transmissions. Nielsen Media Research also fully supports the ATSC PSIP request.

61. In ET Docket No. 99-34, we sought comment on whether coordination committees and a national coordinator could assist in the administration of the DTV system by assigning the unique PSIP station identifier and negotiating the naming and numbering of channels among broadcasters in local markets. We continue to believe that an industry approach is generally the most appropriate means for managing the implementation of a PSIP system. However, we do recognize that the transport stream identifiers (TSIDs) must be unique to each individual television station and that there is a need to coordinate TSID assignments for stations in the border areas with our neighbors in Canada and Mexico. We therefore agree that TSID assignments should be made part of the Commission's licensing process for broadcast television stations and will begin the process to incorporate this function into that process in the near future. Until negotiations with Canada and Mexico on this matter are complete and we have modified our licensing process and records management systems, we will continue to rely on the industry to make TSID assignments.

62. Distributed transmission and boosters. The Merrill Weiss Group (Merrill Weiss), supported by Pappas and Penn State University, and ADC Telecommunications, urge the Commission to adopt rules for on-channel DTV boosters, including allowance for a distributed transmission system. Merrill Weiss defines distributed transmission as being similar to a cellular telephone system in that a service area is divided into a number of cells, each served by its own transmitter. Distributed transmission differs from a cellular telephone system in that all adjacent cells use the same frequency (a "single-frequency network"). DTV boosters also retransmit the primary DTV station's same program on the same channel. Weiss urges the Commission to provide maximum flexibility to allow DTV broadcasters to use DTV boosters and discusses methods of assuring appropriate levels of interference protection to and from neighboring systems. Weiss recommends that boosters inside a DTV station's primary service area be considered primary and those outside that area secondary. ADC urges immediate consideration of DTV boosters to serve areas within the DTV noise-limited contour based on specific parameters.

63. While we recognize the desire to initiate DTV booster operations, we believe there are fundamental issues surrounding their authorization and protection that must be addressed in a more comprehensive manner than can be accomplished based on the limited record on this issue in this proceeding. Therefore, we will defer this consideration to the rulemaking proceeding on digital LPTV and DTV translator stations that we expect to initiate within the next few months.

64. Computer program used for application processing. Several concerns are raised in comments about elements of the Commission's interference analysis program used in processing applications. Hammett and Edison seeks changes in the way the program treats the return of an "Error Code 3" message from the Longley-Rice propagation model.¹²⁰ It also seeks a change to the program's calculation of the depression angle from a transmitting antenna to a cell and requests that the program be changed to allow use of the actual transmitting antenna elevation patterns rather than the generic pattern.

¹²⁰ An "Error Code 3" message is given when internal Longley-Rice program calculations show parameters are out of range and that reported results are dubious or unusable. The message is returned when the calculation of the actual distance to the horizon from a given cell or transmitter location is less than 0.1 times or greater than 3 times the distance to the smooth earth horizon. See Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order in MM Docket No. 87-268, supra at 7488-89.

AFCCE recommends that the cell size and spacing increment should be reduced as necessary to accurately depict terrain and population distribution.

65. We recognize that this is a very complicated analysis. We have found it necessary to balance ideas and recommendations for refining the program with the disruption and uncertainty that would occur when a change is made. In the case of each of these proposals, we believe that the disruption of altering the program would be more severe than warranted by the possible improvement in the accuracy of the analysis results provided by the program.¹²¹ We have an administrative process that relies on comparison of interference and service predictions with the analysis performed in creating the table of allotments. Recalculating the entire table would be an enormous undertaking. Additionally, reconciling calculations using a new methodology with the table calculations based on different methodology is difficult and likely to result in uncertainty in the results and contested decisions.

66. We believe the best balance of accurate interference prediction and administrative certainty can be achieved with the analytical methods that we used to develop the initial table, which is consistent with the comments of AFCCE. AFCCE recommends continuing to use the established methods of determining the grade B contour for predicting an NTSC station's service and determining a DTV service contour using the F(50,90) propagation model as the first step in predicting DTV service.¹²² AFCCE also recommends that use of Longley-Rice analysis and the relevant DTV planning factors be continued. We believe this can be best achieved by maintaining the normal processing analysis based on the methodology established in creating the table. However, in a special case, where one of the suggested revisions would improve the accuracy of the analysis and would make a critical difference, an application may contain a showing using an alternate analysis in support of a waiver request.

67. Release of evaluation software. Everist requests that the Commission immediately release all software to the public that it uses in its DTV evaluation procedures, including existing and subsequent TV translator/LPTV evaluation programs with attendant data bases, even if not fully developed.

68. Some of the software requested by Everist is still in a development and testing phase and we believe it would be premature and, indeed, confusing to release it to the public while it is undergoing review and revision. Software that is relied upon in processing TV and DTV applications has been, and will continue to be, made available to the public in the same way that evaluation software for other video broadcast services is made available.¹²³

69. DTV Planning Factor – Assumed Receiving Antennas. Hammett and Edison objects to the assumed receiving antenna pattern for NTSC reception being different from the assumed receiving antenna pattern for DTV reception in OET-69 interference calculations.

¹²¹ In the case of the "error code 3" request, we note that we previously indicated that the assumption of service was appropriate where the Longley-Rice propagation model indicates that results are unreliable because it is similar to the situation where, for many purposes, all locations within an NTSC TV station's Grade B service contour are assumed to receive service. See Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order in MM Docket No. 87-268, 13 FCC Rcd 7418, 7489 (1998). While Hammett and Edison submits the results of its study regarding the prevalence of the problem, our review of its information reveals no benefit that would warrant reversing our earlier decision.

¹²² See 47 C.F.R. 73.684 and 73.625(b).

¹²³ See, e.g., www.fcc.gov/oet/dtv/dtv_apps.html

70. At this time, we do not have a basis for changing these criteria. The receiving antenna assumptions were considered in the Advisory Committee on Advanced Television Systems and were part of its recommendation to the Commission. There has been no consensus developed in the industry that changing the receiving antenna assumption is appropriate. We therefore see no merit in changing the assumed NTSC and DTV antenna patterns. Also, changing the assumptions now would alter the interference analysis methodology, which, as discussed above, could disrupt processing and create uncertainty.

71. Change in Census Population Data. Everist asks whether the Commission will permit updated Census Bureau population estimates to be used for service and interference calculations as they become available. As a related matter, AFCCE recommends that the geographic center instead of the population centroid of each cell be used in the Longley-Rice analysis. The effect of this change would be to make the analysis of whether a cell is served or interfered-with independent of the population data the analysis is based on (because the precise location that is considered to represent the cell would be fixed at the middle of the cell and not shifted to a location that depends on the population distribution within the cell).

72. At this time, we have not made plans to convert our processing analysis to use new census data. As discussed above in addressing other suggested changes to the computer program used for application processing, using new census data would necessitate re-evaluation of the entire DTV table to establish "baseline" values against which application proposals can be measured. Again as above, additional information about population shifts can be submitted with an application where such information is crucial and decisional. Also, if, in the future, we consider using new census data, we can consider then the AFCCE recommendation concerning the use of the geographic center of each cell.

73. Maximum power clarification. Section 73.622(f)(5) of the Commission's Rules provides that licensees assigned a DTV channel in the initial DTV Table of Allotments may request an increase in either Effective Radiated Power (ERP) in some direction or antenna Height Above Average Terrain (HAAT) that exceeds the initial technical facilities authorized for the allotment. Such increases are limited to maximum powers specified in paragraphs (f)(6) through (f)(8) of that section. Where specified antenna HAAT values are exceeded, the maximum ERP generally is reduced in accordance with the appropriate chart or formula in those paragraphs. Paragraph (f)(5) also allows the maximum ERP and HAAT combination to be "up to that needed to provide the same geographic coverage area as the largest station within their market, whichever would allow the largest service area." AFCCE, Everist and Hammett & Edison, each requests clarification of the term "geographical coverage of the largest station in the market" for determining maximum power and antenna height pursuant to Section 73.622(f)(5) of the Rules. Specifically, AFCCE asks whether the area must be common or if it merely must be the same size and whether the market is the DMA. Everist asks if equivalency is to be determined in terms of the predicted 41 dBu service contour or in terms of a Longley-Rice study of population and area. Hammett and Edison asks about matching the coverage of another station in the market when different transmitter sites are used.

74. We take this opportunity to clarify this rule. First, the maximum ERP limits (1000 kW for UHF channels 14-69 in any zone; 30 kW for VHF channels 7-13 in Zone 1; 160 kW for VHF channels 7-13 in Zone 2 or 3; 10 kW for VHF channels 2-6 in Zone 1; and 45 kW for VHF channels 2-6 in Zone 2 or 3) may not be exceeded. The "largest station" provision applies only where the rules normally require a reduction in the maximum power because a specified antenna HAAT is exceeded. That is, it does not allow power higher than the maximum ERP to compensate for an antenna HAAT that is lower than the value specified in the rule. Second, the "largest station" provision is only triggered where a station in the same market is serving a larger area than could be covered with the standard maximum power and

antenna height specified in Section 73.622(f) of the Rules. Otherwise, applicants must comply with the maximum power and antenna height in that rule section. Third, for the purpose of this rule, stations in the same DMA are considered to be in the same market. Fourth, the geographical coverage determination is based on the area within the DTV station's noise-limited contour, calculated using predicted F(50,90) field strengths as set forth in Section 73.622(e) of the Rules and the procedure specified in Section 73.625(b) of the Rules. Under this provision an application may not request a power and antenna height combination that would result in coverage of more square kilometers of area than the largest station in the market. It is not necessary that the application specify coverage that is congruent with or encompassed by the coverage area of the largest station. Stations are not expected to shift their coverage area in order to use this provision of the maximum power rules. Finally, DTV stations are still subject to the interference protection requirements, even when availing themselves of this provision.

75. Directional Antenna Definition and Interference Creating NTSC White Areas. Everist seeks clarification on the definition of a non-directional and a directional transmitting antenna. He also asks about incremental creation of white or underserved areas as DTV stations are authorized based on creating de minimis interference to the Grade B service of NTSC TV stations.¹²⁴

76. In both of these matters, we believe it is appropriate to continue the NTSC TV practice. Section 73.625(c)(2) of the Rules defines a DTV directional antenna as one "designed or altered to produce a noncircular radiation pattern in the horizontal plane" Section 73.685(e) of the Rules defines an NTSC TV directional antenna as one "designed or altered to produce a noncircular radiation pattern in the horizontal plane" Therefore, the DTV and NTSC rules defining directional antennas are identical and the practices and policies that have been applied to NTSC directional antennas will also be applied to DTV directional antennas. With regard to white area or underserved area determinations, we note that Section 73.684(a) of the Rules concerning NTSC TV station prediction of coverage specifically indicates that "predictions of coverage made pursuant to this section shall be made without regard to interference" Therefore, as has been the case with NTSC interference, we will not consider the effect of DTV interference on analysis of white areas or underserved areas.

77. Closed Captioning for Digital TVs. Motorola addresses an issue of compatibility of DTV closed captioning with an existing digital cable closed captioning technology. Motorola is concerned that this issue could lead to a delay in the DTV transition, so it includes an analysis that it also submitted in ET Docket 99-254.

78. The Report and Order in ET Docket No. 99-254 has addressed this matter and no further action is necessary herein.¹²⁵

79. NTSC Group Delay Blanket Waiver. Hammett & Edison requests a blanket waiver of the envelope delay requirement in Section 73.687(a)(3) of the Rules for NTSC stations with upper-adjacent channel DTV assignments that combine their NTSC and DTV signals and use a common transmitting antenna. That requirement specifies the tolerances for a parameter of the transmitted signal which could affect the picture quality of the received signal. Hammett and Edison explains that the combining filter

¹²⁴ More specifically, he asks whether the current Commission policy of not allowing a network NTSC station to move its transmitter site or reduce its power if doing so would result in a loss of network service will also apply when the loss of network NTSC service is the result of incremental interference caused by DTV maximization requests. Comment of Donald G. Everist at 7.

¹²⁵ See Report and Order in ET Docket No. 99-254, 15 FCC Rcd 16788 (2000), at paras. 37-40.

in such circumstances may result in the NTSC signal not meeting the envelope delay requirement, especially for the top portion of the video passband, approximately 3.9 to 4.2 MHz above the visual carrier.

80. We agree with Hammett and Edison that a blanket waiver is appropriate for this situation. There may be dozens of stations experiencing this problem. There is no out-of-band interference potential to other stations or services. The effect will be some degradation of the NTSC station's reception, that may be corrected by obtaining and installing a custom surface acoustic wave filter. We believe that each NTSC station in this situation has sufficient incentive to provide acceptable quality reception to its viewers. Therefore, we authorize all NTSC TV stations with a DTV signal on the first-adjacent channel above the NTSC channel and with a common transmission line and antenna, to operate at variance with the envelope delay requirements of Section 73.687(a)(3) for frequencies between 3.9 and 4.2 MHz above the visual carrier.

81. Canadian Border Zone. AFCCE urges the Commission to resolve Canadian border zone issues in an expeditious fashion. We believe this concern has been resolved. A Letter of Understanding with Canada was signed September 12 and 22, 2000, and announced in a Public Notice released September 29, 2000.¹²⁶

82. Data Base Inconsistency. Everist is concerned that the new Mass Media Bureau Consolidated Data Base System (CDBS) should be validated. He states that where old terrain elevation data that is inconsistent with current determination of terrain elevation, it can turn an otherwise "checklist" application into a "non-checklist" application because it will show the antenna height differing from that authorized by more than ten meters.

83. Errors and inconsistencies in the CDBS that we have discovered have been corrected and resolved. However, this is an on-going process. As for the criteria for "checklist" treatment, we decline to alter it at this time. We now have the capability to process "non-checklist" applications expeditiously (and to quickly grant those applications that do not raise interference concerns and would have been considered checklist except for failing to meet the power or HAAT limits to be defined as checklist). Thus, there is not a significant benefit to an application being designated as checklist

84. Sanctioning a Government-Industry Committee Similar to TASO. AFCCE recommends that the Commission sanction the formation of a government-industry advisory committee to deal with application processing issues, as well as a "TASO"-like committee to help resolve DTV allotment and service issues.¹²⁷ At this time, we believe it is preferable to allow current industry efforts to continue without interruption. Significant activity is underway and we do not wish to slow it down or prevent it from reaching possible resolution of the issues that are being addressed. In the future, if circumstances warrant, this matter may be revisited.

85. Method for determining 85 % criteria for extending end of the transition. California Oregon Broadcasting, Inc. urges the Commission to consider how it will implement the 85% DTV reception

¹²⁶ Both the Public Notice and the Letter of Understanding can be downloaded from the FCC's International Bureau internet site at <http://www.fcc.gov/ib/pnd/agree>.

¹²⁷ TASO is the Television Allocations Study Organization, which was formed in the 1950s by the television broadcast and consumer electronics industries at the request of the Commission to study the technical principles that should be applied in television channel allocations.

criteria for extending the end of the transition beyond 2006. It is too early in the transition to initiate consideration of this matter. We expect to consider it in a future review proceeding.

86. Biological effects of RF radiation. Carole Lomond opposes introduction of DTV signals in any residential environment until concern over biological effects of nonionizing electromagnetic radiation is resolved. Lomond provides no evidence to warrant re-evaluating our RF exposure regulations.¹²⁸ We therefore decline to consider this issue in the context of this DTV review proceeding.

87. Other technical issues. Everist requests clarifications and explanations of a number of other technical matters. We are unable to address all of these in the context of this proceeding. Many of the issues he addresses have not yet arisen in processing and in the case of others his concerns are not clearly described. As these issues come up, we will resolve them individually on a case-by-case basis. If principles emerge from this practice, we will describe them in a Public Notice.

G. DTV Transmission Standard

88. In the Notice, we observed that some broadcast entities had raised concerns regarding the 8-VSB modulation system used in the ATSC DTV Standard adopted by the Commission as the transmission standard for digital broadcast television signals.¹²⁹ We stated that while we continue to believe that NTSC service replication is achievable by DTV operations using the 8-VSB standard, we recognized that some parties within the broadcast industry had recently raised various issues with respect to this standard. In particular, we noted that the Sinclair Broadcasting Group, Inc. (Sinclair) had previously filed a Petition for Expedited Rulemaking urging that we modify the rules to permit the use of an alternative modulation method, coded orthogonal frequency division multiplexing (COFDM), in addition to the 8-VSB standard.¹³⁰ In its petition, Sinclair argued that COFDM modulation offered easier reception with simple antennas and would enable broadcasters to provide fixed, mobile and portable video services. We dismissed Sinclair's petition, indicating that we continued to believe that NTSC service replication is achievable by DTV operations using the 8-VSB standard.¹³¹ However, we also

¹²⁸ Our RF exposure regulations are found at 47 CFR §§ 1.1301-1.3319.

¹²⁹ The Commission adopted as the digital broadcast television transmission system the Advanced Television Service Committee's (ATSC) Doc. A/52 ("ATSC Standard Digital Audio Compression (AC-3), 20 Dec 95") and Doc A/53 ("ATSC Digital Television Standard, 16 Sep 95"), except for Section 5.1.2 ("Compression format constraints) of Annex A ("Video Systems Characteristics") and the phrase "see Table 3" in Section 5.1.1 Table 2 and Section 5.1.2 Table 4, in the Fourth Report and Order in the DTV proceeding, MM Docket No. 87-268, 11 FCC Rcd 17771 (1996) (Fourth Report and Order). The standard as adopted by the Commission does not include requirements with respect to scanning formats, aspect ratios, and lines of resolution.

¹³⁰ See Petition for Expedited Rule Making filed by the Sinclair Broadcast Group, Inc., October 8, 1999.

¹³¹ See Letter of denial to Mr. Martin R. Leader on behalf of Sinclair Broadcast Group, Inc., by direction of the Commission, FCC 00-35, February 8, 2000. In denying Sinclair's petition, we cited the conclusions of a report comparing the performance of COFDM and 8-VSB for DTV service that was prepared by the Commission's Office of Engineering and Technology. See DTV Report on COFDM and 8-VSB Performance, FCC/OET 99-2, September 30, 1999 (DTV Report). This report concluded that both 8-VSB and COFDM have certain advantages and disadvantages. While it did not find that the performance of either system was clearly superior in all respects, it indicated that 8-VSB has advantages with regard to data rate, spectrum efficiency, and transmitter power requirements. The OET Report concluded that the relative benefits of changing the DTV transmission to COFDM are unclear and recommended that the ATSC 8-VSB standard be retained.

indicated that we would address the concerns raised by Sinclair and others about the 8-VSB modulation standard in the context of this proceeding. In the Notice, we therefore invited comment on the current status of the 8-VSB DTV standard. We specifically requested comment on the progress being made to improve indoor DTV reception under the existing transmission standard and manufacturers' efforts to implement DTV design or receiver improvements. We also asked commenting parties to submit information regarding any additional studies that may have been conducted regarding NTSC replication using the 8-VSB standard.

89. Parties primarily representing some broadcast interests express continuing concern about the ability of the 8-VSB standard to support reliable reception in areas where there is strong multipath, and submit that this deficiency must be corrected.¹³² These parties generally argue that the Commission should actively investigate both 8-VSB and COFDM and should consider a change to COFDM if that system is shown to be superior to 8-VSB. Sinclair and several others continue to argue that broadcasters should be given the option to use a COFDM system for transmitting their DTV signals.¹³³ Other parties representing broadcasters, consumer electronics equipment manufacturers and consumers urge the Commission to maintain the current 8-VSB modulation standard for DTV transmissions.¹³⁴ These commenters generally state that 8-VSB is the most suitable modulation standard for DTV service for North America and that the current concerns about reception in areas where there are high levels of multipath are being addressed through receiver improvements.

90. We also observe that a group of broadcasters, including many of those participating in the Joint Broadcasters comments, has recently completed a program of DTV receiver testing.¹³⁵ This

¹³² Those parties who express continuing concern regarding the 8-VSB system's ability to handle multipath and seek further investigation and testing include the Association of Americas Public Television Stations (AAPTS), George Bednekoff, Blade Communications, Inc. (Blade), California Oregon Broadcasting, Inc. (COBi), Microsoft, the National Broadcasting Company, Inc. (NBC) and The Walt Disney Company, on behalf of itself and ABC, Inc. (in joint reply comments), and Wavexpress.

¹³³ The parties joining Sinclair in requesting that broadcasters be allowed to use COFDM for their DTV operations as an alternative to the 8-VSB DTV standard are the Association of Local Television Stations, Inc. (ALTV), Pegasus Communications Corporation (Pegasus), and Univision Communications Inc. Univision also states that the Commission has yet to act on its Petition for Rule Making seeking authority for broadcasters to utilize COFDM modulation in their broadcasts. See Petition for Expedited Rule Making submitted by Univision Communications Inc. on November 17, 1999. Consistent with our decision herein not to propose allowing broadcasters to use COFDM as an alternative modulation method for their DTV operations, we are also denying Univision's Petition for Expedited Rule Making.

¹³⁴ Those asking that the Commission affirm the 8-VSB standard include the Advanced Television Systems Committee (ATSC), Belo, the Communications Workers of America (CWA), the Consumer Electronics Association (CEA), Fox Television Stations Inc. and Fox Broadcasting Company (Fox), the International Brotherhood of Electrical Workers (IBEW), the National Consumers League, the National Council of Senior Citizens (NCSC), Philips Electronics North America Corporation (Philips), Thomson Consumer Electronics, Inc. (Thomson), the Veterans of Foreign War of the United States (VFW), the Veterans' Rights Coalition (VRC), and Zenith Electronics Corporation (Zenith).

¹³⁵ See "8-VSB/COFDM Comparison Report," VSB/COFDM Project, COFDM Technical Group, December 2000, Executive Summary, pp. *ii* and *iii*. NBC and the Walt Disney Company, in their reply comments cite two other DTV studies, one by the ABERT/SET Study Group in Brazil, "Final Report on the Comparative Trials of the Digital Television Systems, First Part," as published in English translation on CD-ROM by Anatel, the Brazilian Telecommunications Agency, June, 2000 (SET/ABERT Study), and another by Dennis Goeckel, (continued....)

program included field tests of DTV reception in the Washington, D.C., Baltimore, Maryland and Cleveland, Ohio markets. The industry study, among other things, compared reception of 8-VSB and COFDM signals at a large number of locations in those markets. This study took measurements outdoors at the 30-foot antenna height assumed in the DTV planning factors and at 6-feet using simple antennas typical of indoor reception. Some actual indoor measurements were also taken. One of the objectives of the industry tests was to determine whether COFDM should be added to the current 8-VSB standard.¹³⁶ The report on the industry 8-VSB/COFDM comparison tests (8-VSB/COFDM Report) indicates that at the 30-foot receive antenna height, 8-VSB was received at a greater percentage of sites than COFDM, this was true at all distances from the transmitter.¹³⁷ In addition, 8-VSB performed better up to the furthest distances measured from the transmitters (55 miles). It also states that at the 6-foot receive antenna height, using a simple antenna, COFDM was successfully received at more sites than 8-VSB in Washington, while 8-VSB was successfully received at more sites in Cleveland. It notes that successful reception of either system at the 6-foot height was achieved at less than 50% of the test locations. The 8-VSB/COFDM Report further indicates that in the case of indoor measurements, the percentage of successful reception was similar for both 8-VSB and COFDM, with 8-VSB holding a slight advantage. However, successful indoor reception was achieved at only about 30% of the test locations.

91. Based on these test results, the industry has reaffirmed their endorsement of the VSB standard and concluded that there is insufficient evidence to add COFDM to the U.S. DTV broadcast standard. In this regard, on January 15, 2001, the Boards of Directors of MSTV and NAB issued the following joint resolution:¹³⁸

(Continued from previous page)

Dept. of Electrical and Computer Engineering the University of Massachusetts, "Single Carrier (VSB) versus Multi-Carrier (COFDM) Modulation for Digital Terrestrial Broadcast Applications in the United States, Final Report," January 19, 2000 (Goeckel Study). The SET/ABERT Study, which involved field test comparisons of 8-VSB and COFDM systems in São Paulo, Brazil, concluded with a recommendation that Anatel only consider COFDM options for DTV service in Brazil. We note that this study has been criticized in Brazil, see José G. Chiquito, Dalton Arantes and Max H.M. Costa of the Department of Communications, Campinas State University – Unicamp Campinas - SP, Brazil, "Deliberations on the final SET/ABERT report for establishing the digital television standard in Brazil," Public Consultation No. 237, July 31, 2000 (Unicamp Campinas report). As indicated in the NBC and Disney joint reply comments, the Goeckel Study made the following findings: "[i]n a dynamic multipath fading channel, ... the DVB-T [COFDM] scheme will likely enjoy a significant performance advantage over the ATSC [8-VSB] scheme ... [I]t is not clear that there exists a receiver technology of reasonable complexity that will allow a system transmitting according to the ATSC standard to operate in dynamic multipath fading channels... We conclude that it is difficult to envision a receiver employed with the ATSC standard performing comparable to one employed with the DVB-T standard for time-varying multipath fading signals. In their comments, Zenith and NxtWave have separately indicated that they have designs for improvements to 8-VSB that would provide for reception in conditions where time-fading multipath exists. We believe that the demonstrated receiver improvements and the new designs for 8-VSB being developed by Zenith, NxtWave, Broadcom and others have superceded these studies in planning for DTV implementation.

¹³⁶ The Joint Broadcasters indicate that the objectives of this program were to: 1) press for, support, and test improvements in 8-VSB performance, and 2) to develop and implement a two-phase plan to test COFDM systems for application in the United States. Comments of Joint Broadcasters at 22.

¹³⁷ See "8-VSB/COFDM Comparison Report," *supra*, Executive Summary, pp. *ii* and *iii*.

¹³⁸ See January 15, 2001, Resolution of the Boards of Directors of MSTV and NAB.

With the support of 30 major broadcast organizations and the oversight of technical committees consisting of some 25 engineers representing all major technical viewpoints, the broadcasting industry concluded a comprehensive, objective and expedited series of studies and tests to determine whether COFDM should be added to the current 8-VSB standard.

We conclude that there is insufficient evidence to add COFDM and we therefore reaffirm our endorsement of the VSB standard.

We also conclude that there is an urgent need for swift and dramatic improvement in the performance of the present U.S. digital television system.

We therefore will take all necessary steps to promote the rapid improvement of VSB technologies and other enhancements to digital television and direct the staffs to develop a plan and promptly submit it to the Boards.

In addition, our Office of Engineering and Technology (OET) is currently conducting field tests of 8-VSB reception in the Washington, D.C. and Baltimore market areas to independently assess the status of DTV receiver development. The OET study is examining the performance of early and improved models of DTV receivers with respect to multipath and coverage based on reception of the signals of the local DTV stations now operating in those markets.¹³⁹ This study involves taking measurements at a large number of sites throughout these stations' service areas, including close-in urban, suburban, and rural areas located near the stations' predicted DTV service contour. Specific sites were also selected to ensure that measurements were taken in areas with moderate to strong multipath conditions. Measurements were taken outdoors at the 30-foot height and also at 7-feet using simple antennas typical of indoor reception. The interim results of the OET tests indicate that the current generation of DTV receivers are considerably improved over the early generation units, and in particular with regard to their ability to provide acceptable service in areas with moderate and strong, complex multipath signals. The OET test results also indicate that the 8-VSB system adequately meets our goals for DTV service replication, minimum interference, and spectrum recovery as set forth in the Sixth Report and Order.¹⁴⁰

92. These new studies bear out the conclusions of the OET's DTV Report that the relative benefits of changing the DTV transmission system to COFDM are unclear and would not outweigh the costs or delays involved in making such a revision. Accordingly, based on our review of the record, the demonstrated improvements in DTV receiver performance, and the findings and recommendations of the industry, we find that there is no reason to revisit our decision to deny Sinclair's petition. The industry and OET tests and other information submitted in the record indicate that DTV receivers are improving significantly, shortcomings of the early DTV receiver implementations are being addressed, and the system is sufficiently flexible to accommodate future improvements. Consequently we will not reopen

¹³⁹ The OET study includes several second and third generation improved receiver units that are not yet available to the general public. OET expects to complete this study soon, and will release a report of its findings shortly thereafter. We also plan to continue these receiver study efforts with additional testing after the current study is completed. In particular, we are aware that the next generation of receivers, with further improvements over those being tested by OET, are just now becoming available. However, at this point the number of units of these newest receivers that have been produced is very limited, such that manufacturers are not able to provide samples for testing. OET will include these latest generation receivers in its testing as units become available.

¹⁴⁰ See generally Sixth Report and Order in MM Docket No. 87-268, supra at 14605-27.

the issue of the Commission's DTV standard.

H. DTV Receiver Performance Standards.

93. In the Notice, we discussed the desirability of setting receiver performance standards and recognized that some broadcasters have recommended that we address over-the-air DTV signal reception issues by setting receiver performance thresholds. We therefore requested comment on the desirability of adopting minimum performance levels and asked, if we were to adopt such requirements, how they should be structured, including timing considerations.

94. AAPTS/PBS, COBi, the Joint Broadcasters,¹⁴¹ the National Association of Broadcasters (NAB), and the North American Broadcasters Association (NABA) urge the Commission to establish performance standards for DTV receivers. These parties argue that such standards are needed to ensure consumers that the DTV receivers they purchase will consistently provide quality service. They state that if consumers do not have such assurance, they will not purchase DTV sets, and the transition will be imperiled. In statements representative of this group, the Joint Broadcasters submit that equipment manufacturers currently are not producing many sets capable of over-the-air reception at all, and that those receivers that are being produced do not perform well in stressful RF environments.¹⁴² Those proposing DTV receiver standards argue that DTV receivers need to perform at a level consistent with the coverage and interference levels assumed in the DTV Table. They argue that it is not acceptable to wait for the market to remedy these performance shortfalls and that the Commission should step in and mandate minimum desired-to-undesired signal performance thresholds. The Joint Broadcasters also state that the performance standards they seek are perfectly analogous to the type of regulations that the Commission imposed for UHF reception under the All Channel Receiver Act (ACRA).¹⁴³ They also ask that, in order to avoid further delay, the thresholds that the Commission would establish be made effective twelve months from the date of the Report and Order in this proceeding.

95. Consumer electronics manufacturers argue that there is no need for Commission-mandated minimum performance standards for DTV receivers. Philips and Thomson state that such standards would hinder rather than promote improvements in DTV receiver performance because they would stifle innovation and promote design to the lowest common denominator, harming rather than helping consumers. CEA argues that the dynamic operation of the market is far quicker and yields superior results to any performance standards the Commission might consider for receivers, were it to have the statutory authority to do so. CEA, Philips and Thomson argue that the ACRA does not provide the

¹⁴¹ The NAB also filed separate comments to express its specific views on certain issues.

¹⁴² The Joint Broadcasters submit that only 17 percent of all DTV sets sold to date are capable of receiving over-the-air DTV signals at all. They also submit that the DTV receiver performance problems are related to demodulator and signal processing deficiencies, *e.g.*, insufficient equalizer design, AGC performance, or an over-dependence on the pilot tone to acquire the signal, and to tuner performance deficiencies, *e.g.*, a poor noise figure and poor adjacent channel and taboo channel performance.

¹⁴³ The 1962 All Channel Receiver Act added a new Section 303(s) of the Communications Act of 1934, as amended, 47 U.S.C. § 303(s). Section 303(s) provides that the Commission shall "have authority to require that apparatus designed to receive television pictures broadcast simultaneously with sound be capable of adequately receiving all frequencies allocated by the Commission to television broadcasting ..." The Joint Broadcasters submit that they would work with the Commission to supply the conclusions of the industry's 8-VSB performance testing to assist in the creation of adequate performance benchmarks.

Commission authority to set receiver performance standards. They submit that the legislative history of the ACRA indicates that Congress did not intend to provide the Commission broad authority to set broad receiver performance standards.¹⁴⁴

96. In the Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order in the DTV proceeding, we stated that we believe that competitive market forces will ensure that DTV receivers perform adequately.¹⁴⁵ We noted that receiver performance involves trade-offs among many different factors and that manufacturers are in the best position to determine how these trade-offs should best be made to meet consumer demand. We further stated, however, that we would continue to monitor this area through the DTV implementation process and that we would take regulatory action if needed. As indicated above, DTV receiver manufacturers, driven by market forces, are continuing to make significant improvements in their products, particularly in the area of indoor reception and multipath signal handling capabilities. These efforts are consistent with our earlier assessment that those producing receivers are in the best position to determine how to make trade-offs in performance factors to best meet consumer needs. We therefore continue to believe that it would be undesirable to set rigid performance standards for DTV receivers at this time. We agree with Philips and Thomson that the effect of setting such standards at this point would be to stifle the innovation and limit performance to current capabilities. Moreover, as those pressing for DTV receiver standards acknowledge, more work is needed before it would even be possible to make specific proposals for such standards. In addition, we note that further enhancements to the 8-VSB modulation standard are being developed through the ATSC process. We therefore are denying broadcasters' requests that we move to set performance standards for DTV receivers. We will, however, continue to monitor receiver issues throughout the transition and will take appropriate action on receiver standards if necessary.

I. Miscellaneous Issues.

97. In the Notice, we invited comment on any critical unresolved tower siting issues and how they affect the progress of the digital transition. We asked whether broadcasters are able to secure necessary tower locations and construction resources and whether and to what extent zoning disputes, private negotiations with tower owners, and the availability of tower construction resources affect the transition.¹⁴⁶ In response, broadcasters generally stated that the transition is going well. Fox noted that tower siting issues are not generally delaying the transition to DTV but there are isolated tower problems. According to Fox, the Commission should remain prepared, though the DTV Strike Force or the FCC Local and State Government Advisory Committee, to intervene in local zoning disputes involving frivolous allegations of RF radiation concerns.¹⁴⁷ NAB surveyed broadcasters and found that 17.6% of broadcasters that responded reported delays owing to local zoning or other approval problems when siting a new tower. For the top 4 network affiliates in the top 30 markets that responded, the percentage experiencing delays in siting or mounting a new tower or DTV antenna, according to NAB, was 28%. Over half (54%) of those stations reporting delays in tower/antenna siting have not been able

¹⁴⁴ See Comments of CEA at 12; Comments of Philips at 15; Comments of Thomson at 17.

¹⁴⁵ See Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order in MM Docket No. 87-268, supra at 7486-87.

¹⁴⁶ Notice, 5261.

¹⁴⁷ Comments of Fox at 17-18.

to resolve their local zoning or government problems, according to NAB.¹⁴⁸ Thus, NAB argues that the Commission should assume a strong leadership role to ensure that: local and federal agencies work together to approve new tower and antenna sites, the Commission does not become a bottleneck delaying the grant of construction permit and maximization applications, and the Commission continues to monitor and evaluate shortages in equipment availability and tower construction crews.¹⁴⁹

98. The comments generally affirm our preliminary assessment in the Notice that, while some stations are facing problems with tower availability and/or local zoning issues, such problems do not seem to be widespread at this time. The Notice discussed the Commission's efforts to assure that local problems are addressed and remedied, including working through the DTV Tower Strike Force and the FCC Local and State Government Advisory Committee.¹⁵⁰ The Commission intends to continue to monitor the situation to forestall and/or remedy problems through these entities, as requested by NAB.

99. Additionally, in the Notice we invited comment on copy protection and cable compatibility issues. Recently, the Commission issued orders in other proceedings dealing with both issues, obviating the need for action to be taken herein. In our recent Further Notice of Proposed Rule Making and Declaratory Ruling in the navigation devices proceeding,¹⁵¹ we noted that, unlike in the analog context, digital technology enables users to make an unlimited number of virtually perfect copies of digital content.¹⁵² However, digital technology also can enable copyright holders of digital content to prevent misuse of copy protected material through methods not previously available.¹⁵³ In the Declaratory Ruling we found that some measure of anti-copying encryption technology is consistent with our navigation devices rules because it protects a gap where digital data would otherwise be available "in the clear" and subject to unrestricted digital copying. Accordingly, we clarified that the inclusion of some amount of copy protection within a host device does not violate the navigation devices rules.

100. In the Notice, with respect to cable compatibility, we invited comment on the extent to which a failure of industry parties to reach agreement on labeling of digital receivers would hinder the transition.¹⁵⁴ Subsequently, in our recent Report and Order concerning compatibility between cable systems and consumer electronics equipment,¹⁵⁵ we adopted rules providing for the labeling of DTV receivers to ensure that consumers will be fully informed about the capabilities of DTV receivers to operate with cable television systems. We provided for labels with regard to three categories of DTV receivers, depending upon several characteristics. "Digital Cable Ready 1" labels will be required for consumer electronics TV receiving devices capable of receiving analog basic, digital basic and digital

¹⁴⁸ Comments of NAB at 7.

¹⁴⁹ Comments of NAB at 10.

¹⁵⁰ Notice, 5260-61.

¹⁵¹ Further Notice of Proposed Rule Making and Declaratory Ruling in CS Docket No. 97-80, 15 FCC Rcd 18199 (2000).

¹⁵² Id. at 18204.

¹⁵³ Id.

¹⁵⁴ Notice at 5261.

¹⁵⁵ Report and Order in PP Docket No. 00-67, FCC 00-342 (released September 15, 2000).

premium cable television programming by direct connection to a cable system. With such sets, a security card or Point of Deployment module provided by the cable operator is required to view encrypted programming. These sets have no 1394 digital connector or other digital interface; nor do they have two-way capability using cable facilities. "Digital Cable Ready 2" devices are those receivers that, in addition to the features of the Digital Cable Ready 1 sets, also include the 1394 digital interface connector that may be used for attaching the receiving device to various other consumer appliances. Connection of a Digital Cable Ready 2 receiver to a digital set-top box may support advanced and interactive digital services and programming delivered by the cable system to the set-top box. Finally, "Digital Cable Ready 3" receivers are those that, in addition to the features of the Digital Cable Ready 1 sets, are capable of receiving advanced and interactive digital services by direct connection to a cable system providing digital programming and advanced and interactive digital services. Because additional industry work is still required for design specifications for the Digital Cable Ready 3 category, we stated that the record would be kept open in PP Docket No. 00-67 in order to provide us with the option of incorporating these anticipated specifications into our rules at a later date. This labeling scheme will permit consumers to make well-informed decisions about DTV equipment purchases based on a clear understanding of receivers with different labels.

101. Additionally in that proceeding, we required the consumer electronics and cable television industries to report back to us on their progress in developing technical standards in two areas: direct connection of DTV receivers to digital cable television systems, and the provision of tuning and program schedule information to support on-screen program guides for consumers. These two issues have been substantially, but not completely resolved in an agreement between the National Cable Television Association and the Consumer Electronics Association.

102. In sum, substantial progress has been made with respect to both copy protection and DTV receiver/cable compatibility. This progress should allow and support both the affected industries and consumers in moving forward with the transition to digital broadcast television. We see no need for further action at the present time in this proceeding with respect to these important issues and will continue to monitor and consider those issues in the foregoing separate proceedings.¹⁵⁶

V. FURTHER NOTICE OF PROPOSED RULE MAKING

103. As discussed above, in response to the Notice, a number of parties have argued that the Commission should require digital reception capability in all receivers, aside from particular performance thresholds. Their comments also implicated the accurate identification and marketing of receivers with various capabilities. In addition, consumer advocates have complained that any requirement that all receivers contain digital reception capability places an undue burden on consumers, and particularly low-income consumers.¹⁵⁷ These comments have raised pertinent questions on which we will seek further information and comment to develop a full record on the current pertinence of such recommendations.

¹⁵⁶ In PP Docket No. 00-67, we kept the docket open and required periodic reports from the cable and consumer electronics industries to be filed beginning by October 31, 2000, and every six months thereafter until October 2002. These periodic reports are designed to provide the Commission with information on the development of specifications, approved by an accredited standards body, for the bi-directional direct connection receiver and other digital interfaces that might be developed.

¹⁵⁷ See Letter of Consumer Federation of America, dated January 16, 2001, which has been placed in the record of this proceeding.