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

In the matter of	)	
	)	
Amendment of Parts 73 and 74 of the	)	
Commission's Rules to Establish Rules for Digital	)	MB Docket No. 03-185
Low Power Television, Television Translator, and	)	
Television Booster Stations and to Amend Rules	)	
for Digital Class A Television Stations	)	
	)	

REPORT AND ORDER

Adopted: September 9, 2004 **Released: September 30, 2004**

By the Commission: Chairman Powell issuing a statement; Commissioners Copps and Adelstein approving in part, concurring in part and issuing separate statements.

TABLE OF CONTENTS

I. INTRODUCTION

1. With this *Report and Order*, we establish rules and policies for digital low power television ("LPTV") and television translator ("TV translator") stations and modify certain rules applicable to digital Class A TV stations ("Class A").[1] Our action establishes a regulatory framework consistent with our stated goals to hasten the transition of LPTV and TV translator stations to digital operations while minimizing disruption of existing service to consumers served by analog LPTV, TV translator and Class A stations. These stations are a valuable component of the nation's television system, delivering free over-the-air TV service, including locally produced programming, to millions of viewers in rural and discrete urban communities. We wish to facilitate, wherever possible, the digital transition of these stations, thereby enabling their viewers to realize the many benefits of digital broadcast television ("DTV") technology. The rules and policies adopted herein will provide flexible and affordable opportunities for digital LPTV and TV translator service, both through the conversion of existing analog service and, where spectrum is available, new digital stations. Licensees operating analog TV stations in the Class A service may also apply for a "companion" digital station in the LPTV service as a means of facilitating their digital transition. Our interference rules and methodology will provide spectrum for new digital stations without undermining established interference protection rights. We also address important issues such as the digital low power television transition, channel assignments, authorization of digital service, permissible service, mutually exclusive applications, protected service area, equipment and other technical and operational requirements.

[1] *See Amendment of Parts 73 and 74 of the Commission's Rules Concerning Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations*, 18 FCC Rcd 18365 (2003) (*Notice*). LPTV and TV translator stations are regulated under Subpart G of Part 74 of our rules. Class A stations are regulated under Subpart J of Part 73.

II. BACKGROUND

2. The Commission created the low power television service in 1982.[2] The low power television service consists of LPTV, TV translator, and television booster stations (referred to herein collectively as "low power television stations"). Stations in the low power television service are authorized with "secondary" frequency use status. These stations may not cause interference to, and must accept interference from, full-service television stations, certain land mobile radio operations and other primary services.[3] As the name suggests, low power television service stations have lower authorized power levels than full-service TV stations.[4] Unlike full-service stations, stations in the low power television service are not restricted to operating on a channel specified in a table of allotments.

3. *LPTV Stations.* The Commission created low power television stations to bring television service, including local service, to viewers "otherwise unserved or underserved" by existing service providers.[5] LPTV stations may originate programming and retransmit the programs of full-service television stations. Currently, there are approximately 2,128 licensed LPTV stations.[6] These stations operate in all 50 states and serve both rural and urban audiences.[7] Because they operate at reduced power levels, LPTV stations serve much smaller geographic regions than full-service stations, and they can provide service to areas where a higher power station cannot be accommodated in the TV and DTV Tables of Allotments. An LPTV station may be the only television station in an area providing local news, weather, and public affairs programming.[8] Even in some well-served markets, LPTV stations may provide the only local service to residents of discrete geographical communities within those markets.[9] Many LPTV stations air "niche" programming, often locally produced, to residents of specific ethnic, racial, or special interest communities.[10]

4. *Class A TV Stations*. In the Community Broadcasters Protection Act of 1999 ("CBPA"),[11] Congress directed the Commission to establish a Class A television service to provide a measure of primary status to certain LPTV stations so that those stations could continue to operate during and after the DTV transition. In order to qualify for Class A status, an LPTV station was required to have broadcast a

[2] *See Report and Order*, 51 R.R.2d 476 (1982).

[3] *See, e.g.*, 47 C.F.R. §§ 74.703, 74.709, 90.303.

[4] LPTV stations may radiate up to 3 kilowatts of power for stations operating on the VHF band (*i.e.*, channels 2 through 13), and 150 kilowatts of power for stations operating on the UHF band (*i.e.*, channels 14 through 69). By comparison, full-service stations on VHF channels 7 through 13 radiate up to 316 kilowatts of power, and stations on the UHF channels radiate up to 5,000 kilowatts of power. LPTV signals typically extend approximately 15 to 20 miles, while the signals of full-service stations can reach as far as 60 to 80 miles.

[5] *See, e.g., Notice of Proposed Rule Making*, 45 F.R. 69178 (Oct. 17, 1980).

[6] *Public Notice*, Broadcast Station Totals as of March 31, 2004 (released April 27, 2004).

[7] *See Establishment of a Class A Television Service*, 15 FCC Rcd 6355 (2000) (*Class A Report and Order*), *on recon.*, 16 FCC Rcd 8244 (2001).

[8] *See Class A Report and Order,* 15 FCC Rcd at 6357, ¶ 2 (*citing Review of the Commission's Rules Governing the Low Power Television Service*, 9 FCC Rcd 2555 (1994) (*LPTV First Report and Order*).

[9] *Id.*

[10] *Id.*, *citing LPTV First Report and Order*, 9 FCC Rcd at 2555; *Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, 11 FCC Rcd 10968, 10995 (1996).

[11] Pub. L. No. 106-113, 113 Stat. Appendix I at 1501A-594 - 1501A-598, codified at 47 U.S.C. § 336(f).

minimum of 18 hours per day and to broadcast an average of at least 3 hours of locally produced programming per week during the three month period preceding enactment of the CBPA. The CBPA directed that Class A licensees must be subject to the same license terms and renewal standards as full power television licensees, and that Class A licensees should be accorded primary status as television broadcasters as long as they continue to meet the requirements set forth in the statute. Class A TV stations are similar in many respects to LPTV stations; their operations are generally governed by the same technical standards. Unlike LPTV stations, Class A stations must comply with Part 73 regulations applicable to full-service TV broadcast stations, except for those that cannot apply for technical or other reasons. Class A stations also are afforded certain interference protection rights not available to LPTV stations. The Class A service rules (Part 73, Subpart J) also contain provisions for the operation of digital Class A TV stations. The Commission has licensed approximately 610 Class A stations. [12]

5. *TV Translator Stations*. A TV translator station is a low power television broadcast station that receives the signal of a television station and simultaneously retransmits it on another TV channel. Television translators are technically equivalent to LPTV stations in most respects and are licensed in the same manner.[13] Television translator stations are intended to provide service to areas where direct reception of full-service broadcast stations is unsatisfactory because of distance or intervening terrain obstructions. Although translators are not limited to operation within the contour of the station they rebroadcast, they may be used to provide "fill-in" service to terrain-obstructed areas within a full-service station's service area. There are approximately 4,737 licensed TV translators,[14] most operating in the western regions of the country. These stations are often used to deliver the only off-air television service available to rural communities.

6. LPTV and TV translator stations differ only in the amount of programming they may originate. LPTV stations are not limited in the amount of programming they may originate. TV translators may originate only emergency warnings of imminent danger and, in addition, not more than thirty-seconds per hour of public service announcements and material seeking and acknowledging financial support necessary to the continued operation of the station.[15]

7. *TV Booster Stations*. The regulatory provisions for television booster stations were adopted by the Commission in 1987.[16] TV booster stations are intended to provide fill-in service to areas within the predicted Grade B contours of full-service television stations. TV boosters simultaneously retransmit the programming of full-service TV stations and may be licensed only to licensees and permittees of full-service stations. TV boosters transmit on the same TV channel as that of the full-service station they rebroadcast and are permitted to broadcast only within the Grade B contour of the associated full-service station.

8. In the *Notice* in this proceeding we sought comment on a number of issues related to the DTV transition for LPTV and TV translators. We received numerous comments and reply comments in

[12] *Public Notice*, Broadcast Station Totals as of March 31, 2004 (released April 27, 2004).

[13] Licensees can switch between LPTV and TV translator designation by simple letter notification to the Commission. 47 C.F.R. § 74.732(e).

[14] *Public Notice*, Broadcast Station Totals as of March 31, 2004 (released April 27, 2004).

[15] 47 C.F.R. § 74.731(f).

[16] *See Amendment of Part 74 of the Commission's Rules Concerning FM Booster Stations and Television Booster Stations*, 2 FCC Rcd 4625 (1987).

response to the *Notice*.[17]

III. ISSUE ANALYSIS

A. Digital Station Classes in the Low Power Television Service

9. The *Notice* sought comment on whether we should continue to recognize a distinction between TV translator and LPTV stations when these stations operate digitally. Nearly all parties commenting on this issue favor retaining the distinction.[18] The National Translator Association, for example, states that TV translator and LPTV stations serve different purposes and, therefore, should be recognized as separate station classes with regard to digital operations.[19] We agree and expect that most translator licensees will focus their operations, at least initially, on rebroadcasting without altering the signals of DTV stations. We also believe the majority of LPTV licensees operating digital stations will do so in a manner similar to that of their analog stations, providing programming tailored to their communities. We note that certain statutory provisions distinguish between TV translator and LPTV station classes.[20] We disagree with a proposal to establish urban (primary status) and rural (secondary status) classes of digital low power service, demarcating these on the degree of spectrum crowding.[21] Based on our licensing experience, we disagree with a premise of this proposal that available spectrum is scarce only in metropolitan areas. Moreover, despite the urgings of several commenters, the *Notice* clearly stated that we will not address in this proceeding the "interference protection priorities, rights, and responsibilities of stations in the LPTV service, which are well established."[22]

10. For these reasons, we will adopt separate definitions and permissible use provisions for digital TV translator and LPTV stations.[23] As with analog stations, we will provide flexibility by permitting licensees to switch between digital translator and LPTV designations by letter notification to the Commission. Regulatory provisions in this *Report and Order* that do not explicitly refer to digital translator or LPTV stations will apply equally to both. The *Notice* also sought comment on whether we should establish in the low power television service a class of digital booster station. As discussed *infra*, we will not do so in this *Report and Order*, but may revisit issues involving the authorization and operation of boosters in a future proceeding.

[17] Parties filing comments and reply comments and abbreviated name references for each are listed in Appendix A.

[18] *See*, *e.g.*, NTA Comments at 8 and Entravision Comments at 2. With very few exceptions, commenters not specifically focusing on this issue at least imply that there will be a regulatory distinction between digital TV translator and LPTV stations.

[19] NTA Comments at 8.

[20] *See*, for example, 47 U.S.C. § 614(c) and (h) regarding cable carriage of low power TV stations.

[21] *See* Joint Commenters Comments at 6.

[22] *Notice*, 18 FCC Rcd at 18382 and 19383, n. 80.

[23] Generally, we will pattern the distinction between digital TV translator and LPTV stations after that for analog translator and LPTV stations.

B. The Digital Transition for Low Power Television, Television Translator, and Class A Television Stations

11. A principal concern in this proceeding is the question of how the provisions for ending the transition to digital television set forth in Sections 309(j)(14)(A) and 336(f)(4) of the Communications Act apply to analog station authorizations in the LPTV, TV translator and Class A TV services. The determination of when LPTV, TV translator, and Class A licensees must cease operating their analog facilities may affect the success of their digital transition, as well as affect their continued analog TV operations.[24]

12. Section 309(j)(14)(A) of the Communications Act provides that the Commission may not renew a television broadcast license for "analog television service" for a period extending beyond December 31, 2006.[25] The term "analog television service" in Section 309(j)(14) is defined in Section 3 of the Communications Act[26] as "television service provided pursuant to the transmission standards prescribed by the Commission in Section 73.682(a) of its regulations," a rule that deals with full-service station transmission standards. In the *Notice* we sought comment on whether Section 309(j)(14)(A) applies to analog authorizations in the LPTV, TV translator, and Class A services.[27] Further, we considered Section 336(f)(4) of the Communications Act that is entitled "Issuances of Licenses for Advanced Television Services to Television Translator Stations and Qualifying Low-Power Television Stations." That Section provides:

> (4) ISSUANCE OF LICENSES FOR ADVANCED TELEVISION SERVICES TO TELEVISION TRANSLATOR STATIONS AND QUALIFYING LOW-POWER TELEVISION STATIONS. - The Commission is not required to issue any additional license for advanced television services to the licensee of a class A television station under this subsection, or to any licensee of any television translator station, but shall accept a license application for such services proposing facilities that will not cause interference to the service area of any other broadcast facility applied for, protected, permitted, or authorized on the date of filing of the advanced television application. Such new license or the original license of the applicant shall be forfeited after the end of the digital television service transition period, as determined by the Commission. A licensee of a low power television station or television translator station may, at the option of the licensee, elect to convert to the provision of advanced television services on its analog channel, but shall not be required to convert to digital until the end of such transition period. [28]

[24] *See* CBA Comments at 2; International Comments at 2.

[25] 47 U.S.C. § 309(j)(14).

[26] 47 U.S.C. § 153(49)(A).

[27] *Notice*, 18 FCC Rcd at 18409.

[28] *Notice*, 18 FCC Rcd at 18407 citing 47 U.S.C. § 336(f)(4).

We sought comment on the applicability of these provisions to Class A and TV translator stations and whether or not these extend to non-Class A LPTV stations.

13. We conclude that Sections 309(j)(14)(A) and 336(f)(4) ultimately compel LPTV, TV translator and Class A stations to convert to digital. As an integral component of the nation's television system, we believe that Congress intended LPTV, TV translator and Class A stations to transition to digital service, thereby permitting their viewers to realize the benefits of digital broadcast technology. We find the statute to be ambiguous, however, with respect to the transition deadline itself and conclude that under Section 336(f)(4) we have the discretion to set the date by which analog operations of stations in the low power and translator service must cease. The transition deadline established under 309(j)(14) – which prohibits authorizations for "analog television service" beyond December 31, 2006 – does not apply to LPTV and translator stations since neither is providing "analog television service" as that term is defined under the Act (*i.e.,* neither is subject to the transmission standards set forth in Section 73.682(a) of the Commission's Rules).[29] Accordingly, Section 336(f)(4) is best read to allow the transition period for these stations to end "as determined by the Commission."

14. With respect to Class A stations, we recognize that an argument can be made that Class A stations are subject to the deadline in 309(j)(14) given they arguably provide "analog television service" since they are subject to the transmission standards set forth in Section 73.682(a) of the Commission's Rules.[30] Nonetheless, we believe the better reading of the statute is that the 309(j)(14) deadline does not apply to Class A stations, but rather such stations are subject to the transition language in 336(f)(4) which specifically allows the Commission to determine the end of the Class A transition period. Setting a digital transition date for LPTV, TV translator, and Class A stations that is sufficiently after the transition for full-service stations is also consistent with the principles underlying the applicable statutory provisions. It is unlikely that Congress had Class A stations in mind when enacting Section 309(j)(14). Section 309(j) was enacted as part of the Balanced Budget Act of 1997; the Class A television service was created two years later in the Community Broadcasters Protection Act of 1999. Section 309(j)(14) arguably applies only because 336(f)(2) requires Class A stations to comply with the whole panoply of operating rules for full-service stations. In contrast, Section 336(f)(4) specifically deals with the transition period for Class A stations. As part of the 1999 Act, Congress adopted Section 336(f)(4), which expressly gives the Commission the discretion to determine the end of the transition period for Class A, TV translator, and LPTV stations. The apparent intent behind Section 336(f)(4) was to ensure that these stations are not required to prematurely convert to digital operations in a manner that could disrupt their analog service or, more importantly, that might cause them to cease operations Thus, Section 336(f)(4) does not appear to hold Class A stations to the full-service transition deadline.

15. We find that interpreting the statute as giving the Commission the discretion to establish a date for the transition of non-full-service stations "after the end" of the full-service station transition period is additionally supported by a consideration of the mechanics of how the substitution of digital for analog stations in these services must, of necessity, take place unless the service they provide to the public is to be severely interrupted. We adopted an approach for the transition of full-service TV stations that has permitted viewers to continue using their existing TV sets to receive analog programming while the number of DTV service offerings grows and consumers gradually become equipped to receive them. To achieve this purpose, we awarded full-service stations a second channel for digital operations during a multi-year transition period. However, lacking sufficient spectrum, we were unable to award second channels to TV translator, LPTV, or Class A stations to facilitate their digital transition. Indeed, we do not

[29] 47 U.S.C. §§ 153(49); 309(j)(14)(A); 47 C.F.R. 73.682(a).

[30] *See* 47 C.F.R. § 73.6024(a).

expect spectrum for new low power digital operations, as "companion" channels for existing analog programming services, to become available until TV channels are surrendered by full-service stations at the end of the full-service DTV transition period. Moreover, until this *Report and Order*, our low power television service rules have not provided for digital operations.

16. Requiring LPTV, TV translator, and Class A stations to comply with the full-service DTV transition deadline would, therefore, force these stations to "flash-cut" to digital on the channels authorized for their existing analog operations (*i.e.,* cease analog transmissions and begin operation of new digital transmitting equipment on the same date). We are concerned that such a requirement would significantly disrupt the existing service of many of these stations because it is likely that a large number of their viewers may be unequipped to receive DTV signals off-air at that time.[31] Moreover, because they do not have the benefit of cable "must carry" rules, many low power stations do not receive the benefit of being carried on local cable or satellite systems. Thus, unlike full-service TV stations, loss of service due to the termination of a station's analog operation would not be offset by cable carriage of the station's DTV channel or the digital-to-analog conversion of the station's programming. Of even greater concern, some stations might be forced to discontinue service altogether, leaving their viewers without local TV service or, in some cases, without over-the-air television service.

17. We conclude that the better, less disruptive, approach would be for the low power television digital transition to be completed at some fixed time after the deadline for full-service television stations. We expect that completion of the full-service transition will result in the return of a sufficient number of channels to permit most LPTV, TV translator, and Class A stations an opportunity to operate dual analog and digital operations for some period of time, thereby creating an incentive and opportunity for their viewers to transition to digital service without loss of their existing analog service.

18. Permitting LPTV, TV translators, and Class A stations to continue analog operation on a secondary basis beyond the full-service digital transition deadline will not in any way slow or otherwise detract full-service stations' ability to complete the DTV transition. Full-service stations will still be required to return one of their channels on schedule irrespective of whatever deadline we shall ultimately set for the low power television and Class A digital conversion. In addition, a later digital conversion for these stations will not adversely affect new commercial and public safety services in the 700 MHz band.[32] As discussed below, all digital TV translator and LPTV stations will be licensed on a secondary non-interfering basis to 700 MHz commercial and public safety licensees. Thus, there will be no harm to the new 700 MHz licensees in this band, who will have primary status.

19. Fox Television Stations, Inc., and Fox Broadcasting Company (Fox) argue that the December 31, 2006, deadline should apply to all analog broadcasting, including low power, and that "Congress would not have desired to leave a small group of television stations perpetually operating in a

[31] For example, many translator-served communities cannot directly receive any off-air signals of DTV stations because of intervening terrain. We are concerned that viewers in such communities will not become equipped to receive DTV signals until after their translators begin to transmit digital signals. Without continued analog service, these viewers will experience a disruption in service, at least until they secure a digital-to-analog converter or this conversion is made at the translator station(s). *See* NTA Reply Comments at 21-22 ("To suddenly 'flash cut' in rural areas means that the entire rural United States must suddenly develop overnight digital reception capability"). *See* also CBA Comments at 13; Island Comments at 5.

[32] Pursuant to Section 336(e) of the Act, LPTV and TV translator stations must vacate the use of the upper 700 MHz band (channels 60-69) by the end of the full-service DTV transition (*i.e.*, by December 31, 2006, or as extended on the basis of the criteria in Section 309(j)(14)(B) of the Act). 47 U.S.C. § 336(e).

legacy technology – which would only serve to discourage the digital transition in rural areas."[33] We disagree. It is not our intention to allow LPTV, TV translator, and Class A broadcasters to permanently operate their analog facilities. Indeed, we seek to hasten their transition to digital service and will work toward the goal of achieving an end-date at, or soon after, the end date of the full-service transition. However, until we have resolved certain issues for full-service stations and more closely approach the end of the full-service DTV transition, we cannot establish a fixed termination date for the low power digital television transition when LPTV, TV translator, and Class A stations will be required to cease analog transmissions. It would be irrational and arbitrary to choose such a deadline for these stations at this point, given the remaining uncertainties relating to the full-service DTV transition. We will continue to monitor developments in the DTV transition and the LPTV, TV translator, and Class A marketplace. In our third DTV periodic review proceeding, we will revisit this issue and consider establishing a deadline and/or other criteria for the digital conversion of LPTV, TV translator, and Class A stations.[34]

C. Permissible Service

20. In practice, TV translators primarily deliver the programming of TV broadcast stations to communities that cannot receive these signals directly because of distance or terrain. Although LPTV stations may rebroadcast TV signals, most air locally produced and/or other programming not otherwise available in their communities. We seek to preserve in the digital world the important and complementary services provided by TV translator and LPTV stations.

1. Digital TV Translator Stations

21. In the *Notice* we proposed that a digital TV translator station operate for the purpose of rebroadcasting the programs and signals of DTV stations. We tentatively concluded that a digital translator be technically capable of rebroadcasting the entire DTV input signal, producing an output signal that can be satisfactorily viewed on consumer receiving equipment designed for our DTV transmission standard. The *Notice* sought comment on how we should define a digital TV translator in our rules and on the following permissible service issues: (1) the technical mode(s) of digital operation; (2) the extent and nature of translator-inserted local messages; (3) the extent to which a digital translator may alter a DTV broadcast signal; and (4) the permissible sources of digital translator input signals.

22. *Definition and Digital TV Translator Rebroadcasts:* Although to a limited extent we will permit a digital translator to insert local messages and otherwise alter the DTV broadcast signal being retransmitted, we will define a digital TV translator station as follows:

> *Digital television broadcast translator station*. A station operated for the purpose of retransmitting the programs and signals of a digital television ("DTV") broadcast station, without significantly altering any characteristic of the original signal other than its frequency and amplitude, for the purpose of providing DTV reception to the general public.[35]

[33] Fox Comments at 8-9.

[34] Our second periodic review *Notice of Proposed Rulemaking* considers DTV market definitions in connection with the statutory criteria for extending the transition date. *See Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*, 18 FCC Rcd 1303 (2003) ("Second DTV Periodic NPRM"). Our future consideration of digital transition criteria for TV translator, LPTV, and Class A stations may include separate market definitions tailored to the service of these stations.

[35] *Cf.* 47 C.F.R. § 74.701(a) (analog counterpart definition).

Parties commenting on the definition generally support defining a digital TV translator station in this manner.[36] This definition best reflects the identity and fundamental purpose of a TV translator station. Although, as noted below, a few commenters propose that digital translator licensees be afforded a degree of flexibility to alter the signal of a DTV station, we will not, except for the limited provisions adopted herein, permit a station licensed as a digital TV translator to alter the input DTV broadcast signal. However, subject to the consent of a DTV broadcast station, we will permit a digital LPTV station to engage in operations that include both retransmission of the DTV broadcast station and the transmission of non broadcast-related programming or services.[37]

23. *Digital Transmission Mode*: The *Notice* sought comment on two basic modes of digital translator operation (*i.e.*, the technical means by which a TV translator receives an input signal on a TV channel, processes the signal information and transfers it to another TV channel for transmission): (1) heterodyne frequency conversion and (2) a "regenerative" mode. The heterodyne translator is a "pass through" device that typically performs two internal frequency conversions to shift the input signal information to the FCC-authorized output channel for final amplification, out-of-band emission filtering, and transmission.[38] The dual-conversion heterodyne translator is widely used in analog TV translator installations.[39] Heterodyne processors have been developed for digital translator operation.[40]

24. The regenerative mode incorporates technology developed specifically for digital TV translators. The regenerative digital translator employs a complete DTV receiver/processor that demodulates and decodes the input 8-VSB signal and performs "equalization" and "forward error correction" on the signal information to correct signal propagation impairments (*e.g.*, multipath distortion) and bit errors. "As long as the impairment and interference effects do not cause the DTV receiver to extend beyond the point of threshold of visible (TOV) errors, the output MPEG-transport stream is regenerated to the exact same data stream that was transmitted from the full-service station."[41] Thus, unlike a simple heterodyne translator which passes through signal errors in the received input signal – including, if input filtering is not present, unwanted interfering signal energy in the adjacent channels - the regenerative translator removes signal errors, distortion and interference and is capable of producing an output signal with a digital bit stream essentially the same as that transmitted by the DTV station.

25. The *Notice* suggested that both transmission modes could serve a useful purpose.[42] Due to its somewhat lower cost, heterodyne digital translators might be preferred, for example, in "single-hop"

[36] *E.g.*, Elko Comments at 3; Entravision Comments at 2; Fox Comments at 3; MSTV/NAB Comments at 22; NTA Comments at 3; Riverton Comments at 6.

[37] Stations may not "rebroadcast the program or any part thereof of another broadcasting station without the express authority of the originating station." 47 U.S.C. § 325(a).

[38] More specifically, a heterodyne translator mixes the incoming RF frequencies of the input signal with frequencies generated by a tuned local oscillator to generate an IF frequency (such as 44 MHz) that is passed through a band pass filter and "upconverted" by the same process to the final RF output channel for amplification. *See* Gary Sgrignoli Reply Comments at 3.

[39] AFCCE Comments at 1. AFCCE estimates that 90% of existing translators operate in the heterodyne mode. The remaining analog translators employ modulation/demodulation equipment, for example, to receive signals transported via FM microwave.

[40] Riverton Comments at 4.

[41] Gary Sgrignoli Reply Comments at 3.

[42] *Notice*, 18 FCC Rcd at 18372-3.

installations serving isolated communities, while the regenerative translator would be better suited for multi-hop translator networks. The *Notice* asked if there is a purpose for heterodyne digital translators, if we should prefer the use of regenerative translators, and whether we should permit translator operators to choose their transmission mode based on individual circumstances.[43]

26. The majority of commenters propose that we permit both modes of digital translator operation.[44] The Association of Federal Communications Consulting Engineers (AFCCE) asserts that heterodyne translators, equipped with suitable emission mask filters, would perform adequately in most single-hop systems, and it fears that requiring use of regenerative technology could create an unnecessary financial burden on translator operators.[45] Riverton Freemont TV Club (Riverton), a translator licensee, maintains that existing analog heterodyne translators could be suitably modified for digital operation with the addition of an 8-VSB signal processor or a "regenerator" and the required mask filter.[46] Other commenters urge that we adopt only the regenerative mode and/or limit the use of heterodyne processors.[47]

27. The record evidences the superior performance of the regenerative transmission mode with regard to in-band signal quality, adjacent channel performance, and digital signal coverage, especially in those areas severely affected by multipath signal impairments. The regenerative mode will therefore expand opportunities for co-sited adjacent channel operations. The independence of translator input and output signals removes concerns relating to adjacent channel interference signals and noise, and enables more reliable attenuation of out-of-band spurious emissions. Regenerative technology will also facilitate monitoring of such transmission parameters as digital average power and in-band signal-to-noise ratio. For these reasons, we express a strong preference for and encourage, wherever possible, the use of the regenerative transmission mode.

28. We will also, however, permit heterodyne digital signal retransmissions but, as recommended by NTA, limit the digital output power of UHF heterodyne translators to 30 watts and VHF heterodyne translators to 3 watts.[48] Under this approach, we believe most translator operators will be permitted the flexibility to choose their mode of transmission based on individual circumstances. A large majority of analog translator stations operate with UHF and VHF transmitter output power levels not exceeding 100 watts and 10 watts, respectively. Generally the equivalent digital average power of such stations would

[43] *Id.*

[44] *E.g.,* APTS/PBS Comments at 13; Elko Comments at 2; Entravision Comments at 4; KAET Comments at 9; MSTV/NAB Comments at 22; Vermont Educational Comments at 5; Wyoming Comments at 2.

[45] AFCCE Comments at 1.

[46] Riverton Comments at 4.

[47] NTA Comments at 5-6 (recommending that we adopt the regenerative mode for "normal practice" and generally require its use for all translators operating with a digital average transmitter output power of more than 30 watts); Zenith Reply Comments at 2 (arguing that transmitted signals using the regenerative mode are "far superior" to those transmitted by a heterodyne translator); Parsons Reply Comments at 2 (suggesting that heterodyne processors should be permitted in cases of economic hardship on a waiver basis and only in remote rural areas); Larcan Reply Comments at 1 ("There is a general agreement [in the public record] that regenerating the bit stream is worthwhile if economically feasible."); Sgrignoli Reply Comments at 4 (suggesting that we "limit the use of heterodyne units to cases where there are no adjacent channels at the translator input and encourage the 'preferred' use of digital regenerators wherever possible, especially during the frequency-congested transition era").

[48] Although NTA did not differentiate between UHF and VHF power limits, we believe NTA intended the 30-watt limit to apply to UHF stations. The VHF power limit of 3 watts is based on the approximate 10 dB difference between VHF and UHF station power levels to obtain comparable signal coverage.

not exceed the 30 watt or 3 watt limitations.[49] Thus, operators of most translator stations could consider modifying their existing analog equipment for digital operation. The 30-watt UHF and 3-watt VHF output power caps on digital heterodyne translators will help to alleviate concerns about the adjacent channel interference potential of these devices, particularly with regard to translator installations involving co-sited first channel adjacent operation.

29. NTA asks finally that we permit a third transmission mode in which a digital translator employs modulation equipment (*e.g.*, in connection with translator rebroadcasts of incoming signals delivered by microwave or translator insertions).[50] Our rules permit analog translator stations to employ modulation equipment and we will also permit its use for digital translator operations in connection with signal transport and local message insertion.[51]

30. *Local Message Insertions*: The *Notice* sought comment on the merits of permitting licensees to insert local messages into the digital translator output channel. It specifically asked for comment on the duration and nature of local messages and the technical feasibility and cost of translator insertions into the digital bit stream.[52]

31. Television translators have played a unique role in delivering over-the-air programming of TV broadcast stations to many communities otherwise unable to receive such service, and we want this service to continue in the digital age. For this reason, we are preserving the separate identity of digital TV translator stations and their traditional TV rebroadcast role. We also wish to preserve the opportunity for translator operators to insert, on a limited basis, messages of importance to their communities. Accordingly, we will extend to digital operations the provisions for analog translator local message origination. Specifically, we will permit a digital TV translator station to originate emergency warnings deemed necessary to protect and safeguard life and property. We will also permit a digital TV translator to originate local public service announcements or messages seeking or acknowledging financial support necessary for its continued operation, not to exceed 30 seconds per hour.[53]

32. Commenters generally support these provisions.[54] According to noncommercial educational TV station KAET, "[I]t is critically important for local communities to be made aware of local weather and other emergencies as well as school closings and other local bulletins."[55] Vermont Educational Television also emphasizes the crucial importance of emergency warnings, noting that one of its translators serves a

[49] A "digital average" power approximately 6 dB less than a "peak of sync NTSC" power will dissipate the same thermal power is a load resistor. A digital average power level approximately 12 dB less than an NTSC peak power will produce comparable signal coverage.

[50] NTA Comments at 6.

[51] *See* 47 C.F.R. § 74.731.

[52] *Notice*, 18 FCC Rcd at 18373.

[53] Cf. 47 C.F.R. § 74.731(f) (analog operations). Although equipment is available to insert messages into a digital bit stream, it may not be affordable for most translator licensees, and digital message insertion may not be practical at this time. *See, e.g.*, Greg Best Comments at 2; Larcan Comments at 1. Yet, we recognize the potential importance of locally generated messages, especially vital emergency warnings and, therefore, we will provide in our rules for limited digital translator message origination.

[54] *See*, *e.g.*, Elko Comments at 3; Entravision Comments at 2; Fox Comments at 3; KAET Comments at 6; MSTV/NAB Comments at 22; NTA Comments at 6; Vermont Educational Comments at 4.

[55] KAET Comments at 6.

community located near a nuclear power plant.[56] We also agree with Fox that digital translators should also be permitted, if necessary, to modify the PSIP information of a DTV signal only to allow proper tuning by consumer DTV receiver products and will permit such DTV input signal modifications (*See* Section H, *infra*).[57]

33. The record does not contain information related to technical standards for digital translator message origination, and we will not prescribe such standards in this proceeding. Rather, we will permit any means of translator message insertion that is mutually acceptable to a translator operator and the licensee of its primary DTV broadcast station (*e.g.*, originating signals that replace a DTV signal or those that are inserted into the bit stream of the DTV signal). Signals containing local messages must comply with our power and emission requirements, not cause destructive interference, and should be capable of being satisfactorily received by DTV products designed for the Commission's DTV transmission standard.

34. *Other DTV Broadcast Signal Alterations*: We requested comment on whether a digital TV translator should be permitted additional flexibility to alter the content or video format of a DTV broadcast signal, given the consent of the DTV broadcast licensee.[58] We asked if translator rebroadcasts could exclude portions of a DTV signal related to ancillary and supplementary services and whether translator licensees should be permitted to offer local ancillary and supplementary services, including services on a subscription basis. We inquired about the merits, technical feasibility and cost of digital translator multi-cast operations, whereby a translator licensee would arrange with broadcast licensees to rebroadcast the programs of two or more DTV stations on the same translator output channel.

35. Some parties request that translators be given the same flexibility as parent stations to provide ancillary and supplementary services. For example, APTS/PBS believes ancillary and supplementary services would provide compelling public interest benefits and gives examples of the types of services that public TV stations are planning, including the delivery of broadband services.[59] Vermont Educational Television states that a digital translator can serve the current role of rebroadcasting the programming of full-service stations while also having the technical capability to provide unique local services to the public in areas not reached by full-service stations' signals.[60] KAET seeks "regulatory flexibility" to use the "excess digital capacity" of its translator - that remaining after rebroadcast of its primary KAET signal - to offer tailored educational programs.[61]

36. Other commenters oppose permitting digital translators the flexibility to alter DTV signals. MSTV/NAB submits that digital TV translators should "seamlessly pass through all the bits of the parent station without degradation, subject to the limited local insertion exceptions set forth in the existing analog

[56] Vermont Educational Television Comments at 4.

[57] Fox Comments at 3. PSIP is the acronym for Program and System Information Protocol.

[58] *Notice*, 18 FCC Rcd at 18373.

[59] APTS/PBS Comments at 10-11. Examples include dissemination of financial stock exchange information, election returns, subscriber-based weather updates, college courses, and transmissions that could enhance public safety.

[60] Vermont Educational Television at 2.

[61] KAET Comments at 5. KAET maintains that digital translators should be permitted to make DTV signal alterations necessary to accommodate translator-provided originations, including down converting a high definition signal to a standard definition signal.

rules."[62]

37. Several commenters support digital translator multiplexing ("multi-casting") of the programming of two or more DTV broadcast stations on the translator output channel, subject to special arrangements with the DTV station licensees; no commenter provided information on the technical feasibility or cost of such translator operations.[63] Bonneville comments on how multi-casting could offer a spectrally efficient and cost effective option for digital translator service:

> "In areas of high translator congestion, operators could realize spectrum efficiencies by sharing spectrum to provide more than one DTV signal over a single channel. The costs associated with the transition to digital for these stations would consequently not burden a lone operator, but instead be borne by the multiple operators sharing the digital channel."[64]

MSTV/NAB supports use of digital translator multi-casting with the consent of the involved DTV broadcast licensees, but only for the duration of the DTV transition. According to MSTV/NAB, multi-casting could be beneficial in areas where it may be too expensive for broadcasters to build separate translators. It also suggests that during the transition there may be rural areas without enough translators to serve all parent stations (*e.g.*, due to translator displacement resulting from the repacking of the DTV core spectrum) and that multi-casting could help compensate for a temporary shortage of translators.[65] NTA believes multi-casting could serve a useful purpose provided the necessary equipment becomes affordable. It recommends that we permit a "mixture" of the signals of analog and digital primary stations to be multiplexed together in the translator output signal and that the embedded programs be encoded with at least a standard definition format.[66] In opposition, Fox submits that consideration of multi-casting at this time would be premature and that digital translators should be required to pass through the entire DTV signal, at least during the transition period. Fox is concerned that to permit other arrangements could result in viewers not realizing the full benefits of digital television, particularly high definition programming.[67]

38. Consistent with the fundamental purpose of the TV translator, we will generally not permit digital translators to alter the content or format of DTV broadcast signals, other than for limited local origination of the kinds of messages described above. We agree that the types of locally tailored ancillary and supplementary services suggested by APTS/PBS, KAET and Vermont Educational would benefit translator-served communities. We will permit such services under the definition of a digital low power television station. Thus, a digital LPTV station that rebroadcasts the signal of a DTV broadcast station, may, with the consent of a DTV station licensee, supercede or alter that station's signal to locally originate other services, including ancillary and supplementary services (and will be subject to the requirement that they pay a 5% fee on gross revenues of feeable service). This distinction preserves the identity of a television translator station, while also enabling the flexibility sought by APTS/PBS and other

[62] MSTV/NAB Comments at 22; *see also* Elko Comments at 3; Fox Comments at 3; Riverton Comments at 6; NTA Comments at 6.

[63] *See, e.g.,* Bonneville Comments at 5; Cavalier Comments at 16; Entravision Comments at 3; Greg Best Comments at 2; KAET Comments at 5; MSTV/NAB Reply Comments at 13; NTA Comments at 4 and 7.

[64] Bonneville Comments at 5.

[65] MSTV/NAB Reply Comments at 13.

[66] NTA Comments at 4 and 7.

[67] Fox Comments at 3.

commenters.[68]

39. Because of technical complexity and related equipment costs, we do not believe it likely that many digital translator operators will multiplex the program signals of multiple DTV broadcast stations. Yet, we will permit such operations, subject to arrangements with and the consent of all involved DTV station licensees. As requested by NTA, we will permit the multiplexing of a mixture of the program signals of analog TV and DTV stations, but we will not require a minimum video format for the programs embedded in the translator output signal. We believe that the parties to such arrangements will want to provide the best practicable digital service. We expect only that translator output signal be satisfactorily viewable on consumer receiver products designed for the Commission's DTV transmission (8-VSB) standard. We will monitor the use of digital translator signal multi-casting and may revisit in a future periodic review the issue of its post-transition use.

40. *Digital to Analog Signal Conversion*: In the *Notice* we sought comment on whether translators should be permitted to rebroadcast a DTV signal in the analog transmission format and how that issue relates to the definition of a digital TV translator station.[69] We also asked if we should permit translators to rebroadcast an analog input signal as a digital output signal.[70]

41. Most parties commenting on the digital-to-analog conversion issue support permitting translators to operate in this manner.[71] We agree that permitting translators to convert DTV signals for analog rebroadcasts would serve a useful purpose. As noted by Entravision, analog conversion would permit viewers to continue to receive the programs of TV broadcast stations that switch to digital-only operation.[72] We do not believe that allowing analog conversion of DTV signals would prolong the DTV transition. On the contrary, it could facilitate the transition by "allow[ing] rural translator operators that may encounter difficulty in making the transition to digital operations to continue providing free-over-the-air service to viewers in remote areas throughout the DTV transition and at its end -- once full-service stations being rebroadcast return analog channels and broadcast only digital signal."[73] This mode of operation would also permit translators to transmit the programs of DTV broadcasters until sufficient DTV set penetration levels exist to warrant translator licensees to convert their analog channels to digital operation. Digital to analog conversion may also enable translator-served communities to experience a significant signal quality improvement. According to Gary Sgrignoli, "[T]echnology is mature for the conversion of digital MPEG streams to analog NTSC outputs in affordable commercial equipment."[74] For these reasons, we will permit TV translators and LPTV stations to convert a DTV input signal to an output channel in the analog (NTSC) format and to do so without Commission authorization or notification.

42. In this regard, NTA asks us to adopt the following provision in our rules:

---

[68] *See* Joint Commenters Comments at 3.

[69] *Notice*, 18 FCC Rcd at 18370.

[70] *Id.* at 18374.

[71] *See, e.g.,* Bonneville Comments at 4; Joint Commenters Comments at 4; MSTV/NAB Comments at 23; NTA Comments at 3; Wyoming Comments at 2.

[72] Entravision Comments at 3.

[73] Bonneville Comments at 4.

[74] Gary Sgrignoli Comments at 3. *See* also Parsons Comments at 8. Significant improvements to signal parameters such as the translator in-band signal-to-noise ratio, would result from the signal and data processing capabilities of the front-end DTV receiver/processor in such translator installations, particularly improving signal reception in multi-hop translator systems.

> "If the programs of the analog station are continuously included in the signal of the companion digital primary station, then the input for the analog translator may be derived from this source."[75]

Although we agree with the operational flexibility sought by NTA, the suggested language would prevent a translator from converting to the analog format the signal of a station with DTV-only operation, which will be the case for all full-service broadcast stations upon completion of the DTV transition. We will, therefore, expand the NTA's proposed rule to permit the rebroadcast of a DTV input signal as an analog output until such time as translators are required to transmit only digital signals.

43. NTA asks that we permit digital TV translators to rebroadcast the signals of analog TV broadcast stations, thereby allowing "maximum flexibility" to bring digital TV service to rural areas.[76] Such a conversion would necessitate use of the regenerative translator technology and would therefore result in a significantly improved translator output signal during the DTV transition. Although we expect this mode of operation will occur infrequently, we will permit it.

44. *Digital LPTV and Translator Input Signal Sources*: In the *Notice* we proposed to allow digital TV translators to receive broadcast signals using any of the signal delivery means available to analog TV translator stations.[77] All parties commenting on this issue support this proposal, and we will adopt it.[78] We agree that permitting alternate signal delivery means will facilitate efficient spectrum use and could significantly benefit the digital conversion of TV translators in frequency congested areas.[79] We will therefore extend all provisions in the relevant rule for analog LPTV and TV translator signal inputs to include their digital operations.[80]

2. Digital Low Power Television Stations

45. The *Notice* sought comment on the definition of a digital low power TV station and the types of services we should require and permit for these stations.[81] We noted that LPTV stations are defined as stations that may retransmit the programs of full-service TV broadcast stations, originate programming in any amount greater than 30 seconds per hour and offer subscription television service.[82] We tentatively concluded that digital LPTV stations should be subject to the same minimum video program service requirement applicable to DTV broadcast and digital Class A TV stations.[83] Specifically, a digital LPTV

[75] NTA Comments at 3.

[76] *See* NTA Comments at 6; Entravision Comments at 3.

[77] *Notice*, 18 FCC Rcd 18374.

[78] APTS/PBS Comments at 13; Bonneville Comments at 6; Entravision Comments at 4; Greg Best Comments at 2; MSTV/NAB Comments at 23; NTA Comments at 7; San Bernardino County Comments at 9.

[79] *See* Sgrignoli Reply Comments at 4 (*e.g.*, noting that four 6 MHz 8-VSB signals can be embedded in a broadcast auxiliary microwave channel of 25 MHz bandwidth).

[80] *See* 47 C.F.R. § 74.731(b), which lists permissible alternative translator input sources including another translator, television translator relay, intercity relay, television STL, "or other suitable source such as a CARS or common carrier microwave relay…" and specifies methods of signal transmission. Note also that the microwave bands in the TV broadcast auxiliary service (Subpart F of Part 74) may be used for digital transmissions with any available signal modulation format.

[81] *Notice*, 18 FCC Rcd at 18374.

[82] *See* 47 C.F.R. §§ 74.701(f) and 74.731(g).

[83] *Notice*, 18 FCC Rcd at 18375.

station would be required to provide a free video programming service of at least NTSC (analog TV) quality, intended for reception by the general public. Upon meeting that requirement, we tentatively concluded that digital LPTV stations should be permitted the same flexibility to offer ancillary and supplementary services, including subscription services, allowed for DTV and digital Class A stations, including arrangements with outside parties to offer such services in the manner provided in our DTV rules.[84] We sought comment on what circumstances, if any, should exempt a digital LPTV station from the minimum video program service requirement and enable it to use the entire digital bit stream for providing ancillary and supplementary services (*e.g.*, station operations between 12:00 a.m. and 6:00 a.m.). Finally, we proposed to apply to digital LPTV stations the public interest-related obligations applicable to analog LPTV stations and asked if there is any basis for treating digital and analog LPTV stations differently in this regard.

46. *Definition*: Commenters did not explicitly address the definition of a digital LPTV station, but did so implicitly in terms of the required and permitted services of such stations.[85] Nonetheless, building on the definition in our rules for a low power television station,[86] we will define a digital low power TV station as follows:

> *Digital low power TV station*: A station authorized under the provisions of this subpart that may retransmit the programs and signals of a digital television (DTV) broadcast station, may originate programming in any amount greater than 30 seconds per hour for the purpose providing DTV reception to the general public and, subject to a minimum video program service requirement, may offer services of an ancillary or supplementary nature, including subscription-based services. (See § 74.790 of this part).

47. *Required Digital Service*: In the *Notice* we tentatively concluded that a digital low power TV station should be subject to the minimum video program service applicable to DTV broadcast and digital Class A TV stations.[87] Under this provision, the transmissions of digital LPTV stations would be required to include a free video programming service of at least analog (NTSC) TV technical quality, intended for over-the-air reception by the general public. This provision has three significant elements: (1) the video program service need not occupy the entire 19.38 Mbit/sec information-bearing capacity of a DTV signal, only enough to provide video resolution comparable to an NTSC TV video image – a relatively small portion of the overall bit capacity; (2) the service must be offered free of charge to viewers; and (3) the signal on which the video program service is carried must be intended for reception by the general public – meaning that the digital signal must be transmitted in a form that can be viewed with receiver products developed for our universal DTV transmission standard (*i.e.*, the ATSC standard incorporating the 8-VSB modulation format).

48. Several Class A and LPTV licensees urge us not to impose such a requirement, but rather to allow licensees maximum flexibility to provide new digital services to the public.[88] Moreover, Island

[84] *Id.*

[85] *See, e.g.,* CBA Comments at 17 (CBA believes that the statutory definition of broadcasting could be satisfied by requiring only that a signal be distributed without a fee to any member of the public who wishes to receive it).

[86] 47 C.F.R. § 74.701(f).

[87] *See* 47 C.F.R. §§ 73.624(b) [DTV requirement] and 73.6026 [Digital Class A TV requirement].

[88] *See, e.g.,* Cherryland Wireless Comments at 2 (requesting that digital LPTV stations be initially allowed to provide a high speed downstream datacasting service); Bruno Comments at 6 (arguing that LPTV stations should be (continued....)

states that many LPTV licensees now face serious economic difficulties and submits that a minimum program service requirement, together with an 8VSB modulation requirement could "seriously jeopardize their continued viability, and possibly result in their ultimate demise."[89] According to Commercial, "the degree of operational freedom" afforded to licensees, whose stations generally have limited signal coverage and lack cable and satellite carriage, will affect their willingness to invest in digital services.[90]

49. KM argues that enforcing a minimum video program service requirement on LPTV stations would be contrary to the decision of the United States Court of Appeals for the District of Columbia Circuit in *Motion Picture Association of America, Inc., et al v. FCC*.[91] In that case, the court held that Section 1 of the Communications Act "does not otherwise authorize the FCC to regulate program content."[92] Because the video description rules at issue in the case involved program content, the court vacated the Commission's video description requirements. In this case, however, our minimum video program service requirement is not related to content. LPTV broadcasters are free to air the content they choose on their stations. The minimum video program service requirement merely is an operational rule pertaining to how television broadcasters use their licensed digital spectrum.[93]

50. Other commenters support the minimum video programming service requirement for digital LPTV stations.[94] MSTV/NAB submits that "[E]nsuring that viewers receive service from digital Class A, LPTV and translator licensees that matches what they have come to expect from analog stations serves the public's interest in preserving free, over-the-air television service."[95] NTA notes that digital LPTV stations will be occupying spectrum designated for television broadcast to the public and that a video service requirement will minimize "the interest of spectrum speculators" seeking digital stations for the exclusive purpose of data transmission, which would restrict channel availability for broadcasting.[96]

51. We will adopt for digital low power TV stations the minimum video program service requirement applicable to digital Class A TV stations. Whenever operating, a digital LPTV station must use some portion of its digital capacity to provide a free video programming service intended for reception by the general public. This requirement could be met by retransmitting the video program services of TV broadcast or DTV broadcast stations or video programming obtained from other sources. Local video program originations would also satisfy the requirement.[97] The video programming service must be

(...continued from previous page)
allowed to use or lease their spectrum for cellular phone or video-on-demand services); CBA Comments at 16-17 (suggesting that allowing LPTV stations flexibility to experiment with new digital services and technologies would assist our evaluation of "alternate systems.").

[89] Island Comments at 2. Zenith states that after performing tests on 8-VSB and COFDM signals, the Commission concluded there was insufficient evidence to warrant altering its DTV transmission standard and that the VSB modulation format was "sufficiently flexible" to accommodate further improvements. Zenith Reply Comments at 2.

[90] Commercial Broadcasting Reply Comments at 10; *see* also CBA Comments at 17.

[91] KM Comments at 8-9.

[92] 309 F.3d 796, 804 (D.C. Cir. 2002).

[93] *See generally* 47 U.S.C. § 301.

[94] Cavalier Comments at 16; Cox and Liberty Reply Comments at 5; MSTV/NAB Comments at 21.

[95] MSTV/NAB Reply Comments at 11.

[96] NTA Comments at 9 and Reply Comments at 23.

[97] *See* 47 C.F.R. § 74.701(g)-(h).

viewable on consumer receiver products designed for the Commission's DTV transmission standard[98] with a video resolution at least comparable to that of analog (NTSC) TV signals.

52. The video programming requirement will further our DTV goal "to promote and preserve free, universally available, local broadcast television in a digital world."[99] The Commission created the LPTV service to supplement the services of TV broadcast stations and provide opportunities for unmet service needs. In many communities, viewers uniquely depend on Class A TV and LPTV stations as their source of local news, weather and public affairs programming. We agree with Zenith that "Class A and LPTV stations are integral components of our national system of television stations."[100] We believe these stations should and will play a significant role in the nation's digital television broadcast system. We also agree with NTA that the minimum service requirement is appropriate, considering that digital LPTV stations will occupy TV broadcast channels and compete for spectrum with other stations that would provide free television programming.

53. *Permitted Digital Service*: In the *Notice* we tentatively concluded that digital LPTV stations should be permitted to use their bit stream dynamically to transmit one or more digital programs in any DTV video format and to offer all of the ancillary and supplementary services, including subscription services, allowed for DTV and digital Class A TV stations.[101] We also stated that LPTV station operators should be allowed to enter into arrangements with outside parties regarding ancillary and supplementary services, in the manner permitted for DTV broadcast licensees.[102]

54. We will adopt all of these flexible-use provisions for digital LPTV stations. We agree with CBA and other commenters that LPTV stations should have the same freedom as full-service stations to offer ancillary services.[103] We disagree with Rural Stakeholders that such flexible use is contrary to the secondary status of the low power TV service and would not further the DTV transition.[104] In the DTV proceeding, the Commission reasoned that permitting broadcasters to offer ancillary and supplementary services would provide opportunities "to develop additional revenues from innovative services" that will "help broadcast television to remain a strong presence in the video programming markets that will, in turn, help support a free programming service."[105] The record in this proceeding suggests this rationale applies with equal or greater force to digital LPTV stations. We are mindful of the economic concerns expressed in the comments of several Class A and LPTV licensees. We believe the flexibility we are providing herein will enable licensees of digital LPTV stations to offer many supplemental services to the public,

[98] *See* 47 C.F.R. § 73.682(d) - *Digital broadcast television transmission standard*. This standard incorporates by reference the ATSC Digital Television Standard, which incorporates the 8-VSB signal modulation format.

[99] *See Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service* ("*DTV Fifth Report and Order")*, 12 FCC Rcd 12809 (1997) ¶ 5.

[100] Zenith Reply Comments at 5.

[101] *Notice*, 18 FCC Rcd at 18375.

[102] *See* 47 C.F.R. § 73.624(c) (examples of ancillary and supplementary services include computer software distribution, data transmissions, aural messages, paging services, audio signals and subscription video).

[103] CBA Reply Comments at 11; *see* also MSTV/NAB Reply Comments at 12; NTA Comments at 8.

[104] Rural Stakeholder Comments at 7. Rural Stakeholders, rural telephone companies that have acquired 700 MHz spectrum to provide broadband services, contend that digital LPTV stations would have a "cost advantage in providing competitive [subscription] services" because LPTV stations did not acquire spectrum though the competitive bidding process and that allowance for digital LPTV non-video subscription services would not foster the digital transition in rural areas.

[105] *DTV Fifth Report and Order* at ¶ 29.

including non-broadcast related services.

55. *Permissible Service Alternative:* The *Notice* sought comment on a permissible service alternative that would allow digital LPTV stations to provide only ancillary and supplementary services under special circumstances (*e.g.*, during hours such as 12:00 a.m. to 6:00 a.m.). We asked what circumstances, if any, would justify exclusion of the minimum free over-the-air video programming service requirement we are adopting for digital LPTV stations.[106] We also asked what interference criteria should be applied to services employing transmission methods other than those based on our DTV transmission standard.[107]

56. Few parties commented on this issue, and no commenter addresses interference criteria for alternate transmission systems. Entravision submits that we should impose a video program service requirement only during the hours from 6:00 a.m. to 11 p.m. in urban areas and 7 a.m. to 10 p.m. in rural areas.[108] Bruno maintains that this requirement should apply only when an LPTV station is "viable," which it defines as a station capable of being received by at least 85% of households in its market – in the sense DTV broadcast stations would be considered viable in this manner.[109]

57. We will not in this proceeding adopt a permissible service alternative for digital LPTV stations. First, we are providing LPTV station licensees ample flexibility to offer a variety of digital services of a nonbroadcast nature. Second, it is unlikely that licensees would invest in additional and separate technology to offer nonbroadcast services on an exclusive basis, if such service was confined to limited periods of time (e.g., 12:00 a.m. to 6:00 a.m.). Finally, we lack technical criteria for analyzing the interference potential of digital LPTV stations that would employ two-way communications systems and/or modulation types other than 8-VSB. We agree with NTA that, without adequate safeguards, digital LPTV stations should not be permitted to operate in a manner that could be likely to interfere with the reception of DTV service.[110]

58. *Additional Service Obligations*: The *Notice* proposed to apply to digital LPTV stations the additional service obligations applicable to analog LPTV stations and asked if there is any reason to treat analog and digital stations differently.[111] We received very little comment in this regard, and no commenter addressed specific requirements.[112] We reiterate that the purpose of this proceeding is to provide the regulatory foundation to permit stations in the LPTV service to transition to digital service, rather than to fundamentally alter the nature of the service. Accordingly, we adopt our proposal in the *Notice* to require digital LPTV stations to comply with the additional service obligations applicable to

[106] *Notice*, 18 FCC Rcd at 18377.

[107] *Notice*, 18 FCC Rcd at 18394-6.

[108] Entravision Comments at 4; *see* also NTA Comments at 9 (not opposing digital LPTV station transmitting ancillary and supplementary services exclusively in the "off-hours").

[109] Bruno Comments at 7.

[110] *See* NTA Reply Comments at 23-25 (raising interference concerns regarding two-way digital communications systems using UHF TV broadcast channels).

[111] *Notice*, 18 FCC Rcd at 18376, *citing* 47 C.F.R § 74.780 - "Broadcast regulations applicable to translators, low power and booster stations (*e.g.*, sponsorship identification and broadcasts by candidates for political office).

[112] MSTV/NAB Comments at 21.

analog LPTV stations.[113]

D. Channel Assignments

59. Spectrum availability presents a challenge for the transition of LPTV, TV translator, and Class A stations to digital operation. As we stated in the *Notice*, "the pace at which these stations begin to operate digitally may depend on the ability of station licensees to secure additional channels, which, in turn, will depend on the TV channels we make available for digital low power operations."[114] We therefore proposed to make available for digital low power stations VHF channels 2-13, inclusive, and UHF channels 14-59, inclusive (except 37, which is reserved for radio astronomy). We proposed the use of these channels for both on-channel analog-to-digital station conversions and for new digital LPTV and TV translator stations. We stated that these stations would be required to operate on a non-interfering basis to primary users of these channels and also protect earlier-authorized secondary users.

60. We sought specific comment on our proposal to allow digital low power operations on TV channels 52-59.[115] We noted that in the *Channel 52-59 Reallocation Order*, the Commission permitted LPTV and TV translator stations to operate indefinitely on these channels on a non-interfering basis and to negotiate interference agreements with new primary service providers.[116] We stated that use of channels 52-59 would facilitate the digital conversions of existing low power service. Alternatively, we sought comment on whether to permit use of channels 52-59 only when applicants could demonstrate that no lower channels are available for their digital operations. We also sought comment on whether this policy should apply to applications for new digital low power service or also include applications seeking to convert existing analog operations to digital.

61. With regard to channels 60-69, we sought comment on whether these channels should be made available for new digital LPTV and TV translator stations and/or digital conversions of existing analog stations.[117] In the *Channel 60-69 Reallocation Order*, the Commission decided that, in view of their secondary status, it would continue to authorize LPTV and TV translator service on these channels until the end of the DTV transition.[118] We noted, however, that, by statute, all TV broadcasters, including LPTV and TV translators, must vacate the use of this spectrum after the DTV transition ends.[119] The Commission concluded that the statute left it no discretion in clearing LPTV and TV translator stations from the band at the end of the transition period.[120] In the *Notice* we sought comment on whether we should authorize digital LPTV and TV translator stations on channels 60-69 and, if so, whether we should permit such authorizations only when applicants can demonstrate the lack of other available channels.[121]

[113] In a future proceeding, we will consider how to adapt existing public interest obligations for LPTV stations if they choose to multicast on their digital channels.

[114] *Notice*, 18 FCC Rcd at 18377.

[115] *Notice*, 18 FCC Rcd at 18378.

[116] *See Channel 52-59 Reallocation Order*, *supra*.

[117] *Notice*, 18 FCC Rcd at 18378.

[118] *See Reallocation of Television Channels 60-69, the 746-806 MHz Band*, 12 FCC Rcd 22953 (1997) (*Channel 60-69 Reallocation Order*).

[119] *See* 47 U.S.C. 336(e) ("any person who holds a television broadcast license to operate between 746 and 806 MHz may not operate at that frequency after the date on which the digital television service transition period terminates, as determined by the Commission").

[120] *Channel 60-69 Reallocation Order* at ¶ 29.

[121] *Notice*, 18 FCC Rcd at 18378.

In addition, we sought comment on whether to authorize digital low power service only on the channels that are not allocated for public safety operations.

62. Several parties support our channel assignment proposals.[122] APTS/PBS states that use of channels 52-69 is "essentially important to public television stations."[123] They estimate that more than one-third (35 percent) of public television translators operate on channels 52 and above and approximately 25 percent operate on channels 60-69. The CBA states that as many channels as possible should be made available for low power digital operation, including channels 52-59 and 60-69.[124] The CBA argues that, while it is true that "those channels will not be available indefinitely, their ultimate fate is well known, and those Class A/LPTV licensees who need to use those channels should be permitted to do so, on a temporary and secondary basis with knowledge of the risk."[125] APTS/PBS, Entravision and NTA maintain that there should be no requirement to demonstrate necessity in connection with an application to use an out-of-core channel.[126] NTA argues that "[A] prospective translator licensee would not choose an out-of-core channel without good reason."[127]

63. Numerous 700 MHz licensees, a few full-service broadcasters, public safety groups and some equipment suppliers, however, oppose authorization of new digital LPTV and TV translator stations in either the channel 52-59 or 60-69 bands.[128] The Rural 700 MHz Band Licensees take issue with our statement in the *Notice* that use of channels 52-69 by digital low power operations "could also provide additional opportunities for new digital stations, particularly in rural areas where new wireless and other primary services may not operate in the near future."[129] The Rural 700 MHz Band Licensees represent that many of the winning bidders from Auction Numbers 44 and 49 in rural areas "are in a position to proceed with their plans for Lower 700 MHz Band networks and to begin providing service to rural customers as soon as their business plan is completed and suitable equipment is identified and acquired."[130] Although they acknowledge that it will be perhaps years before equipment is available for the Lower 700 MHz Band Service at affordable prices, they argue that the band must be cleared of broadcasters as soon as possible "so that the larger auction winners can deploy services in major markets, thereby creating the economies of scale that will bring equipment prices down for rural providers."[131]

---

[122] *E.g.,* CBA Comments at 9; NTA Comments at 9; APTS/PBS Comments at 9; Bonneville Comments at 7; Entravision Comments at 5-6; KAET Comments at 9; Venture Comments at 4-5; Vermont Educational Comments at 6; KM Comments at 9-10. The Joint Commenters request that we change our rules and permit applicants for digital low power TV authorizations on "channels 14-59 to displace" Private Land Mobile Radio operators. *See* Joint Commenters Comments at 9. We will not consider the Joint Commenters proposal because this issue was not addressed in the *Notice* and is therefore beyond the scope of this proceeding.

[123] APTS/PBS Comments at 10.

[124] CBA Comments at 9.

[125] *Id.* (footnotes omitted).

[126] APTS/PBS Comments at 10; NTA Comments at 10.

[127] NTA Comments at 10.

[128] *See* Paxson Comments at 6-9; Artic Comments at 2-6; Aloha Comments at 5-6; APCO Comments at 2; and the Comments of Access Spectrum, Corr, Datacom, Harbor, LIN/Banks, Martin, Motorola, Pioneer, Qualcomm, United, Rural 700 MHz, and Vulcan, *seriatim*.

[129] *Notice*, 18 FCC Rcd at 18378.

[130] Rural 700 MHz Band Licensees Comments at 6.

[131] *Id.*

64. Many of the 700 MHz licensees note that they have spent millions of dollars "for the rights to offer services where full-power broadcast facilities do not exist."[132] For example, when Access Spectrum bid for spectrum, it did so to acquire service areas that were "devoid of incumbent full-service broadcast facilities on the co-channel and adjacent channel frequencies to the maximum extent possible."[133] Access Spectrum states that it is likely that low power broadcasters will seek that same "white space" for their new digital operations. Aloha and Corr argue that they had no notice that digital low power service would be permitted in the 700 MHz band when they bid for spectrum and that allowing new low power broadcasters in the 700 MHz bands "breaks a faith with the companies who bid in good faith for the licenses for this spectrum."[134]

65. APCO is concerned about the potential impact of new digital LPTV and TV translator stations to public safety facilities operating in the channel 60-69 band.[135] APCO notes that TV channels 63, 64, 68 and 69 were reallocated for public safety use and that these channels will "play a critical role in alleviating dangerous congestion on existing radio systems, promoting greater inoperability among 'first responders' to emergencies of all sizes, and facilitating the deployment of new public safety communications tools."[136] APCO specifically opposes low power digital operations on these channels and first adjacent channels thereto.[137] APCO argues that allowing LPTV and translator stations to initiate operations on channels 60-69, even if on a secondary basis, would "set the stage for bitter community/political battles between LPTV and translator licensees, and public safety agencies seeking access to critical spectrum."[138] They support our proposal to license new digital low power television stations on channels 2-59.

66. Cavalier argues that, even if new digital low power stations are licensed on channels 52-69 on a secondary basis, new wireless licensees will "still have to deal with the new secondary stations" and that "takes time, money and effort which would be better spent providing new wireless services to the public."[139] This imposes an unfair additional cost on 700 MHz licensees, DataCom and Harbor Wireless argue.[140] Cavalier, Corr, and Qualcomm are concerned that interference disagreements may be difficult to resolve.[141] If the low power station does not have to shut down until the disagreement is resolved, Cavalier maintains that the low power station is not really secondary.[142]

67. Paxson argues that, if clearing these channels for new wireless and public safety services is a viable possibility, "it makes little sense to create an entire new class of temporary users of that spectrum – another set of stakeholders in whose interests it will be to stall band-clearing and the end of the DTV

[132] Access Spectrum Comments at 3; *see also* Aloha Comments at 3; Motorola Comments at 3; Rural Stakeholders Comments at 4.

[133] Access Spectrum Comments at 3.

[134] Corr Comments at 4; Aloha Comments at 4.

[135] *See* APCO Comments at 1-4.

[136] *Id* at 2.

[137] *Id.*

[138] *Id.*

[139] Cavalier Comments at 7.

[140] DataComm Comments at 2; Harbor Comments at 3.

[141] Cavalier Comments at 7; Corr Comments at 3; Qualcomm Comments at 12.

[142] Cavalier Comments at 8.

transition."[143] The 700 MHz Advancement Coalition and the Rural 700 MHz Band Licensees state that our priorities must be the full-service DTV transition and clearing the 700 MHz band.[144]

68. We conclude that spectrum availability will largely determine the extent to which LPTV, TV translator and Class A stations can successfully transition to digital operation. Accordingly, we will adopt our proposal to make available for digital LPTV and TV translator operations VHF channels 2-13, inclusive, and UHF channels 14-59, inclusive (except channel 37). We agree that use of these channels is needed to facilitate the digital transition of the low power television service. We find it necessary to also make channels 60-69 available for digital low power operations, but on a more limited basis than the use of channels 52-59.

69. Before the creation of the LPTV service in 1982, TV translator stations were confined to the use of channels 55-69. Many hundreds of translator stations continue to operate on these channels. Our licensing experience indicates that over much the country in-core replacement channels for digital operations may not be available for many of these stations, at least until full-service broadcasters surrender channels upon completion of the DTV transition. We agree with the CBA and NTA that this spectrum is needed to ensure continued free television service to rural areas and to avoid leaving an undue number of low power stations with no realistic opportunity to develop digital service.[145] It would be unfair and unreasonable to deny temporary use of channels 52-69 for digital low power service at locations where no other channels are available for this purpose and where stations could operate without conflicting with new primary users of this spectrum. As discussed below, we disagree that permitting any use of this spectrum for digital low power TV operation will jeopardize public safety operations or impede the development of new wireless services.

70. We conclude that making channels 52-69 available for LPTV and TV translator station operations in the manner described below will balance the concerns of the low power television and 700 MHz wireless and public safety communities. As a preliminary matter, we will no longer permit the filing of applications for new analog stations in the LPTV service proposing these channels. Our goals in this proceeding are to facilitate the transition of LPTV, TV translator, and Class A stations to digital service and to do so in a way that minimizes disruption of new and existing services in the 700 MHz bands. Accordingly, we believe further use of channels 52-69 in the secondary low power service should be limited to incumbent LPTV, TV translator and Class A licensees and permittees for digital LPTV and TV translator operations and to analog LPTV and TV translator stations as replacement channels when confronted by channel displacement.

71. *Channels 52-59.* We adopt our proposal in the *Notice* to make channels 52-59 available for on-channel conversion from analog-to-digital operation. Pursuant to the application filing process adopted *infra*, we will also permit TV translator, LPTV, and Class A station incumbents[146] to seek use of channels 52-59 as digital "companion" channels (*i.e.*, to their existing analog TV service), but only where applicants can certify in their applications the unavailability of any suitable in-core channel for this purpose. We define a "suitable in-core channel" as one that would enable the station to produce a digital service area comparable to its analog service area. In addition, we will require that stations proposing use of channels 52-59 for digital operation notify all potentially affected 700 MHz commercial wireless licensees of the

[143] Paxson Comments at 9.

[144] 700 MHz Advancement Coalition Reply Comments at 5; Rural 700 MHz Band Licensees at 1.

[145] *See* CBA Reply Comments at 12; NTA Reply Comments at 15.

[146] In this regard, Class A incumbents will be filing as applicants for digital LPTV stations, rather than digital Class A stations, which are limited to the use of in-core channels.

spectrum comprising the proposed TV channel and the spectrum in the first adjacent channels thereto. Specifically, we will require notification to wireless licensees within whose licensed geographic boundaries a digital LPTV or TV translator station proposes to locate. We will also require notification to co-channel and first adjacent channel licensees whose geographic service area boundaries lie within 75 miles and 50 miles, respectively, of the proposed digital LPTV or TV translator station location. A station seeking an on-channel digital conversion must provide such written notification at least 30 days in advance of filing its minor change application. An applicant for a digital companion channel must provide the required notifications within 30 days of submitting its "long-form" application. In both cases, applicants must certify in their applications that the notification requirements have been met. These provisions will provide wireless licensees with advance notice of proposed digital low power facilities and an opportunity to coordinate with LPTV and TV translator licensees and permittees. The identity and contact information for all wireless entities in the 700 MHz band is readily available through our Universal Licensing System on the Commission web site (www.fcc.gov).[147] Digital LPTV and TV translator stations may continue to operate on channels 52-59 on a secondary basis as long as they do not technically conflict with the operations of a primary service licensee. LPTV and TV translator station authorizations will be explicitly conditioned to that effect.

72. Additionally, we adopt the following provisions in an effort to prevent secondary digital LPTV and TV translator stations from technically conflicting with future operations of primary 700 MHz wireless licensees, within their licensed service areas. Any existing or future primary wireless licensee in the 700 MHz band may provide notice of its intention to initiate or change operations in its licensed band that may impact secondary users. This notice should take the form of a letter, by certified mail, return receipt requested, to any digital LPTV or TV translator station operating on the spectrum comprising the TV channel and the spectrum in the first adjacent channel thereto. Such notice should indicate the approximate date of commencement of, or change to, the wireless service, and should be sent no less than 120 days in advance of that date. It should also describe the facilities and associated service area and operations of the wireless licensee with sufficient detail to permit an evaluation by the secondary LPTV or TV translator operator of the likelihood of interference from the operation of the LPTV or TV translator station to the primary 700 MHz wireless service.[148]

73. Upon receipt of such notice, the LPTV or TV translator licensee must cease operation of any interference-causing operation within 120 days, unless it obtains the agreement of the primary licensee to continue operations.[149] If the LPTV or TV translator licensee believes that its operation will not cause

[147] At present, auctions have been held and commercial licenses have been issued for the spectrum comprising TV channels 54 and 59 (spectrum Block C) and channel 55 (Block D). Geographic service areas for the Block C are the 306 Metropolitan Statistic Areas ("MSAs") and 428 Rural Service Areas ("RSAs"). These areas, generally consisting of one or more counties, can be ascertained from www.fcc.gov/auctions or FCC Report No. CL-92-40 entitled "Common Carrier Public Mobile Services Information, Cellular MSA/RSA Markets and Counties. 7 FCC Rcd 742 (1992). Geographic areas for the Block D consist of six Economic Area Groups ("EAGs"), consisting of Economic Areas, which, in turn, consist of an aggregate of counties. A map of these areas and a listing of counties and EAGs is available at the above web site. Contact information on wireless licensees can also be obtained from this site for a particular auction (Auctions 44 and 49) or using the "Market-Based" license search tools under www.fcc.gov/wtb.

[148] The notice should provide such information as the frequencies, bandwidth, modulation, and radiated power of fixed and mobile/portable emitters, the geographic coordinates and antenna heights of fixed stations, and the mobile/portable operating area.

[149] A digital LPTV or TV translator licensee may file a "displacement relief" application for an available replacement channel and related facilities and a request for special temporary authority to begin operating on that channel.

interference to the primary licensee, or if it wishes to negotiate an alternative arrangement, it may enter into discussions with the 700 MHz wireless licensee, in which both parties shall cooperate in an effort to resolve the potential conflict and permit continued operation of the secondary LPTV or TV translator station. The broadcast licensee must inform the 700 MHz wireless licensee of any means by which it seeks to resolve the potential for interference to the primary licensee. The secondary digital LPTV or TV translator licensee may not continue operations if such operations would interfere with the primary 700 MHz licensee's operations after the commencement or change to the wireless service.

74. We seek a balance for the resolution of the potential for interference conflicts that will neither unduly delay the rendering of 700 MHz wireless service, nor result in the premature disruption or cessation of digital LPTV or TV translator service. Based on our licensing experience, we expect that primary wireless and secondary broadcast licensees will use the notification process described above to resolve most potential interference conflicts before the commencement of 700 MHz wireless operations and without the need for Commission intervention. We believe that, in most cases interference conflicts can be resolved within this period. [150] The secondary LPTV or translator licensee may ask the Commission to stay the effect of the interference notification and allow it to continue secondary operations until the matter is resolved. The Commission will address such requests on a case-by-case basis, but in the absence of a stay, we will require the digital LPTV or TV translator station to cease operating on its 700 MHz channel in the event the conflict has not been satisfactorily resolved within 120 days of receipt of the notice.[151]

75. Notwithstanding the notification process described above, we note that a primary wireless licensee maintains the right to require that a secondary broadcast licensee immediately cease operations that cause actual interference to its operations, regardless of whether it has gone through the notification process. The notification process is intended to deal with potential interference by affording a primary licensee a process for initiating the clearance process before it actually commences service, while giving the secondary licensee time to move or seek a negotiated alternative.

76. *Channels 60-69*. We will limit LPTV and TV translator application proposals for channels 60-69 to on-channel digital conversions of authorized analog stations and to those related to analog or digital channel displacement. In the *Notice* we noted that all broadcasters, including LPTV and TV translator stations, are statutorily required to vacate the use of this spectrum after the full-service DTV transition ends. Digital low power operation on channels 60-69 must therefore cease at the end of the full-service DTV transition. Considering the potentially limited time stations could operate on these channels, we will not permit incumbent station permittees and licensees to seek their use as digital LPTV or TV translator companion channels. Further, four of the ten channels in this band are allocated for use by public safety services. We will require applicants for digital conversion on channels 60-69 to notify potentially affected commercial wireless licensees (including 700 MHz Guard Band managers) on the same basis as the notifications to licensees on channels 52-59.[152] To ensure that secondary operations do not conflict with primary wireless operations, we adopt the same procedures as in channels 52-59 for current and future

[150] The 120-day period should help to overcome the constraints imposed by seasonal conditions on access to remotely located LPTV or TV translator sites (*e.g.*, site inaccessibility due to snow).

[151] In the event that the commencement of wireless service is delayed beyond the 120-day period, the period will automatically be extended until the actual commencement of wireless service.

[152] At present, auctions have been held and band manager licenses have been issued for the two paired blocks of "guard band" spectrum: 746 -747 MHz paired with 776-777 MHz (Block A, including portions TV channels 60 and 65) and 762-764 MHz paired with 792-794 MHz (Block B, including portions of TV channels 62 and 67). The licensed geographic market areas for these blocks are the 52 Major Economic Areas ("MEAs"). Detailed information is available at the web sites given in the preceding footnote (*see* Auction 33). *See also* www.fcc.gov/oet/info/maps/areas for a map and county list for the MEAs.

upper 700 MHz commercial licensees to provide notice of potential technical conflicts to digital LPTV or TV translator stations, and require the secondary broadcast licensee to cease operations within 120 days of such notice, unless the parties can resolve the conflict (e.g., by entering into an agreement permitting the continued operation of the secondary licensee) or until the Commission has stayed the conflict resolution process, if requested to do so.

77. Because of the critical nature of public safety operations, we will provide an additional "prior coordination" requirement for secondary digital low power broadcast use of channels 63, 64, 68 and 69 – the TV channels comprising the upper 700 MHz spectrum allotted for public safety operations.[153] Before filing their minor change applications at the Commission, applicants seeking use of one of these channels for on-channel digital conversion must successfully coordinate their proposed facilities with representatives of the potentially affected public safety entities. The purposes of this coordination are to prevent interference to current public safety operations and to establish a mechanism for eventual cessation of broadcast operations to avoid interference to future public safety operations. Because spectrum segments in each of these TV channels are administered separately by regional planning committees[154] and states,[155] we will require separate coordination with both entities. Coordination agreements may detail the conditions of the low power digital operations on the public safety channels, including provisions for cessation of broadcast operation to avoid interference, but may not provide for acceptance of interference by an entity operating on public safety channels. Coordination must be undertaken with the regional planning committee[156] and state 700 MHz spectrum administrator for the region and state within which a digital low power station proposes to locate and for other regions and states having boundaries located within 75 miles of the proposed digital low power station location.[157] Within 30 days of filing their applications, we will also require applicants proposing digital conversion on a channel adjacent to channels 63, 64, 68 or 69 to notify their proposed facilities to the pertinent regional planning committees and state administrators (*i.e.*, for the geographic region and state encompassing the proposed broadcast antenna site and other regions and states having boundaries located within 50 miles of the proposed site). Applicants must certify in their applications that these requirements have been met. Thus, for channels 63, 64, 68 and

[153] The spectrum in each of these TV channels is subdivided into narrow band (6.25 kHz) and wideband (50 kHz) channels. The 6 MHz spectrum in a TV channel contains interspersed groups of public safety channels assigned for the following purposes: general use, interoperability, state channels, low power operations, secondary trunking and reserve spectrum. The 12.5 MHz designated as "general use" spectrum is administered by 55 Regional Planning Committees (RPCs), comprised of representatives of various public safety entities. Although most of these regions consist of single states, some are comprised of multiple states or portions of states. For example, the state of California contains two regions. The spectrum assigned for "state channels" and "interoperability" is administered by designated state government entities known as State Interoperability Executive Committees (SIECs).

[154] There may be regions in which there is no 700 MHz RPC, either because no RPC was formed or because the RPC disbanded upon completion of its planning tasks regarding the 700 MHz public safety spectrum. In areas without a 700 MHz RPC, LPTV and TV translator applicants should undertake the required prior coordination directly with the potentially affected licensees, or with a frequency advisory committee certified by the Commission to coordinate 700 MHz public safety channels.

[155] Some states have chosen not to form SIECs. In those states, the function of SIECs is performed by the 700 MHz RPC, so the required coordination should be undertaken with the relevant 700 MHz RPC.

[156] We here clarify the RPC are not required or expected to amend their regional plans to reflect secondary LPTV or TV translator operations on Channels 63, 64, 68 and 69.

[157] The location of public safety planning regions and contact information for the regional planning committees and states is available at the Commissions Internet site. *See* http://wireless.fcc.gov/publicsafety/700MHz/regional.html, http://wireless.fcc.gov/publicsafety/700MHz/state.html and http://wireless.fcc.gov/publicsafety/700MHz/interop-contacts.html

69, obtaining affirmative coordination from the proper entity or entities is a prerequisite; it will not be sufficient to show that no party objected to the proposal. If prior coordination has not been successfully completed, the minor change application will be dismissed.[158] Digital low power broadcast operations must not cause interference to public safety operations, and these operations must cease if such interference occurs, or in any event at the end of the full-service DTV transition.[159] All authorizations will be so explicitly conditioned.

78. We believe the above limitations on digital low power broadcast use of channels 52-69 should alleviate concerns about interference and other impediments to wireless and public safety operations. We will continue to strictly enforce the secondary regulatory provisions of the LPTV service. In this regard, the Joint Commenters recall that the Commission has "consistently and aggressively reacted to any complaint that an LPTV station might be interfering with a primary service licensee."[160] The Joint Commenters add that: "[T]here is no hesitation on that staff's part to instruct the allegedly offending LPTV licensee to immediately cease transmissions. This manner of handling primary/secondary conflicts is so consistent that when a primary service co-channel licensee signs on the air most LPTV licensees automatically sign off the air without even being asked to or being confronted with an allegation of interference."[161] We do not believe LPTV and TV translator operators will be lulled, as some 700 MHz commenters suggest, into a false sense of security, given the history of LPTV channel displacement by full-service television stations.[162] We have no reason not to believe that LPTV and TV translator station licensees will continue to honor their non-interference obligations and maintain the excellent interference track record of the LPTV service.

79. We also do not find the potential for channel displacement to be an impediment to limited use of channels 52-69. We agree with the CBA that "the scenario of secondary use and the disruption that comes from displacement is a necessary part of efficient and timely use of the spectrum and is absolutely necessary here to avoid leaving an undue number of Class A/LPTV stations with no realistic opportunity to develop service."[163] Our licensing experience indicates that channel displacement is not a necessarily complicated or time-consuming process that would be expected to unduly delay the implementation of new wireless uses in the 700 MHz band.[164] As NTA points out, modern LPTV and TV translator transmitters are frequency agile . . . "[T]hus a channel change need not require a major replacement of equipment and can be a relatively minor cost."[165]

80. We acknowledge the concerns of public safety and broadband wireless interests about the

[158] We have no reason to believe the RPCs and SIECs will unreasonably refuse to coordinate with LPTV and TV translator applicants. In that connection, we understand that developing, budgeting for, and implementing public safety communications systems is often a multi-year process. We therefore do not expect RPCs and SIECs always to be in a position to identify with precision the facilities for which protection is necessary.

[159] As noted *infra*, LPTV or TV translators that receive a report of interference to 700 MHz licensees, must cease operation immediately upon notification by any primary wireless licensees and once it has been established that the LPTV or translator station is causing the interference.

[160] Joint Commenters Reply Comments at n.1.

[161] *Id.*

[162] *See* Motorola Reply Comments at 5; Joint Commenters Reply Comments at ¶ 31.

[163] CBA Reply Comments at 8.

[164] *See* Motorola Reply Comments at 5.

[165] NTA Reply Comments at 15.

potential issues associated with permitting digital LPTV and TV translators to use the 700 MHz bands; however, we do not agree that allowing low power broadcasters to use the 700 MHz band on a secondary, non-interference basis for digital facilities would amount to an unconstitutional taking of rights from those wireless licensees that obtained their spectrum at auction.[166] In the channel 60-69 reallocation proceeding, we determined to continue licensing analog low power facilities on a short-term, secondary basis. In the 52-59 reallocation proceeding we retained the discretion to cease accepting applications for additional LPTV and TV translator stations, but did not preclude altogether the filing of such applications. As APTS/PBS points out, the Commission had stated when it reallocated the Lower 700 MHz band (Channels 52-59) in 2001 that it intended to allow for some LPTV use of that band on a secondary basis.[167]

81. Finally, we find that limited use of digital low power broadcasting on channels 52-69 will not have a negative effect on the full-service DTV transition, but rather will help to promote the overall transition for rural and underserved areas.

E. Interference Protection

1. Protected Digital Translator and LPTV Service Contour

82. In the *Notice* we proposed the following protected signal contour values for digital LPTV and TV translator stations, as calculated from the F(50,90) propagation method in Section 73.625(b)(1) of our rules: 43 dBu for stations on channels 2 – 6, 48 dBu for stations on channels 7 – 13, and 51 dBu for stations on channels 14 – 69.[168] These are the values we had previously adopted for the digital Class A TV service.[169] We chose digital Class A TV station protected contour values that reflected the differences between analog LPTV and full-service TV station protected contours, reasoning that these values would yield digital Class A service areas comparable in size to analog Class A TV stations' service areas, which would also permit the operation of co-channel stations at closer distances, increasing opportunities for new digital Class A, LPTV, and TV translator stations. We indicated that the rationale for selecting the digital Class A protected contour values also should apply to digital LPTV and TV translator stations because Class A TV stations started as LPTV stations and operate under the same effective radiated power limits and many of the same interference protection criteria as LPTV

[166] Corr argues that allowing low power broadcasters to use the 700 MHz band for digital operations is a deprivation of the 700 MHz licensees' exclusive rights in that property and would be subject to the taking provisions of the Fifth Amendment to the United States Constitution and would require either a rebate of some or all of the auction price or a payment for the lost value. Corr Comments at 6. The Commission has on numerous occasions stated that while its "exclusive use" licensing model resembles property rights in spectrum, this model does not imply or require creation of "full" private property rights in spectrum. *See*, *e.g.*, Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands, 18 FCC Rcd 23318, 23346, n. 184 (2003). Courts have held that licensees have no property rights in a radio license. *See*, *e.g.*, Ashbacker Radio Corp. v. FCC, 326 U.S. 327, 331 (1945) (stating that "[n]o licensee obtains any vested interest in any frequency"). Furthermore we do not view the licensing of a limited number of new digital low power television stations in the 700 MHz band as a deprivation of the rights of the 700 MHz licensees. The 700 MHz licensees will not be deprived of their right to use their spectrum because digital low power television licensing in the 700 MHz band will be done on a secondary basis. Under the rules we adopt herein, new digital low power television stations will not be permitted to interfere with 700 MHz wireless operations. Therefore, 700 MHz licensees will retain the flexibility to deploy their facilities and use their auctioned spectrum as they see fit.

[167] APTS/PBS Reply Comments at 13.

[168] 47 C.F.R. § 73.625(b)(1). This rule specifies the procedure for determining F(50,90) field strength values from the Commission's F(50,50) and F(50,10) propagation curves.

[169] *See Class A Report and Order* ¶ 38; *see* also 47 C.F.R. § 73.6010.

stations. We also sought comment on our belief that these values continue to be appropriate for digital Class A TV stations.

83. Among others, NTA, AFCCE, and Parsons agree that the protected contours for each frequency band as proposed in the *Notice* are appropriate.[170] No commenter opposed these values, suggests any other values, or suggests changing the current values for digital Class A TV stations. For the reasons described in the *Notice*, we are adopting our proposed values for digital LPTV and TV translator station protected signal contours, and we are re-affirming the same values for digital Class A TV stations.

2. Protection Standards and Methodology -- Broadcast Station Protection

84. In the *Notice* we discussed the need to balance providing spectrum opportunities for low power digital service and ensuring adequate protection to authorized broadcast services. We wish to explore every means of maximizing channel use for digital LPTV and translator service, recognizing that TV channel availability is limited in much of the country. In addition, however, the service of full-service and low power broadcast stations must be protected, and we seek to minimize instances of interference caused by LPTV and TV translator stations.

85. Applications for analog LPTV and TV translator stations must satisfy interference prediction criteria that depend on the nature of the station being protected and the channel relationship between the proposed and protected stations.[171] Most commonly, predicted field strengths of a proposed station must not exceed values that would cause certain desired-to-undesired ("D/U") signal strength ratios to be exceeded at locations along another station's protected contour ("contour overlap methodology"). Application acceptance standards for potential interference from analog and digital Class A TV facilities to DTV service require the service population within a DTV station's noise-limited contour to be protected using the same approach as applicants for proposed full-service TV and DTV facilities use to analyze potential interference to DTV service ("DTV methodology" or "OET 69 method"). Unlike DTV broadcast stations, Class A TV and digital Class A TV stations are not permitted to cause *de minimis* levels of DTV service population reduction other than a 0.5% rounding allowance.[172]

a. Desired-to-Undesired ("D/U") Signal Strength Ratios

86. In the *Notice* we proposed to base standards for accepting digital LPTV and TV translator station application proposals on D/U protection ratios for analysis of predicted interference to and from digital LPTV and TV translator stations. We reasoned that D/U ratios provide an accurate basis for interference analyses, and that D/U-based approaches facilitate efficient spectrum use by taking into account such factors as the characteristics of directional transmitting and receiving antennas and the effects of terrain on the propagation of the signals from both the desired and undesired stations. We

[170] NTA Comments at 10; AFCCE Comments at 2; Parsons Comments at 11.

[171] 47 C.F.R. §§ 74.705, 74.706, 74.707, and 74.708 define requirements for the protection of TV broadcast stations, DTV stations, low power TV and TV translator stations, Class A TV and digital Class A TV stations, respectively.

[172] In the DTV proceeding, we permitted DTV stations in the initial allotment table to decrease the populations served by NTSC TV and other DTV stations by no more than two percent, not to exceed a total population reduction from all stations of ten percent. Applicants seeking facilities modifications of full-service NTSC stations may not cause any additional interference to DTV service, other than a 0.5% reduction in service population to account for rounding and calculation tolerances. *See Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, 13 FCC Rcd 7418 (1998).

specifically proposed to apply the co-channel D/U ratios for "DTV-into-analog TV," "Analog TV-into-DTV" and "DTV-into-DTV" given in Section 73.623(c)(2); the DTV-to-DTV co-channel adjustment formula and analog-to-DTV co-channel adjustment table given in Section 73.623(c)(3); and the "DTV-into-analog TV" D/U ratios given for the following channel relationships: N-2, N+2, N-3, N+3, N-4, N+4, N-7, N+7, N-8, N+8, N+14 and N+15 (collectively, the "UHF taboo" channel relationships).[173]

87. Commenters generally support our proposals. For example, AFCCE and Greg Best support providing protection based on D/U ratios to full-service and LPTV/TV translators.[174] These commenters also agree with the using the D/U ratios as proposed for co-channel situations.[175] Sgrignoli generally supports the D/U ratios for taboo channel relationships, but points out a discrepancy between the rules and OET Bulletin 69 for the N+7 taboo.[176] In addition, dLR supports use of the D/U ratios of 73.623(c) for determining interference protection from digital LPTV and TV translator stations.[177] In urging that our interference prediction methodology not rely solely on D/U ratios, MSTV/NAB submits that the D/U ratios used to develop the DTV Allotment Table "were based on limited and incomplete data, and a single prototype DTV receiver was used to develop these ratios."[178] MSTV/NAB notes that the broadcast and consumer electronics industries are working through the Advanced Television Systems Committee ("ATSC") to recommend DTV receiver performance standards to the Commission that would assist in refining the initial D/U ratios.[179]

88. For the reasons described in the *Notice*, we are adopting our proposed D/U ratio values for digital LPTV and TV translator stations protecting co-channel and UHF-taboo-channel-related stations. These values from Section 73.623 of our rules are the ones we use for full-service DTV interference analysis with respect to these channel relationships. The current version of OET Bulletin 69 has corrected the N+7 D/U ratio, and it now matches our rule.[180] With regard to the concern of MSTV/NAB, the D/U ratios in our rules have been consistently used to analyze TV and DTV broadcast station proposals. These ratios have also been applied to study requests to waive the LPTV and TV interference protection criteria using OET-69 interference prediction methods. We are not persuaded that it would be inappropriate to apply D/U ratios in our DTV rules to the analysis of digital station proposals in the LPTV service. If we revise these ratios for purposes of interference protection among TV and DTV broadcast stations, we will consider amending our LPTV interference rules accordingly.

b. First Adjacent Channel Ratios

89. In the *Notice* we proposed that analog LPTV and TV translator station proposals protect first

[173] *Notice*, 18 FCC Rcd at 18382-3.

[174] AFCCE Comments at 3; Greg Best Comments at 3.

[175] Sgrignoli Reply Comments at 5; Greg Best Comments at 3.

[176] Sgrignoli Comments at 6.

[177] dLR Comments at 3.

[178] MSTV/NAB Comments at 15.

[179] *Id*. On June 22, 2004, the Advanced Television Systems Committee (ATSC) approved "ATSC Recommended Practice: Receiver Performance Guidelines" (ATSC Doc. A/74). This document, which establishes voluntary guidelines for DTV receiver performance, is available at www.atsc.org.

[180] OET Bulletin No. 69, "Longley-Rice Methodology for Evaluating TV Coverage and Interference (February 06, 2004), available at FCC Internet address: http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet69/oet69.pdf.

adjacent channel digital LPTV and TV translator stations based on the D/U values given in Section 73.623(c)(2) of the rules (-48 dB for "Lower analog TV-into-DTV" and -49 dB for "Upper analog TV-into-DTV").[181] For digital LPTV and TV translator protection to first adjacent channel analog and digital stations, we sought comments on alternatives to the D/U ratios in our DTV rules (-14 dB for Lower DTV-into-analog TV, -17 dB for Upper DTV-into-analog TV, -28 dB for Lower DTV-into-DTV, and -26 dB for Upper DTV-into-DTV). Alternatives were described, based on the "Sgrignoli Paper," on the effects of DTV transmitted "sideband splatter" into adjacent channel NTSC analog and DTV signals.[182] That paper derived first adjacent channel D/U ratios based on digital TV translator use of two proposed out-of-band spectral emission masks referred to as the "Simple" and "Stringent" masks (Simple: 10 dB for DTV- into- Analog and -7 dB for DTV- into- DTV; Stringent: 0 dB for DTV- into- Analog and -12 dB for DTV- into- DTV). We noted that the more restrictive D/U ratios are associated with the less restrictive emission mask. We also asked whether selected first adjacent channel ratios and related emission masks should be applied to digital Class A TV stations and whether there are processing implications that would complicate record-keeping and interference analysis if applicants are required to specify one of multiple mask options in their applications. We tentatively concluded that under such circumstances, stations seeking to change their mask would be required to file a minor change application to modify their authorizations.

90. Commenters generally support our proposals. Sgrignoli suggests that the analog-into-DTV adjacent channel ratios are not being regularly met by DTV receivers and were developed without accounting for "splatter." He argues that using -43 dB for both upper and lower adjacent channels would be more conservative and would more reliably protect against interference.[183] Greg Best argues that the adjacent channel analysis provided by the Sgrignoli paper should only apply to co-located adjacent channel situations.[184] Venture proposes use of the DTV-into-DTV adjacent channel D/U ratios in our DTV rules where stations would use sufficient out-of-channel emission filtering.[185]

91. As proposed, we will use the first adjacent channel D/U ratio values in Section 73.623 of our DTV rules for analog LPTV and TV translator station protection of digital LPTV and TV translator stations. These values are consistently used for determining interference between all combinations of full-service TV and Class A TV stations. For digital stations protecting analog and digital first adjacent channel stations, our decision to allow a station to elect its emission mask compels us to specify different D/U ratios based on the elected mask. The values derived in the Sgrignoli paper are the only documented option. We recognize that these values may be more conservative than necessary in certain circumstances and reserve the right to re-visit this issue based on our experience authorizing service and the actual operation of stations authorized under these criteria. These ratios (and the associated emission masks), however, would appear to be well suited to accommodate co-sited operations involving use of first adjacent channels, a situation we believe will occur extensively at TV translator installations. Accordingly, we will require applicants to specify the emission mask they will comply with, and we will require the use of the following D/U ratios based on the specified mask:

---

[181] *Notice*, 18 FCC Rcd at 18383.

[182] "DTV Repeater Emission Mask Analysis," Gary Sgrignoli, *IEEE Transactions on Broadcastin*g, March 2003, Volume 49, Number 1, Pages 32-80, ISSN 0018-9316, which is also available at the following Internet site: www.zenith.com/digitalbroadcast/downloads/DTV Emission Mask Analysis.pdf.

[183] Sgrignoli Reply Comments at 7 (indicating that his analysis corrects a short-coming of the original D/U ratio development ignoring "splatter").

[184] Greg Best Comments at 3.

[185] Venture Comments at 5.

	DTV into Analog	DTV into DTV
Simple Mask	10 dB	-7 dB
Stringent Mask	0 dB	-12 dB

92. As discussed *infra*, we will make some accommodation to station operators converting existing analog transmitters for "on-channel" digital operation where the analog transmitter falls short of the Simple Mask (i.e., at the mask "shoulders"), due to limitations of the transmitter's RF power amplifier. In this event, we will apply the adjacent channel D/U ratios for the Simple Mask.

c. Interference Prediction Methodology

93. In the *Notice* we sought comment on the appropriate methodology for interference analysis to be used in the application process for accepting digital LPTV and TV translator applications.[186] One possible choice would be the contour protection approach now used to evaluate analog LPTV and TV translator station proposals. We proposed to clarify that for digital proposals we would use the Commission's F(50,90) propagation method in lieu of the F(50,50) curves to determine distances to the protected contours of digital stations, and that F(50,10) curves would be used to locate all digital interference contours.[187] While our use of contour overlap methodology has resulted in very little reported interference to over-the-air broadcast reception, we noted that it has shortcomings that could result in fewer opportunities for digital LPTV and TV translator service. The shortcomings include incomplete consideration of terrain effects on signal propagation, not considering locations inside the protected contour where interference might occur despite protection being afforded along the contour, not considering the effects of interference predicted from other stations (interference "masking"), not accounting for the directional signal attenuation characteristics of outdoor receiving antennas, and not making any allowance for signal attenuation characteristics of transmitting antennas in the vertical plane.

94. As a preferred alternative to the contour overlap approach, we sought comment on basing application acceptance on our DTV interference prediction methodology.[188] We noted that use of the DTV methodology is permitted to support analog LPTV waiver requests and in the Class A TV service to protect authorized and allotted DTV facilities.[189] We noted that the DTV methodology overcomes the shortcomings we identified with the contour overlap methodology.

95. We suggested that this proceeding is an appropriate time to follow through on a 1997 Commission statement in the DTV proceeding that, in the future, we would consider changing the LPTV

[186] *Notice*, 18 FCC Rcd at 18384.

[187] *See* 47 C.F.R. § 73.625(b).

[188] The DTV interference model is based on service area and interference provisions given in Sections 73.622 and 73.623 of our rules and additional engineering criteria given in OET Bulletin 69. OET Bulletin, "Longley-Rice Methodology for Evaluating TV Coverage and Interference (July 2, 1997), available at FCC Internet address http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet69/oet69.pdf.

[189] *See*, *e.g.*, 47 C.F.R. §§ 74.705(e), 73.6013 and 73.6018. Class A station proposals are not permitted to decrease the predicted service populations of DTV stations and allotted facilities by more than 0.5%, an allowance for rounding and computer platform tolerance.

and TV translator application acceptance criteria to reflect the DTV service approach.[190] Our DTV prediction methods and computer model have been used for several years in the regular processing of applications for DTV and NTSC TV facilities, as well as in the evaluation of requests by LPTV and TV translator applicants to waive the contour protection standards. Most long-form applications filed in the most recent LPTV filing window (August 2000) requested waivers based on OET-69 type interference analysis. Thus, engineering consultants appear to be prepared to use the DTV interference prediction methods for digital TV translator and LPTV operations.

96. In connection with the possible adoption of DTV methodology, we sought comment on necessary revisions for digital LPTV and TV translator interference analyses, especially whether using the standard vertical antenna pattern assumed in OET Bulletin 69 is appropriate for analysis of digital and analog LPTV and TV translator stations.[191] Our concern included some areas close to the LPTV or TV translator stations' towers that would not be predicted to be served by those stations, possibly including the main community. We observed that if service is not predicted, protection from interference is not afforded. We also expressed concern about possible under-prediction of the interference impact to other LPTV and translator stations as well as to full-service analog and DTV stations on adjacent channels. We also sought comment on the extent of antenna beam tilting by LPTV and translator stations and its importance as an input to the interference prediction model. Finally, we sought comment on whether we should consider using the DTV methodology for analog LPTV, TV translator, and Class A TV application acceptance studies. We also asked how to deal with the possibility of making changes to protection standards currently based on minimum distance separations.[192]

97. CBA and NTA each suggests that the present system be retained, where a prohibition of overlap between interfering and protected contours is established as the initial test, and the terrain-based OET Bulletin 69/Longley-Rice method is available when the contour method produces an unnecessarily restrictive result.[193] They contend that the Longley-Rice method may be more precise, but the contour method is easier and less expensive for those who do not need a more sophisticated approach. Whether or not the contour overlap approach is abandoned, CBA urges that Longley-Rice should be recognized as an acceptable approach for any applicant who wants to use it, without having to request a rule waiver. NTA agrees.[194] AFCCE believes the OET-69 interference prediction methodology using the Longley

[190] *See Advanced Television Systems and Their Impact upon the Existing Television* Broadcast *Services,* 12 FCC Rcd (1997), ¶ 145.

[191] We noted that use of the assumed transmitting antenna vertical plane radiation patterns set forth in Table 8 of OET Bulletin 69 could under-predict LPTV and translator service and interference potential. OET Bulletin 69 specifies analog and digital radiation patterns for the frequency band of the channel being considered based on antennas typically used by full-service TV stations, employing a moderate amount of electrical beam tilt (0.75 degrees) and a relatively high gain in the main lobe, while typical LPTV and TV translator stations use transmitting antennas with less gain and more beam tilt because such antennas are less expensive, smaller and lighter, and transmit a larger proportion of the stations' limited power downward toward the close-in locations these stations want to serve. In addition, we noted that TV translator stations are often sited on hills or mountain slopes where they use electrical antenna beam tilt or combinations of mechanical and electrical tilt to maximize their signal down into the served communities.

[192] *See* 47 C.F.R. § 74.705.

[193] CBA Comments at 4.

[194] NTA Comments at 11; *see also* St. Clair Reply Comments at 5 (suggesting a combination of contour overlap and DTV methodology); Parsons Comments at 12 (advocating use of contour protection method with allowance for Longley-Rice and OET 69-type methods on a waiver basis).

Rice propagation model should be used instead of the previously used contour method.[195] Greg Best agrees because widely varying terrain is not effectively considered using the contour method.[196] Some parties support use of different methodologies in different circumstances; for example, contours in rural areas and DTV methodology in urban areas.[197] Fox urges that the contour method should be replaced with the TIREM model and not OET-69.[198]

98. Some parties urge changes to the methodology to make the protection requirements more restrictive. For example, MSTV/NAB requests that interference standards for protecting full-service stations be revised by updating the D/U ratios, not allowing digital LPTV or TV translator stations within the noise-limited contour of any full-service analog or digital station on the same channel or a first adjacent channel and not allowing (in the UHF band) digital LPTV and TV translator stations within 31 km of the noise-limited contour of a full-service station if operating on the +/- 2nd, 3rd, 4th, 7th or 8th adjacent channels or within 48 km if operating on +/- 14th or 15th channels.[199] Brey urges that full-service DTV stations should be protected from interference by digital Class A, LPTV, translator, and booster stations to the limits of the DTV stations' actual coverage.[200] Renard suggests that contour interference should not include consideration of directional receiving antenna characteristics and that OET-69 should not be modified to account for intermodulation interference.[201]

99. On the other hand, Joint Commenters suggest eliminating the UHF taboos for +/- 2nd, 3rd, 4th, 5th and 7th channel for the protection of analog stations by digital stations.[202] Similarly, several commenters suggest applying the full-service DTV 2% / 10% *de minimis* interference standard to the interference caused by digital LPTV and TV translator stations, or at least among digital stations in the LPTV service.[203] CBA also suggests that areas already receiving interference should be disregarded in determining whether new interference will be caused (known as "masking"), and the directional characteristics of over-the-air receiving antennas should be recognized.[204] NTA suggests that stations that already accept 10% or more interference before the new application is considered should have the predicted new interference amount rounded to the nearest whole percent, allowing less than 0.5% and specifying the full percent rounding in the rule.[205] AFCCE believes that a 2% *de minimis* interference standard should be applied from digital LPTV and TV translator stations to Class A TV, LPTV, and TV translator stations, analog or digital; full-service DTV stations also should be permitted a 2% *de minimis*

[195] AFCCE Comments at 3.

[196] Greg Best Comments at 5; *see also* APTS/PBS Comments at 14; dLR Comments at 4.

[197] Joint Commenters Comments at 11; Mullaney Comments at 2; Venture Comments at 5; *see also* Metrocast Comments at 4 (expressing concern about unrestricted use of Longley-Rice); MSTV/NAB Reply Comments at 16 (supporting a combination of contour protection and minimum distance separations).

[198] Fox Comments at 9.

[199] MSTV/NAB Comments at 16; *see also* Paxson Reply Comments at 4 (urging re-examinination of existing interference standards).

[200] Brey Comments at 3.

[201] Renard Reply Comments at 7-8.

[202] Joint Commenters Comments at 10.

[203] CBA Comments at 4; NTA Comments at 12; Greg Best Comments at 5.

[204] CBA Comments at 11.

[205] NTA Comments at 12.

interference standard with respect to protection of Class A TV stations.[206] AFCCE and dLR believe the use of a 1 square kilometer grid resolution should be the maximum permitted in evaluating the interference to Class A, LPTV, and TV translator facilities, whose smaller service areas require a finer grid resolution analysis.

100. With regard to vertical antenna patterns, CBA supports realistic interference calculations but does believe that it is important not to take the level of detail beyond what is readily available in reasonably priced computer software that will run on commonly used computers.[207] NTA expresses concern that the FCC's implementation of the OET Bulletin 69 procedures allows for only one assumed vertical pattern for each frequency band and type of transmission, chosen to be representative of the vertical patterns of the antennas used by full-service stations, and that it is not possible to specify the actual beam tilt of either a proposed or target station.[208] NTA and other commenters urge accommodation of actual vertical antenna patterns and request that the electrical and mechanical beam tilt, if any, should be specified in the application and utilized in the analysis.[209] If this is not possible, NTA suggests that we establish three standard vertical patterns for each band – broad, medium, and narrow -- and require LPTV and translator applicants to specify which vertical pattern is closest to the antenna they will use.[210] Alternatively, NTA suggests that the several vertical patterns be developed by industry consensus outside the rulemaking proceeding and incorporated into OET Bulletin 69. AFCCE suggests establishing a default vertical plane radiation pattern for situations where a custom vertical pattern is not specified.[211] MSTV/NAB wants OET-69 expanded with respect to use of vertical antenna patterns.[212] Joint Commenters oppose the use of beam tilt and vertical patterns in interference calculations.[213]

101. AFCCE believes that the OET-69 interference method should be adopted for analog LPTV, TV translator, and Class A analyses to mitigate the concerns of unequal treatment.[214] Greg Best believes that the Longley-Rice interference method should be adopted for analog LPTV and TV translator analyses as well as digital and analog Class A TV analyses.[215] dLR requests that OET-69 methodology be applied to analog LPTV and TV translators (grandfathering existing stations) and modified to include intermodulation interference, while Joint Commenters oppose incorporating intermodulation interference.[216] Cox/Liberty opposes any change in protection of full-service stations by

[206] AFCCE Comments at 4.

[207] CBA Comments at 11.

[208] NTA Comments at 13.

[209] NTA Comments at 13; dLR Comments at 4; St. Clair Reply Comments at 4; Sgrignoli Reply Comments at 9.

[210] *See* Greg Best Comments at 5 (suggesting that specific antenna types be added to the table of antennas for OET-69).

[211] AFCCE Comments at 3.

[212] MSTV/NAB Reply Comments at 16; *see also* Metrocast Comments at 5-7 (urging that standard vertical patterns are necessary to prevent applicants from specifying unattainable antenna vertical radiation lobes that result in an erroneously low value of a station's effective radiated power to the radio horizon).

[213] Joint Commenters Reply Comments at 15.

[214] AFCCE Comments at 4.

[215] Greg Best comments at 5.

[216] dLR Comments at 5; Joint Commenters Reply Comments at 14.

LPTV and TV translator stations.[217] Paxson opposes using the 2% *de minimis* interference standard for LPTV, Class A TV, and TV translator protection of full-service stations.[218]

102. The use of a single interference prediction methodology is preferable; based on the record, it is apparent that it should be the DTV methodology. This methodology is widely available and has been employed extensively for full-service TV and DTV application processing. All parties support allowing use of the DTV methodology – either as a standard approach or at least with regard to rule waiver submissions - and it provides more accurate results. To the extent that an application proposal might pass a contour overlap analysis but fail a DTV methodology analysis, we do not believe the public would be served by approving such a facility.

103. Further, it would be inappropriate to allow these secondary service stations to be authorized on the basis of the full-service DTV *de minimis* criteria (2% / 10%) to determine unacceptable predicted interference to full-service analog and DTV stations. Instead we conclude that the tolerance we have established elsewhere for "no interference" (being less than 0.5%) is an appropriate standard here. In the full-service context, the benefit offsetting the loss of service to interference was the flexibility to construct DTV stations more quickly in order to start the DTV transition and, in most cases, the ability to provide new DTV service to a substantially larger number of viewers. In the digital LPTV and TV translator context, the entire new service area may contain fewer people than the 2% of the population served by the interfered-with full-service station. We agree, however, that the 2% criteria is appropriate for protection of other secondary services (*i.e.*, analog and digital LPTV and TV translator stations). The 2% criteria applied between low power stations involve much less interference than in protecting a full-service station, and the 2% criteria will allow proposed new digital low power stations flexibility to serve more people. In this regard and others (*e.g.,* 1 km maximum grid resolution), we are largely adopting the AFCCE recommendations for analysis of digital LPTV and TV translator station proposals. We will also permit digital Class A stations to protect digital LPTV and TV translator stations on the same basis. Because of their technical similarities to digital LPTV stations, we will amend the Class A rules to specify that application acceptance studies of digital Class A applications will be based on the DTV interference prediction methodology, as adapted for study of digital LPTV and TV translator applications.

104. Regarding vertical radiation patterns, we are hesitant to make the digital LPTV/TV translator procedures significantly more complicated than those for full-service stations (*i.e.*, by considering use of vertical patterns of the transmitting antennas proposed in station applications). If in the future we develop an ability to account for actual vertical radiation patterns and related beam tilt in the full-service DTV context, we will consider applying that ability in the digital LPTV and TV translator context. We remain convinced that the assumed vertical patterns in Table 8 of OET Bulletin 69 are not appropriate for LPTV and TV translator stations, but based on the record before us, we do not have suitable replacement patterns to adopt. As a temporary measure, we will assume (for predicting both service and interference) that the downward relative field strengths for digital and analog LPTV and TV translator stations, and digital and analog Class A TV stations is double the values specified in OET Bulletin 69, Table 8, up to a maximum of 1.000.[219] We are inclined to adopt a revised procedure in the

[217] Cox/Liberty Reply Comments at 4.

[218] Paxson Reply Comments at 5.

[219] To illustrate: For UHF DTV stations at a depression angle of 2 degrees, Table 8 specifies a relative strength field value of 0.690, but we will assume a LPTV or TV translator relative field value would be 1.000. For UHF DTV stations at a depression angle of 6 degrees, Table 8 specifies a relative field strength value of 0.150, but we will assume a LPTV or TV translator relative field value would be 0.300.

future if parties develop and propose realistic alternative vertical patterns, including the shifting of relative field strength values to account for electrical antenna beam tilting.

105. For processing analog LPTV, TV translator, and Class A TV applications, we will continue to allow contour overlap analysis, but specifically also allow an optional showing based on DTV methodology without a requirement to seek a rule waiver. Based on the record in this proceeding, we are not prepared to replace the analog spacing requirements with DTV methodology standards.

d. Interference Agreements

106. In the *Notice* we noted that interference agreements that supercede compliance with the LPTV interference protection standards are permitted among LPTV, TV translator, and Class A TV stations.[220] Additionally, we noted that applications for LPTV and translator facilities predicted to interfere with full-service stations may be granted with the written consent of the affected stations and that such consent does not obviate the responsibility of the LPTV or translator station to eliminate interference caused to over-the-air reception of the full-service station, wherever its signal is regularly viewed. We sought comment on applying these provisions to digital LPTV and TV translator stations.

107. Several parties support continuing to accept interference agreements between the concerned parties.[221] MSTV/NAB opposes interference agreements among digital LPTV and TV translator stations or between them and full-service stations, expressing concern that interference agreements between two parties could adversely affect third parties that are not involved in the agreement.[222] On balance, we believe that permitting interference agreements for these stations will provide a useful means of accommodating technical and non-technical local conditions. Fundamentally, these will be secondary stations, required to accept interference from, and not cause it to, primary stations. MSTV/NAB has not indicated how an interference agreement between two stations in the LPTV service could adversely impact a full-service broadcaster. Indeed, the increased risk of interference to others attributable to interference agreements will be negligible and, as with other situations where we have allowed interference agreements, we retain the discretion to disapprove agreements that do not serve the public interest.[223]

e. Co-located Operation on Adjacent Channels

108. In the *Notice* we pointed out that the analog contour protection standards do not allow a new or modified LPTV or TV translator station to be located within the protected contour of a TV broadcast, LPTV, TV translator, or Class A TV station on a first adjacent channel or the fourteenth or fifteenth channel above that of the potentially affected station.[224] As we sought ways to assist LPTV and TV translator operators displaced by new DTV services, we also stated that we would consider co-located or "nearly co-located" waiver requests where applicants could demonstrate that such stations' replacement channel proposals would not cause any new interference.[225] We also noted in the *Notice*

[220] 47 C.F.R. §§ 74.703(a), 73.6022.

[221] Parsons Comments at 13; APTS/PBS Comments at 5; dLR Comments at 5; NTA Reply Comments at 15.

[222] MSTV/NAB Comments at 17-18.

[223] *See*, *e.g.*, 47 C.F.R. § 74.623(g).

[224] 47 C.F.R. §§ 74.705(b), 74.707(b) and 74.708(c). In addition waivers may be requested based on the applicable D/U protection ratios not being exceeded at any location within the co-located stations' protected contour.

[225] DTV *Sixth Report and Orde*r, ¶ 146.

that co-locating adjacent channel operations may offer one of the most promising opportunities for identifying available channels for digital TV translator and LPTV service.[226]

109. We sought comment on proposals related to co-located adjacent channel operations involving digital LPTV and TV translator stations, including the first adjacent channel to DTV and analog TV and the following channel relationships to analog TV channels, where N is the analog channel: N-2, N+2, N-3, N+3, N-4, N+4, N-7, N+7, N-8, N+8, N+14, N+15. We indicated that the DTV methodology permits interference analysis of such proposals for co-located operations so a waiver of the LPTV interference rules would not be necessary, but we also sought comment on whether we should require a waiver showing, for example, to account for the transmitting antenna vertical radiation pattern concerns expressed above. We suggested that if the existing contour protection methodology is selected, considering co-located adjacent channel operations on a waiver basis would seem to be appropriate. In either case, we proposed permitting co-located adjacent operations on the basis of written agreements among the affected parties. We also asked whether the term "co-located" should include only transmitting antennas located on the same tower or other supporting structure or, alternatively, on structures located within a particular proximity and whether we should limit co-location to particular classes of adjacent channel station, such as only to LPTV and/or TV translator stations.

110. CBA suggests that collocation of first adjacent channel stations should be permitted where their power and antenna patterns do not diverge greatly.[227] AFCCE agrees with waiving rules to allow operation on an adjacent channel to an analog station provided the relevant D/U ratios are satisfied, OET-69 methodology is employed, and the stations are located within 2 kilometers of each other.[228] Other commenters support co-located adjacent channel operations and suggest that we consider stations to be co-located that are geographically separated by distances ranging from 2 to 10 kilometers.[229] As discussed above, MSTV/NAB opposes allowing digital LPTV and TV translator stations within the noise-limited contour of first adjacent-channel analog and digital full-service stations.[230]

111. As discussed above, we are adopting the DTV methodology for determining whether digital LPTV and TV translator proposals adequately protect authorized stations from interference. The interference protection provided by the DTV methodology with respect to any co-located (at whatever separation distance) facilities renders additional restrictions unnecessary. Moreover, LPTV operations on a channel adjacent to a full-service analog or digital TV station will usually be avoided because the higher power full-service station has a much greater chance of interfering with the LPTV or TV translator service than vice versa. In addition, the LPTV or TV translator remains secondary. Under the circumstances and recognizing the conservative nature of the adjacent channel D/U ratios discussed above, the prohibition MSTV/NAB seeks is unnecessary.

f. Carrier Frequency Control and Offset

112. "[W]here a low power television station or TV translator station is operating on the lower adjacent channel within 32 km of the DTV station and notifies the DTV station that it intends to

[226] *Notice*, 18 FCC Rcd at 18387-8.

[227] CBA Comments at 11.

[228] AFCCE Comments at 4.

[229] dLR Comments at 6; Joint Commenters Comments at 13; St. Clair Reply at 3; Sgrignoli Reply Comments at 9.

[230] MSTV/NAB Comments at 16.

minimize interference by precisely maintaining its carrier frequencies, the DTV station shall cooperate in locking its carrier frequency to a common reference frequency and shall be responsible for any costs relating to is own transmission system in complying with this provision."[231] While full-service DTV broadcasters are required to maintain a precise frequency separation between their 8VSB pilot frequency and the visual carrier frequency of any nearby lower adjacent channel analog TV station, we sought comment in the *Notice* on whether we should extend this requirement to digital and lower first adjacent channel analog LPTV and TV translator stations within some geographic proximity.

113. We also sought comment on any other technical means for demonstrating interference avoidance that could facilitate channel availability for digital LPTV and TV translator service without compromising the interference protection rights of other stations. In that regard, we asked about other changes to our LPTV service interference protection rules that could provide additional spectrum opportunities without unduly risking impermissible interference such as, for example, requiring all analog LPTV and TV translator stations to operate with a frequency offset.[232] Analog Class A TV stations are required to operate with a frequency offset.

114. Greg Best believes locking the DTV pilot to the visual carrier of a lower first adjacent analog station is not worth the benefit gained, due to a combination of the lower output powers of analog LPTV and translator stations and the relatively high expense involved.[233] Describing the results of ATTC tests of the "color beat" that led to this requirement, Gary Sgrignoli notes that this TV picture impairment affected some TV sets (but not all) and that it was most noticeable at large interfering signal levels. He suggests that if the D/U ratios within a station's service area are sufficiently large ("DTV signal much lower than NTSC by at last 10 dB), the color beat effect should not be a problem, even without any DTV pilot carrier frequency offset."[234]

115. CBA suggests the time has come to require mandatory frequency offset as a way to minimize interference because the spectrum is becoming crowded, decreasing the justification for allowing stations to operate without offset.[235] CBA suggests that where an applicant is constrained because another station does not operate with offset, the applicant should be permitted to offer to pay for the cost of offset equipment. If the other station does not accept the offer, then CBA suggests that station should be required to accept the resulting interference. CBA argues there should also come a point when the acceptance and installation of offset equipment should become mandatory because the existing station may cause serious interference to the applicant that could be avoided by offset. CBA also urges that the Commission immediately forbid the installation of any new or replacement transmitter or exciter that does not incorporate the capacity for offset.[236] Several other commenters agree.[237] Parsons,

[231] *Notice*, 18 FCC Rcd at 18389, citing 47 C.F.R. § 73.622(g)(2).

[232] Frequency offsetting involves positioning the TV station's signal so that its visual carrier frequency is at its nominal position of 1.25 MHz above the lower edge of a TV channel (zero offset), 10 kHz above the nominal frequency (plus offset), or 10 kHz below (minus offset). For stations with the same (or no) offset, co-channel interference is predicted to occur when the D/U ratio is 45 dB, while for stations with different offsets the co-channel interference D/U ratio is reduced to 28 dB.

[233] Greg Best Comments at 6; *see also* APTS/PBS Comments at 4 (arguing that we should not require frequency offset for digital LPTV and TV translator stations where a nearby analog station is on the lower adjacent channel).

[234] Sgrignoli Reply Comments at 10.

[235] CBA Comments at 11.

[236] *Id.* at 12.

on the other hand, claims a requirement for all TV translator stations to operate with a frequency offset would be an economical disaster and would very rarely be needed in the rural environment.[238] Joint Commenters indicate that frequency offsets should be required in urban areas, but not in rural areas.[239]

116. First, we conclude that the burden of requiring a digital LPTV or TV translator licensee to maintain the pilot frequency of its 8-VSB DTV signal to a specified offset with respect to the visual carrier of an analog LPTV or TV translator station on the lower first adjacent channel is not supported by the record. Such a requirement would be unlikely to significantly improve the service quality or coverage of the analog station. If a situation develops where there appears to be more adjacent channel interference than expected to the service of a lower first adjacent channel analog station, we encourage the licensees to cooperate in efforts to reduce the interference by attempting to achieve and maintain a more desirable frequency offset between the DTV pilot and the analog TV visual carrier.

117. Where analog LPTV and TV translator stations operating without a nominal frequency offset prevent the proposed service of a new or modified LPTV, TV translator or Class A station, we agree that the time has come to require that station to maintain a designated offset. Where non-offset stations are so remotely located that no additional service proposals would be obstructed, we also agree that the expense of installing "offset" equipment would be unnecessary. We address only the situation where protection of an existing analog LPTV or translator station without a frequency offset (*i.e.*, plus 10 KHz, minus 10 kHz or zero) would render an application proposal specifying an offset unacceptable for filing. In this situation, the proposed facilities will be analyzed with respect to co-channel "non offset" stations based on both the 45 dB D/U ratio applicable for non offset operations and the 28 dB D/U ratio that applies in the analysis of stations specifying different offsets.[240] In such cases, the application proposal will be considered acceptable if it provides adequate protection based on the 28 dB "offset" D/U ratio. The existing non-offset station will then be required to install at its expense offset equipment and notify us that it has done so or, alternatively, that it has reached an interference agreement with the new station.[241] In the event the existing station does not cooperate in this regard, we will direct it to operate with a frequency offset different than that specified in the application proposal.[242]

(...continued from previous page)

[237] AFCCE Comments at 4; Greg Best Comments at 6; Venture Comments at 5; Commercial Broadcasting Reply Comments at 6.

[238] Parsons Comments at 13.

[239] Joint Commenters Comments at 12.

[240] The 45 dB D/U ratio also applies to predictions of co-channel interference between stations specifying the same frequency offset.

[241] The existing non offset station would be required to accept the additional interference associated with maintaining its non offset operation.

[242] In the proceeding that created the Class A TV service, we established a time frame within which all Class A stations were required to operate with a frequency offset. During the interim period, we established a policy that directed Class A station licensees, permittees and Class A-eligible LPTV applicants to operate their station with a carrier frequency offset at the request of a displaced Class A station, displaced Class A-eligible LPTV station or applicant or allotment petitioner for a new NTSC television station. For purposes of such accommodations, we also reserved the right, on a case-by-case basis, to modify the license of a TV translator or non-Class A LPTV station, subject to the provisions of the Section 316 of the Communications Act. *See Establishment of a Class A Television Service, Memorandum Opinion and Order on Reconsideration*, 16 FCC Rcd 8244 (2001).

g. Protection of Land Mobile Radio and Other Primary Services

118. As explained in the *Notice*, LPTV and TV translator stations are authorized on a secondary non-interfering basis to certain land mobile operations and other primary services. These include public safety and other new wireless services that are operating or will operate in the spectrum comprising TV channels 52 – 69.[243] With regard to digital LPTV and TV translator operations, we did not propose to alter the interference priorities and remediation provisions identified in our rules.

119. Section 74.709 of our rules specifies criteria for protecting land mobile radio operations on TV channels 14-20 in the vicinity of 13 large cities. Generally, an application for a new or modified LPTV or TV translator facility will not be accepted if it proposes (1) a transmitting antenna site on a co-channel or first adjacent channel within 130 km of these cities, or (2) the proposed LPTV or translator facilities would produce a field strength exceeding 52 dBu at the protected contour (generally extending the 130-km distance) of a co-channel land mobile assignment or 76 dBu at the protected contour of a first adjacent channel land mobile assignment.[244] We requested comment on the suitability of these protection requirements for digital LPTV, TV translator, and Class A TV stations.

120. We also proposed to subject digital LPTV, Class A, and TV translator digital stations to the requirements of Section 73.1030, which requires that applicants for authority to construct a new station in the vicinity of radio astronomy, research, and certain receiving installations, such as FCC monitoring stations and the Department of Commerce's radio receiving zone on Table Mountain, Colorado, notify the affected installation(s) and give consideration to providing protection to the installation(s) against interference.[245] In addition, we requested comment on whether it might be appropriate to subject digital low power television stations to those requirements only with regard to the more sensitive operations of the radio astronomy observatories at Green Bank, West Virginia, and Arecibo, Puerto Rico.[246] In this regard, we also observed that digital low power television stations will operate with much lower ERP levels than full-service DTV stations and therefore would appear to pose less of a concern for radio receiving sites and FCC monitoring stations.

121. APCO urges that we re-examine the adequacy of our current interference rules for protecting land mobile operations from DTV, stating that some DTV stations have caused interference to public safety land mobile operations in the 470 to 512 MHz band.[247] Other parties that oppose digital translator and LPTV station use of channels 52-69 also question how protection would be afforded to new primary licensees on those frequencies.[248] Otherwise, commenters did not address the related issues raised in the *Notice*.

122. As proposed, we will require digital LPTV, TV translator, and Class A TV stations to

[243] The *Notice* also indicated that LPTV and translator stations must not interfere with reception at a cable TV headend or output channel of a cable TV, MDS, or ITFS system converter, if the cable, MDS or ITFS operator is the "earlier user," and must protect stations in the Off-Shore Radio Service if proposing to use channels 15, 16, 17 or 18 by not locating within a specified area near the Gulf of Mexico.

[244] 47 C.F.R. § 74.709(a)-(d). These provisions also apply to Class A TV stations.

[245] *Notice*, 18 FCC Rcd at 18390-91; *see also* 47 C.F.R. § 73.1030.

[246] The National Telecommunications and Information Administration ("NTIA") has requested that we subject digital low power television stations to Section 73.1030 of our rules.

[247] APCO Comments at 3.

[248] Access Spectrum Comments at 5; Adams Telcom Comments at 2; Motorola Comments at 4.

comply with the requirements of Section 73.1030 of the rules concerning interference to radio astronomy, research and receiving installations. We will also require compliance with the criteria specified in Section 74.709 of the rules for protecting land mobile radio operations on TV channels 14-20 in the vicinity of 13 large cities. While we are aware of indications that some DTV stations may be causing some interference to land mobile operations on channels 14-20, those situations involve full-service DTV stations. The criteria we are adopting herein come from our rules for the LPTV and TV translator services (*e.g.*, ERP limits). In addition, digital LPTV and TV translator stations will have a secondary status that will require the correction of interference to a primary service (including mobile operations) even if that means the secondary station must cease operating in order to eliminate the interference.

123. We have concluded that it is necessary to permit limited operation of digital translator and LPTV stations in the 700 MHz bands. Such operations will result from the digital conversion of stations' authorized analog channels and, to a lesser extent, from operations on digital companion channels. As a result, it is likely that some stations will seek temporary operations on spectrum that has been licensed to new wireless service providers or the immediately adjacent spectrum. Some of these stations may be located within the geographic service boundaries of a wireless licensee, while others may be located at some distance beyond the boundaries. We have permitted wireless licensees substantial flexibility to provide a variety of communications services involving both fixed-station and mobile/portable operations, employing a wide range of signal architectures and modulation formats. In light of this service flexibility, we decline here to develop specific interference prediction criteria from which to protect wireless operations from digital stations in the low power television service.

124. We make clear, nonetheless, that any interference caused by a digital LPTV or TV translator station to public safety operations or the services provided by commercial or public safety wireless licensees in the 700 MHz bands must be eliminated, and that the offending LPTV or translator station must cease operation immediately upon notification by any primary wireless licensees and once it has been established that the LPTV or translator station is causing the interference. We will add these provisions to our LPTV rules (Section 74.703). We will also place a special condition on all digital construction permits and licenses for channels 52-69, reminding permittees and licensees of their interference remediation responsibilities.

125. We are requiring applicants for digital LPTV or TV translator station operations on channels 52-69 to meet certain notification and coordination requirements with respect to public safety and commercial licensees whose operations could be potentially affected by interference from the proposed digital television facilities. We believe the requirements are conservative, considering that for many stations, the radio horizon for their facilities will fall well short of the distances we are adopting. Also, the substantial out-of-channel emission attenuation requirements we are adopting for digital low power stations should substantially mitigate the potential for adjacent channel interference. To avoid wasted expenditure of time and resources, we are requiring applicants for all digital LPTV and TV translator stations to notify all potentially affected wireless licensees prior to applying for digital facilities. Moreover, we are requiring the coordinated-use of agreements for applicants proposing to operate digital LPTV or translator stations on the public safety-designated spectrum (*i.e.*, TV channels 63, 64, 68 and 69).

126. As proposed in the *Notice*, we will extend to digital LPTV and TV translator station operations all of the interference remediation provisions in Section 74.703 applicable to analog LPTV service stations.

F. Authorization of Digital LPTV and TV Translator Stations

1. On-Channel Digital Conversions

127. In the *Notice* we stated that some licensees of analog LPTV and TV translator stations may wish to convert to digital operations ("flash-cut") on their authorized channels.[249] We sought comment whether to authorize an on-channel digital conversion as a "minor" facilities change provided: (1) the proposed digital facility would not involve a channel change not related to channel displacement, and (2) the protected digital signal contour of the proposed facility would overlap some portion of the protected contour based on the station's analog authorization.[250] We proposed that, consistent with our rules for analog minor change applications, we would grant on-channel digital conversion applications on a first-come, first-served basis under the current processing procedures.[251]

128. We sought comment on whether on-channel digital conversion applications having predicted interference conflicts with other applications filed the same day would be mutually exclusive and whether such mutually exclusive applications would be subject to the auction process. We also sought comment on how to resolve mutually exclusive digital conversion and channel displacement relief applications. We noted that displacement applications are accorded a higher priority than applications for new or modified facilities, regardless of which application was filed earlier.[252] We asked whether a digital conversion application should be subject to dismissal if it becomes mutually exclusive with a displacement application of an analog or digital LPTV, TV Translator or Class A licensee or permittee.[253]

129. Those commenters that supported allowing low power broadcasters to seek digital facilities also supported our proposal to permit incumbent station operators to flash-cut to digital on their existing channel by filing a digital conversion application.[254] Bonneville states that on-channel digital conversion, "where it is necessary and appropriate, is spectrally efficient because the operator requires no additional spectrum to transition to digital service."[255] Bonneville also points out that such a digital conversion is more cost effective because it would save the operator the "expense of powering both an analog and digital signal during the transition."[256] Finally, the MSTV/NAB and Bonneville note that on-channel conversion is a less intrusive manner that allows the station the flexibility to decide when to change to digital operations once it determines that DTV receiver penetration warrants conversion.[257] There was also general support for the concept that digital conversion applications be filed as minor

[249] *Notice*, 18 FCC Rcd at 18401.

[250] *Id.* We noted that this contour overlap constraint also applies to analog LPTV and TV Translator minor change applications. *See* 47 C.F.R. § 73.3572(a)(2).

[251] *Notice*, 18 FCC Rcd at 18401.

[252] *Notice*, 18 FCC Rcd at 18041 *citing* 47 C.F.R. § 73.3572(a).

[253] *Notice*, 18 FCC Rcd at 18042.

[254] *See* CBA Comments at 5; NTA Comments at 22; APTS/PBS Comments at 6; MSTV/NAB Comments at 12; Bonneville Comments at 6; KM Communications Comments at 6-7; Fox Comments at 4-5; Paxson Comments at 7; Cavalier Comments at 14. As outlined herein, some commenters believe this is the only method by which low power broadcasters should be permitted to convert to digital.

[255] Bonneville Comments at 6.

[256] *Id.*

[257] MSTV/NAB Comments at 13; Bonneville Comments at 6.

change applications.[258]

130. We will allow existing LPTV and TV translator stations to file digital conversion applications as minor changes to their existing analog facilities. We adopt the requirement that (1) the proposed digital facility not involve a channel change unrelated to channel displacement, and (2) the protected digital signal contour of the proposed facility overlap some portion of the protected contour based on the station's analog authorization. We will also define in this manner minor facilities changes of digital LPTV and TV translator stations. We will permit the filing of on-channel digital conversion applications on a first-come, first-served basis.[259] We define "existing low power station" as one that is either licensed or has a valid construction permit.[260] As outlined elsewhere herein, LPTV and TV translator on-channel digital conversions will be filed on FCC Form 346 and will be treated as minor facilities changes.[261]

131. We will not require stations proposing on-channel digital conversions to notify full-service DTV stations. The MSTV/NAB requests that we adopt a requirement that stations undertaking on-channel digital conversions notify all full-service stations within 150 miles of the low power station's transmitter site at least 60 days before filing for the conversion.[262] MSTV/NAB argues that such a requirement is necessary to safeguard against interference to full-service broadcasters' DTV facilities.[263] We reject this proposal as an unnecessary burden on low power stations. Low power stations proposing digital conversions will be required at the application stage to meet the interference protections we adopt herein with respect to full service NTSC and DTV stations. We do not anticipate unexpected interference problems from such on-channel conversions and, in the event that such interference is brought to our attention, it will be resolved expeditiously.

132. We will not adopt the proposal of the CBA and NTA that incumbent low power broadcasters be permitted to convert to digital on their existing analog channel by simply notifying the Commission "after the fact" as long as the digital effective radiated power (ERP) not exceed 25% of the authorized analog ERP and there would be no other changes to the authorized analog facilities. Because it is likely that spectrum available for digital low power operations will be limited, and applicants would be likely to propose various means of interference avoidance, the need for prior engineering review to ensure compliance with our interference protection provisions will be greater in this case. Low power stations must, therefore, file an application and obtain prior Commission approval for on-channel digital conversions. [264]

133. We will permit existing stations to file digital on-channel conversion applications at any time following the effective date of the rule changes in this proceeding and Office of Management and

[258] *See*, *e.g.*, CBA Comments at 8.

[259] *Notice*, 18 FCC Rcd at 18041.

[260] *See* CBA Comments at 6. We will not adopt, as suggested by the CBA, a processing priority for digital conversion applications filed by licensed low power stations over digital conversion applications filed by valid construction permit holders. We consider both to be incumbent stations.

[261] On-channel digital conversions of authorized Class A stations are filed on FCC Form 301-CA.

[262] MSTV/NAB Comments at 19.

[263] *Id*.

[264] We have no experience with the station operations permitted on this basis and, therefore, to ensure compliance with our interference prediction criteria, will not permit station licensees to seek digital on-channel conversions as a modification of a station license. *See* 47 C.F.R. § 73.1690.

Budget approval of revisions to the application form necessary to accommodate digital requests.[265] No commenter advocates that we delay opportunities to file such applications. Because such filings do not involve the use of new channels, we do not find it necessary to wait until certain issues surrounding the DTV transition of full-service broadcasters have been resolved. Existing low power broadcasters that wish to immediately convert to digital on their analog channel may do so or they may wait until a later time to determine if additional channels are available.

134. We adopt the following minor change processing rule for digital LPTV and TV translator displacement applications filed to replace channels that are displaced by a full-service NTSC or DTV station or by a 700 MHz commercial wireless or public safety operation. Such applications may propose a change in transmitter site of no more than 30 miles from the reference coordinates of the existing station's community of license, as provided in Section 76.53 of our rules.[266] This will help to prevent applications from using the displacement process to propose greater than needed modifications to their facilities.

135. We address elsewhere the issue of how to deal with mutually exclusive digital applications and resolve mutual exclusivity through the auction process. With respect to analog and digital displacement applications, we will afford these applications a priority over applications for new or modified digital facilities. That is, an application for new or modified digital facility or for digital conversion shall be subject to dismissal if it becomes mutually exclusive with an analog or digital displacement application, including a displaced analog station filing for a digital replacement channel (*i.e.*, filing for a replacement channel and on-channel digital conversion in the same minor change application). In order to continue to encourage digital conversion and place an emphasis on new digital service, we will also place a priority on digital displacement applications over analog displacement applications. That is, an application for analog displacement relief will be dismissed if it becomes mutually exclusive with an application for digital displacement relief.

2. Authorization of Companion Digital Channels

136. In the *Notice* we outlined an approach for authorizing digital channels to LPTV, TV translator and Class A stations based on Part 74 of the rules.[267] We contemplated permitting stations in these services to seek a companion channel with a secondary spectrum use priority, regardless of whether a station's existing analog channel has certain additional protections against interference, as is the case for Class A stations, or is subject to displacement by primary stations, as are translators and LPTV stations. Under this approach, we would not, at this stage of the DTV transition, award Class A stations second channels for digital operation (*i.e.*, channels having Class A primary status requiring protection from full-service stations). To do so would limit our spectrum flexibility to complete the implementation of the full-service DTV transition.[268] We stated that an all-secondary status licensing scheme would also allow us to use less extensive interference protection standards, thus expanding the number of stations that might

[265] *See* Section V., *infra*.

[266] *See* 47 C.F.R. § 76.53.

[267] *Notice*, 18 FCC Rcd at 18404.

[268] A number of commenters suggest that we take this opportunity to transform some or all of the low power broadcasting service into a service having primary regulatory status. As we stated in the *Notice*, "[I]n this proceeding we are not addressing the interference protection priorities, rights and responsibilities of stations in the LPTV service, which are well established. . . . Provisions regarding the secondary regulatory status of stations in the LPTV service are not at issue in this proceeding." *See Notice*, 18 FCC Rcd at 18383, n. 80. Requests to radically alter the nature of the service by authorizing some or all new digital stations on a primary, interference-protection basis are clearly beyond the scope of this proceeding.

obtain an additional channel.

137. We acknowledged that Section 336(f)(4) of the Act sets forth a different approach to providing digital channels for some stations.[269] That section states that the Commission is not required to issue additional licenses for advanced television services to Class A and television translator stations, but must accept applications for such services if they meet certain strict interference criteria. In the *Notice* we sought comment on whether, under Section 336(f)(4), any additional channels awarded under its terms would be protected from displacement by primary stations and, if this status would extend to Class A stations and to translators' digital channels as well.

138. We received a number of comments by incumbent low power broadcasters in support of licensing digital companion channels.[270] In contrast, full-service broadcasters and some 700 MHz wireless providers oppose allowing low power broadcasters to obtain a companion digital channel, urging that we provide only that these stations may "flash-cut" to digital operation.[271] They maintain that licensing companion digital channels would congest the spectrum, complicate the "re-packing" of the core television channels and the clearing of the 700 MHz band, risk interference to DTV broadcast operations, and divert needed FCC resources from the full-service DTV transition. The CBA responds that full-service stations have had more than six years to file for their digital facilities and make facilities modifications or DTV channel allotment changes.[272] The CBA states that the DTV transition is not, as MSTV/NAB suggests, at a crossroads but is instead "nearing the finish line."[273] The NTA classifies the "complication to re-packing" argument as "spurious," arguing that if there are no channels available in a particular area, then low power broadcasters will not be able to apply for a companion digital channel.[274] It concludes that awarding digital low power channels on a secondary basis will have no effect on the full-service DTV transition or the efforts to clear the 700 MHz band.[275] As for possible interference to full-service DTV facilities and 700 MHz licensees, San Bernardino County remarks that the low power services "have a record of non-interference that holds every promise for expansion without significant new problems."[276]

139. With respect to the strain on Commission resources that may occur if we permit low power broadcasters to apply for a companion digital channel, the NTA notes that the Commission has a separate staff to process low power applications and that it is "hard to imagine how additional applications to be processed by this separate staff may affect the Commission's resources."[277] San Bernardino County adds that the processing of applications for new service to the public "always involves an expenditure of

[269] *Notice*, 18 FCC Rcd at 18407.

[270] *See*, *e.g.*, CBA Comments at 3 and Reply Comments at 4-7; NTA Comments at 29 and Reply Comments at 5-8; APTS/PBS Comments at 4; Fox Comments at 4-5; Joint Commenters Reply Comments at 39-47; San Bernardino County Comments at 4 and Reply Comments at 3-5; Bruno Reply Comments, seriatim; Commercial Reply Comments, seriatim; Tiger Eye Reply Comments, seriatim.

[271] *See*, *e.g.*, MSTV/NAB Comments at 2-4 and 9-20 and Reply Comments 1-5; Venture Comments at 2-3 and 7; Annapolis Comments at 2; International Comments at 4; Word of Life Comments at 2; Cox Comments at 3-4; Paxson Comments at 6-7 and Reply Comments 2-3.

[272] CBA Reply Comments at 3.

[273] *Id.* at 3-4.

[274] NTA Reply Comments at 6.

[275] NTA Reply Comments at 7; *see also* Joint Commenters Reply Comments at ¶ 40..

[276] San Bernardino County Reply Comments at 4.

[277] NTA Reply Comments at 7.

administrative resources, albeit a tiny one compared with the beneficial effects for new licensees, manufacturers, program producers and the public."[278]

140. The opposing commenters also argue that Section 336(f)(4) does not require grant of a second digital channel or explicitly permit non-Class A LPTV stations to apply for these channels. The Joint Commenters respond that the statute is clear that the Commission should accept applications for DTV channels from Class A stations.[279] The Joint Commenters argue that, for LPTV stations, the statute neither provides nor denies the opportunity to file an application.

141. We will allow permittees and licensees of LPTV, TV translators and Class A stations to seek a companion channel for their digital operation on a secondary basis.[280] We agree with the CBA that low power stations "serve the same viewers as full-service stations and they face all the same problems over time as the universe of television receivers evolves toward digital technology."[281] Allowing opportunities for companion analog and digital channel operations would, we believe, facilitate the digital conversion of many stations in the LPTV service. We are concerned that flash-cutting by all low power stations could leave numerous rural viewers without free over-the-air television service and put many low power broadcasters out of business. As the CBA states, "[F]lash-cut from analog to digital operation on a single channel may well be suicidal to a station, because it will instantly cut off a substantial portion of the station's potential audience."[282] We concur with CBA that "[M]ost low power stations operate in rural areas or underserved urban markets where digital set penetration will likely occur at a slower pace. . . A second channel for ramp-up, to attract viewers to digital operation while maintaining the analog operation essential for economic support is at least as important if not more so to Class A/LPTV stations as to full-service stations."[283]

142. Because we will award companion digital channels on a secondary basis, we reject the claims of full-service broadcasters that our action will negatively impact their DTV transition.[284] After broadcasters elect their post-transition DTV channel, we will make further channel adjustments in generating a final DTV Table of Allotments. As they have done throughout their history, LPTV and TV translator station operators will accept authorizations with the understanding that these may be displaced at a later date by a full-service broadcast station (*e.g.*, a station operating on its post-transition DTV channel) and assume the risk associated with secondary status. The NTA notes that the "very limited possibility of future full-service station channel changes is not a reason to delay the adoption of rules for digital translators."[285] We agree with CBA that providing opportunities for digital companion channels could

[278] San Bernardino County Reply Comments at 5.

[279] Joint Commenters Reply Comments at ¶ 45.

[280] Similar to the approach we followed for the authorization of full-service digital channels, we will authorize the companion digital channel together with the station's analog authorization as part of a single modified station license.

[281] CBA Comments at 3.

[282] *Id.*

[283] CBA Reply Comments at 5.

[284] Paxson notes that some full-service stations do not have a paired DTV channel and argues that the Commission should focus its attention on outstanding full-service DTV issues instead of using spectrum to award second channels to low power television broadcasters. Paxson Comments at 2-4. The issue of how to address full-service television stations that were not awarded a paired DTV channel will be considered in a future DTV proceeding.

[285] NTA Reply Comments at 8.

help "to stimulate digital set penetration, to maximize the public interest through continuation of incumbent services and to avoid the sudden flash-cut loss of analog service in areas that might not be ready for complete digital transition."[286]

143. *Section 336(f)(4)*. Class A stations may flash-cut their analog channel to digital operation at any time and retain their primary regulatory status.[287] To provide these stations with the same flexibility as LPTV and TV translator stations, we will permit Class A stations to apply for a companion digital channel, but such channels will be licensed on a secondary basis as an LPTV station. In the *Notice* we recognized that Section 336(f)(4) of the Communications Act describes a different approach to providing digital channels for some stations. In pertinent part, this section reads as follows:

> The Commission is not required to issue any additional license for advanced television service to the licensee of a class A television station under this subsection, or to any licensee of any television translator station, but shall accept a license application for such services proposing facilities that will not cause interference to the service area of any other broadcast facility applied for, protected, permitted, or authorized on the date of filing of the advanced television application.[288]

The *Notice* sought comment on whether the licensing approach set forth in the statute is the only means by which we can authorize additional channels to Class A and translator stations, or whether we may now permit Class A stations to seek second channels for secondary LPTV stations and defer implementation of the 336(f)(4) licensing approach until a later point in the DTV transition. We also asked if there is a way to combine the statutory and the secondary licensing approaches, for example, permitting applications to be filed under both approaches and providing a means for resolving mutually exclusive applications in different classes. We also sought comment on whether additional channels awarded under the statute to Class A stations would be protected from displacement by primary stations and, if so, whether this protection would also extend to digital channels authorized to TV translators.[289]

144. Full-service television broadcasters oppose authorization of second channels with protected status for Class A stations, contending that the statute does not require to Commission to issue such licenses and that to do so would undermine the full-service transition to digital television.[290] Other parties maintain that Congress intended that the Commission award second channels for digital Class A operations under the provisions of Section 336(f)(4).[291] Commenters did not address how we could combine the two licensing approaches.

---

[286] *See* CBA Reply Comments at 7.

[287] *See* 47 U.S.C. § 336(f)(4).

[288] *Id*.

[289] *Notice*, 18 FCC Rcd at 18408

[290] *See*, for example, MSTV/NAB Comments at 3-12 (second channels to Class A stations would "make the challenge of accommodating the transition of all full service stations even more difficult by further congesting [the] broadcast spectrum" and, in the event second channels are awarded to Class A stations, 336(f)(4) does not specify that these should have the interference protections of Class A stations).

[291] CBA Comments at 6-7 ("Failure to award primary status both runs contrary to the intent of Congress and creates a negative incentive for an analog operator to invest in high quality digital transmission facilities"); APTS/PBS Comments at 3-5 (submitting that the statute requires acceptance of applications for digital upgrades by translator stations and questioning why Congress would require processing of such applications without authorizing digital service).

145. In creating the Class A TV service, we acknowledged that the statute requires the acceptance of Class A applications for additional DTV licenses, but also concluded that "the plain reading of the CBPA, as well as the legislative history of the Act, does not require us to issue an additional license for DTV services to Class A or TV translator licensees."[292] We also stated that "we should exercise restraint to issuing additional DTV licenses in order to preserve spectrum to accommodate needs associated with the transition of full-service stations to digital service…and that a number of issues are yet to be resolved in future DTV proceedings."[293] As a result, we deferred matters regarding issuance of additional digital licenses for Class A stations to a future proceeding.

146. Significant DTV spectrum matters are yet to be resolved.[294] Indeed, we are approaching a pivotal stage in the transition when full-service broadcasters will be electing their post-transition DTV channels.[295] Under the channel election procedures, DTV broadcasters first will certify their intentions to replicate their NTSC service or maximize their already-authorized service. The majority of stations - those with in-core DTV and NTSC channels – are scheduled to make their initial election in December 2004. The multi-step channel election process will culminate with the development of a post-transition DTV allotment table that will accommodate all full-service TV broadcasters with an in-core DTV channel.

147. More than 600 Class A stations are licensed to operate, many in large metropolitan areas. Permitting these stations to file applications for digital channels with Class A-protected status would introduce uncertainty into the channel election process and complicate our efforts to find channels for broadcasters who are either unable to make an election or to elect a suitable channel (*e.g.*, stations with out-of-core NTSC and DTV channels). [296] Uncertainty would also arise because the CBPA does not explicitly address the interference protection rights and responsibilities of Class A stations authorized a second channel for "advanced television service." [297] During the election process, prospective applicants for digital Class A stations would also face uncertainty as they considered their requirement under 336(f)(4) to protect "any other broadcast facility applied for, protected, permitted or authorized on the date of filing of [their] advanced television application." In determining the acceptability of such applications, we would anticipate controversies over interference conflicts between proposed Class A facilities and DTV channel elections and service area intentions. We are concerned that such complications could delay the election process and, therefore, prolong the DTV transition.

148. A better course of action, we believe, is to continue to defer awarding second digital

[292] *See Class A Report and Order*, 15 FCC Rcd at 6394.

[293] *Id*.

[294] MSTV/NAB urge that we take a "cautious approach" because "[O]nce full power broadcasters begin to migrate to their final digital channels, there will inevitably be unexpected service and interference issues that will need to be worked through, and the Commission needs to conserve adequate spectrum to ensure that these matters can be resolved as effectively as possible." MSTV/NAB Comments at 7.

[295] *See Second Periodic Review of the Commission's rules and Policies Affecting the Conversion to Digital Television*, *Report and Order*, FCC 04-192, released September 7, 2004.

[296] There are also more than 4700 licensed TV translator stations. In the CBPA, we believe that Congress intended to provide these stations an opportunity to seek a companion channel for digital operations, but with the same secondary regulatory status applicable to their analog station operations; there is no indication to the contrary in the statute or accompanying legislative history.

[297] The CBPA provides analog Class A stations certain protection rights with respect to DTV service maximization and requests for allotments by new entrants, but also stipulates that Class A stations must yield to DTV stations in the event of conflicts arising from technically necessary modifications to DTV facilities or channel allotments. 47 U.S.C. § 336(f)(1)(D).

channels with protected status to Class A licensees, but also provide opportunities for these licensees to seek digital channels for LPTV station operations. We make clear that Class A station licensees are guaranteed primary status on one of their channels. Class A stations, therefore, will retain Class A regulatory status on the channel they ultimately choose to retain for digital operations. Once the election process has concluded and DTV spectrum and service area issues are settled, we will be in a better position to consider awarding second channels with protected status to Class A station licensees, thereby enabling them to operate paired analog and digital stations for the duration of their digital transition period. [298] We will consider in our next DTV periodic review proceeding issues related to how and when to permit Class A stations to seek companion channels for digital Class A operations or to convert their LPTV digital companion channels to Class A regulatory status.

3. Filing Window for Companion Digital Channels

149. In the *Notice* we tentatively concluded that we should place a high priority on facilitating the digital transition of existing LPTV and TV Translator service.[299] We also stated that we wished to provide opportunities for Class A stations to obtain channels for digital operations. We stated that the digital low power transition should be built around the base of existing analog LPTV, TV translator and Class A stations. We contemplated opening an initial filing window for only incumbent stations to file for digital companion stations. We did not contemplate that such an initial incumbent-only digital companion channel filing window would be geographically restricted. Only after the completion of this initial window, did we anticipate opening additional opportunities for new digital low power stations to be filed on a first-come, first-served basis.[300]

150. The commenters generally supported an incumbent-only digital companion channel filing window.[301] The CBA requests that no applications for new digital stations be permitted until existing stations have had an adequate opportunity to apply for digital channels.[302] Entravision states that "[B]uilding initial digital service around the base of existing analog LPTV, television translator, and Class A stations provides the best means for the Commission to accelerate the DTV transition without disrupting existing services."[303] Cordillera notes that, for full-service DTV transition, the Commission built initial digital service on the base of existing analog stations.[304] Cordillera believes "there is no reason to stray from this approach for low power stations, especially given the public interest benefits that would result."[305]

151. A number of commenters suggests that an incumbent-only filing window be done on a geographic basis and that we first allow applications for digital companion channels in rural areas.[306] San Bernardino County, for example, suggests that we use the same approach used for the first LPTV

[298] *See Notice*, 18 FCC Rcd at 18408, n 181.

[299] *Notice*, 18 FCC Rcd at 18403.

[300] *Id.* at 18404.

[301] *See* Bonneville Comments at 10; CBA Comments at 5 and 7-8; Entravision Comments at 7-8; NTA Comments at 24; Riverton Comments at 6; Vermont Educational Comments at 5; Cordillera Comments at 2-4.

[302] CBA Comments at 5; NTA Comments at 25.

[303] Entravision Comments at 8.

[304] Cordillera Comments at 2.

[305] *Id.*

[306] *See* Bonneville Comments at 10-11; APTS/PBS Comments at 6-8; Joint Commenters Comments at 21.

application freeze in 1982. San Bernardino County states that, at that time, applications were limited to "Phase I" communities, defined as more than 55 miles outside the reference coordinates of 212 ranked markets in the Commission's TV Channel Utilization Report. Later, Phase II was added to the eligible area – locations outside the reference coordinates of the top 100, followed by Phase III which had no geographic restrictions. San Bernardino County argues that a similar approach should be used for the digital companion channel initial window to ensure that applications are for "places where there is just one established operator, and therefore a reduced likelihood of application conflicts from multiple filers."[307]

152. Based on the support of the public, we will adopt our contemplated filing procedure and allow LPTV, TV translator and Class A station licensees and permittees to file for digital companion channels in an initial filing window. Allowing existing stations to have the first opportunity to obtain digital channels will encourage these stations to take the lead to further the DTV transition. This will also help to reduce possible disruption of service for existing low power stations by allowing these stations the first opportunity to seek available TV channels on which to operate companion digital facilities.[308] Restricting the initial window to applications for digital companion channels will also avoid the difficult task of deciding among mutually exclusive applications for digital companion service by incumbents and new digital low power service by new entrants.[309]

153. This window will be announced by Public Notice that will detail the pertinent filing parameters and procedures. Only existing LPTV, TV translator and Class A TV station licensees and permittees will be permitted to file for digital companion channels during this initial window. We will allow stations to seek only a single digital companion channel for each existing analog channel. In addition, applicants for digital companion channels must propose to serve the community of license of their associated analog facility. Finally, stations will be required at some point - to be determined in a future proceeding - to return one of their two companion channels to the Commission.

154. We will not adopt a geographic approach to the digital companion channel window. As we noted in the *Notice*, many stations, particularly LPTV and Class A stations, are located in and around major cities for which the last opportunity to file for a new station occurred in 1991.[310] This was done to specifically preserve spectrum options for DTV service in the major television markets. We are concerned that limiting the digital companion channel window to only rural areas, as suggested by the NTA, may unfairly limit opportunities for urban LPTV stations to secure available spectrum, which may be most limited in these areas.[311] We find that any digital filing window with geographic restrictions would be inherently unfair to some parties. We agree with the CBA that "wherever the line is drawn between regions, there will always be someone on the wrong side of that line, whose ability to find a digital channel will be constrained by someone on the other side of the line whose window opened earlier."[312] To encourage the roll-out of low power digital TV service to all areas of the United States, we will only restrict the filing of applications for digital companion channels in the initial filing window to existing stations.

155. At some point after the incumbent-only filing window for digital companion channels,

[307] San Bernardino County Comments at 6.

[308] *See* Vermont Educational Comments at 5.

[309] *See* Joint Commenters Comments at 21.

[310] *Notice*, 18 FCC Rcd at 18403.

[311] NTA Comments at 2.

[312] CBA Comments at 5, n. 12; *see also* St. Clair Reply Comments at 7.

we will permit applications to be filed for new digital LPTV and TV translator stations without eligibility restrictions. Such applications will be received on a first-come, first-served basis (*i.e.*, "rolling one-day windows"). A Public Notice will announce the date for the beginning of this application filing process.

156. In order to stabilize our low power database and to ensure that interested parties are able to identify available channels for digital use, a freeze will be announced on the filing of analog minor change and displacement applications for LPTV, TV translator and Class A stations prior to the beginning of the initial digital companion channel window filing period.[313] The Public Notice will set out the length and terms of the analog filing freeze. After the digital companion channel window has been completed, applications for analog minor change and displacement applications will once again be accepted.

157. Currently, applications for new analog stations or major changes to analog LPTV, TV translator and Class A stations may not be filed.[314] We recognize that some station operators and other entities would like an opportunity to file these types of applications, particularly in those locales with relatively little or no over-the-air television service.

158. With respect to the timing for the filing of applications for digital companion channels, some commenters oppose opening any such application filing opportunity until the full-service DTV transition has advanced to a later stage.[315] These commenters urge us not to allow the filing of any digital low power applications until full-service stations have made their final DTV channel election and the final "re-packed" DTV Table of Allotments has been announced. They are concerned that allowing digital low power applications to be filed before there has been more clarity in the full-service DTV transition would hinder that process as well as the clearing of the 700 MHz band. The CBA and NTA oppose delaying the start of the digital low power transition.[316] APTS/PBS point outs that Congress has appropriated $29 million to the Rural Utilities Service (RUS) to upgrade rural public television facilities including translators.[317] APTS/PBS maintains that a delay in the licensing of digital channels would prevent the implementation of facilities under the RUS program. The CBA states that full-service broadcasters have had more than six years to propose their DTV facilities.[318] The NTA argues that the DTV Table of Allotments is "largely in final form now and will be even nearer to completion when digital translator applications can first realistically be filed."[319] Commercial Broadcasting Corp. agrees saying that the full-service digital transition "is well on its way."[320]

159. We agree that it is desirable to provide opportunities to obtain digital companion channels as soon as possible. We also believe, however, we should wait until there is additional clarity in

[313] *See* CBA Comments at 4-5; Riverton Comments at 6.

[314] Additional new Class A stations are limited to those LPTV stations that have already received Class A eligibility status. The remaining Class A-eligible LPTV stations operate on channels 52-69, which are not available to Class A stations under the Community Broadcasters Protection Act of 1999 ("CBPA"). The CBPA stipulates that these stations may seek Class A licenses only upon securing an in-core TV channel.

[315] *See* Paxson Comments at 7-8; Cox Reply Comments at 3; Rural 700 MHz Band Licensees Reply Comments at 4; 700 MHz Advancement Coalition Reply Comments at 5.

[316] CBA Reply Comments at 2-4; NTA Reply Comments at 7.

[317] *See* APTS/PBS' *ex parte* filing dated September 1, 2004, "The Importance of Digital Translators to Public Television and Rural America."

[318] CBA Reply Comments at 3.

[319] NTA Reply Comments at 7.

[320] Commercial Broadcasting Corp. Reply Comments at 7.

the full-service television transition before accepting applications for new digital service, other than through on-channel conversion. After the DTV channel election process for full-service broadcasters has sufficiently progressed, it will become clearer what channels may be available for digital LPTV and TV translator stations.[321] The majority of full-service broadcasters will be making their channel election during the first phase of the process scheduled to occur in December 2004. Subsequently, the Media Bureau will announce by Public Notice the window filing opportunity for digital companion channels and will, at a later date, establish parameters for the filing of additional applications.

4. Mutually Exclusive Applications

160. Should we receive mutually exclusive applications for digital on-channel conversion, digital companion channels or for new digital LPTV, TV translator or Class A facilities, we must resolve mutual exclusivity through competitive bidding.[322] In the *Notice* we stated that applications for new analog LPTV and TV translator stations and major facilities modifications to existing LPTV and TV translator stations are subject to the application filing and competitive bidding or "auctions" procedures given in Section 73.5002 *et seq.* of the rules.[323] That process generally begins with a Commission Public Notice announcing an auction proceeding, including the time period during which all applicants seeking to participate in an auction must file their applications (an "auction filing window"). We sought comment on whether to apply some or all of these procedures to digital LPTV and TV translator applications or whether to adopt new procedures that could better facilitate the transition from analog to digital television service.

161. We also sought comment on whether the auction exemption provisions of Section 309(j)(2)(B) of the Communications Act apply to mutually exclusive applications for new LPTV and TV translator digital stations or where such applications are mutually exclusive with other applications in the LPTV and Class A TV services.[324] We noted that Section 309(j)(2)(B) exempts from auction applications "for initial licenses or construction permits for digital television service given to existing terrestrial broadcast licensees to replace their analog television service licenses."[325] If the exemption applies, we proposed to permit applicants to resolve mutual exclusivities through engineering solutions or settlements.

162. The commenters were uniformly against the use of auctions to resolve mutual exclusivity among applications for digital low power stations.[326] The CBA states that "mutual exclusivity is a nemesis, particularly for existing stations. Many, if not most Class A/LPTV, will have to struggle to raise capital to construct digital facilities and surely will not have money to bid at auction for a digital channel."[327] Parsons states that rural communities cannot compete in an auction because "the highest bidder always wins."[328] The Joint Commenters state that the Commission avoided having to use auctions

[321] *See Second Periodic Review of the Commission's rules and Policies Affecting the Conversion to Digital Television*, *Report and Order*, FCC 04-192, released September 7, 2004 (providing a procedure and timetable for full-service stations to elect their post-transition DTV channel).

[322] *See* 47 U.S.C. § 309(j).

[323] *Notice*, 18 FCC Rcd at 18402.

[324] *Id. citing* 47 U.S.C. § 309(j)(2)(B).

[325] 47 U.S.C. § 309(j)(2)(B).

[326] *See*, *e.g.*, Joint Commenters Comments at 20; CBA Comments at 8-10; APTS/PBS Comments at 7; Parsons Comments at 15.

[327] CBA Comments at 8.

[328] Parsons Comments at 15.

for the full-service television DTV transition by finding a companion digital for each station.[329] The Commission should extend the same universal assistance to low power broadcasters seeking DTV channels out of a sense of fairness and equity, the Joint Commenters argue.[330] The Joint Commenters suggest that filing windows be tailored so that applications for stations in rural and urban areas not be mixed. The Rural 700 MHz Band Licensees argue that the auction of digital low power applications would "likely attract a large number of speculators, who are looking to turn a quick profit by reselling their licenses and who may or may not have any intention of providing service to rural customers."[331] Even if auctions are required in this case, Word, the CBA and APTS/PBS encourage the Commission to use engineering techniques to avoid mutual exclusivity.[332]

163. Section 309(j)(1) plainly states that the Commission "shall" use competitive bidding to select among mutually exclusive applications unless one of the exemptions set forth in Section 309(j)(2) applies. Unless we find that one of the auction exemptions applies in this case, we are statutorily mandated to use auctions for applications filed for new LPTV and TV translator digital stations. Some commenters argue that Section 309(j)(2)(B) forbids the use of auctions for such digital stations because they are applications for "initial licenses or construction permits for digital television service given to existing terrestrial broadcast licensees to replace their analog television service licenses."[333] KM argues that the language is clear and unambiguous and it creates no exceptions for the LPTV service.[334] A closer examination of the language of this section reveals that the exemption does not apply to applications for LPTV or TV translator stations. Section 3 of the Communications Act defines the term "analog television service" as "television service provided pursuant to the transmission standards prescribed by the Commission in Section 73.682(a) of its regulations.[335] In addition, the Communications Act defines "digital television service" as "television service provided pursuant to the transmission standards prescribed by the Commission in Section 73.682(d) of its regulations."[336] Under Part 74 of the rules, LPTV and TV translator stations are not required to comply with either Section 73.682(a) or (d). The list of broadcast regulations applicable to the low power television service does not include these rules.[337] LPTV and television translator stations, therefore, were not included in the definitions of "analog television service" or "digital television service" and are not subject to the auction exemption in Section 309(j)(2)(B).[338]

---

[329] Joint Commenters Comments at 20.

[330] *Id*.

[331] Rural 700 MHz Band Licensees Comments at 14-15.

[332] CBA Comments at 9 *citing* 47 U.S.C. § 309(j)(6)(E); APTS/PBS Comments at 8; Word Comments at 3.

[333] CBA Comments at 9; APTS/PBS Comments at 7-8.

[334] KM Comments at 8.

[335] 47 U.S.C. § 3 (49).

[336] *See* 47 U.S.C. § 153(49)(A).

[337] *See* 47 C.F.R. § 74.780.

[338] We note that Section 309(j)(2)(C) of the Act provides a separate auction exemption for noncommercial educational (NCE) stations. *See* 47 U.S.C. § 309(j)(2)(C). The Commission, however, found that LPTV and TV translators are not exempt under this section because these stations are not licensed on a NCE basis. *See Reexamination of the Comparative Standard for Noncommercial Educational Applicants*, 18 FCC Rcd 6691, 6697 (2003) *recon. pending* (*Noncommercial Report and Order*),. The Commission did, however, find that LPTV and TV translators "owned and operated by a municipality and which transmit only noncommercial and educational programs for education purposes" are exempt from auction under Sections 309(j)(2)(C) and 397(6)(B) of the Act. (continued....)

164. We also do not believe it was Congress' intent that the auction exemption apply to applications for new digital LPTV and TV translator stations. The exemption was adopted as part of the Balanced Budget Act of 1997 in conjunction with provisions intended to facilitate the full-service digital television transition. A second digital channel had been allocated by the Commission for each full-service television station and Congress adopted an exemption from the auction provisions to make clear that full-service stations would not be required to bid for their second digital channel. At the time, we had not considered the DTV transition for low power stations. Therefore, we believe it was not Congress' intent that the digital television exemption apply to applications for low power digital channels.

165. As for Class A stations, as we announce herein, we will permit these stations to file an application to either convert to digital on their existing analog channel or for a digital companion channel. Digital companion channels to Class A stations will be licensed on a secondary, LPTV basis and at this juncture operation of companion channels will not be subject to the requirements of Section 73.682(d) of the rules. Because companion channels to Class A stations, like those licensed to LPTV and TV translators, are not subject to Section 73.682(d), they do not fall within the definition of "digital television service," and they are not subject to the auction exemption in Section 309(j)(2)(B). Class A TV stations that choose to convert to digital on their existing analog channel will be licensed on a primary, Class A basis and their converted digital facilities will be subject to the requirements of Section 73.682(d). Class A digital conversion applications, therefore, are exempt from auction. In the event that a Class A digital conversion application is found to be mutually exclusive with other such application(s) or digital companion channel application(s), we will allow the parties a period of time to find an engineering solution to resolve their mutual exclusivity. Failure to do so will result in the dismissal of the applications in the mutually exclusive group.

166. We will utilize the existing Part 1 and broadcast auction and filing procedures set forth in the rules with respect to mutually exclusive applications for digital LPTV and TV translator stations.[339] The initial digital companion channel window will be conducted as an "auction filing window." During the window, existing stations seeking a digital companion channel will submit a "short-form" application (FCC Form 175) together with required certifications, information and exhibits, including technical data on the proposed digital facility necessary to determine mutually exclusive applications (*i.e.*, applications that cannot all be granted in compliance with out interference protection standards). Short-form applications determined to not be mutually exclusive and winning bidders from the auction will be notified by Public Notice and required to submit a "long-form" (FCC Form 346) that will be processed according to the rules and be subject to the filing of petitions to deny. Filing of digital conversion applications and displacement relief applications will not be permitted during the digital companion channel auction filing window. Only those applications determined to be mutually exclusive will be scheduled for auction.

167. While we are statutorily required to use auction procedures to select among mutually exclusive applications for LPTV and TV translator stations, we intend to provide an opportunity to utilize engineering solutions and settlements to resolve conflicts among applications. CBA argues that a settlement opportunity may provide licensing efficiency and avoid undue delay initiating digital low power

(...continued from previous page)
We will follow the procedures established by the Commission for resolving applications filed by municipalities that are determined to be mutually exclusive with other applications. *Noncommercial Report and* Order, 18 FCC Rcd at 6700.

[339] *See* 47 C.F.R. §§ 1.2100 *et seq.* and 73.5000 *et seq*; *see also Implementation of Section 309(j) of the Communications Act – Competitive Bidding for Commercial Broadcast and Instructional Fixed Service Licenses*, 13 FCC Rcd 15920 (1998).

service.[340] Consistent with past practice with other secondary LPTV applications that are subject to auction (*e.g.*, Auction No. 81), the Media Bureau may provide applicants with a limited period after the filing of short-form applications to enter into settlement agreements[341] and/or to submit engineering amendments to their proposals.[342]

5. Digital Station Construction Period

168. In the *Notice* we proposed applying to digital LPTV and TV translator stations the construction period provisions applicable to analog stations in these services.[343] Under the analog rules, each original construction permit for a new station or changes to an existing station specifies a period of three years from the date of the issuance of the original construction permit for completion of construction and filing of a license application. The grant of an application to modify the construction permit does not extend the expiration date of the underlying construction permit.

169. Commenters supported a three-year construction period for digital LPTV, TV translator and Class A stations. [344] APTS/PBS urges retention of the three-year period stating that "many public television stations will be seeking federal funding assistance for digital translator and/or booster construction. . . (and that) frequently the time that it takes from filing of the grant application to an award is nearly a year."[345] APTS/PBS also points out that many translators are operated by universities and colleges that must work with their schools' budget cycle. It is important, APTS/PBS argues, to adopt a construction period that accommodates these unique circumstances.[346] KM argues that full-service stations have had a number of years to complete their DTV facilities and LPTV stations should not have to complete construction in a much shorter time period.[347] Commercial suggests that a standard three-year construction period be adopted because of possible bottlenecks that may arise with the manufacturing community and unforeseen circumstances that may arise.[348] Commercial suggests that on-channel digital conversions have no deadline other than the absolute end of the transition.[349]

170. Given the record support, we adopt the three-year construction period as proposed in the *Notice*. Once again, the grant of an application to modify construction permit will not extend the expiration date of the underlying construction period. We decline Commercial's suggestion that there should be no construction deadline for construction permits issued for on-channel digital conversions. We are not certain when the digital transition will be completed for stations in the low power television

[340] CBA Reply Comments at 10.

[341] To prevent possible abuse by applicants, we will require that parties submitting a settlement agreement comply with the settlement limitations set forth in Section 311(c) of the Communications Act of 1934, as amended, and Section 73.3525 of the Commission's rules, including, *inter alia*, the reimbursement limitations.

[342] *See* 47 C.F.R. § 73.5002(d).

[343] *See Notice*, 18 FCC Rcd at 18410 *citing* 47 C.F.R. § 73.3598.

[344] *See* APTS/PBS Comments at 9; Joint Commenters Comments at 23; Parsons Comments at 15; San Bernardino County Comments at 3; KM Comments at 13; Commercial Reply Comments at 6-7.

[345] APTS/PBS Comments at 9.

[346] *Id.*

[347] KM Comments at 13.

[348] Commercial Reply Comments at 6-7.

[349] Commercial Reply Comments at 7.

service. In order to prevent spectrum from laying fallow and to foster digital TV service to the public, we will require that all construction permits issued in the digital LPTV, TV translator and Class A services, including on-channel digital conversion construction permits, expire three years after their issuance.

171. As for requests to extend digital low power construction permits, we have two possibilities for processing these requests. We could adopt the "tolling" provisions for analog LPTV and TV translator construction permits.[350] Those provisions are strict and only permit extension of construction permits under very limited circumstances. On the other hand, we could adopt the separate extension provisions that were created for full-service DTV construction permits.[351] The Joint Commenters support this approach.[352] The full-service DTV extension provisions allow extension whenever the permittee is able to demonstrate that construction was delayed do to unforeseeable circumstances or circumstances beyond its control. If the permittee shows that it took all reasonable steps to overcome the delay expeditiously, an extension application is granted. In addition, permittees may demonstrate that they were unable to construct their digital facility because of financial hardship. Up to two extensions may be granted by the staff and further extensions must be acted upon by the Commission. Failure to justify an extension can result in the application of certain remedial measures.[353]

172. Because we anticipate that stations in the low power television service may find the DTV construction process very challenging, we adopt the full-service DTV construction permit extension procedures for the digital low power and Class A television services. This will allow those permittees that experience delays in construction or financial hardship the opportunity to justify an extension of their digital construction permit. At the conclusion of the three-year construction period, LPTV, TV translator, and Class A permittees may request an extension of no more than six months to complete construction of their digital facilities. We delegate to the Media Bureau the authority to grant or deny the first two applications for extension of the digital construction deadlines in the low power television and Class A services. Subsequent applications for extension must be referred to the Commission for action. We adopt the standard for extension currently set forth in the full-service television DTV extension rule.

6. Application Forms and Fees

173. We requested comment in the *Notice* on what fees should apply to digital LPTV and TV translator stations.[354] We proposed using the same application fees for analog and digital LPTV and TV translators for particular types of applications (*e.g.*, new and major change, minor change, and assignment and transfer). We asked how we should consider digital LPTV, and TV translator stations for purposes of regulatory fees assessed pursuant to Section 9 of the Communications Act.[355] The majority of commenters supported our approach.[356] The Joint Commenters asked that we adopt lower fees for digital LPTV, TV translator and Class A stations in rural areas by a factor of 50%.[357]

---

[350] *See* 47 C.F.R. § 73.3598(b).

[351] *See* 47 C.F.R. § 73.624(d)(3).

[352] Joint Commenters Comments at 23-24.

[353] *See Remedial Measures For Failure to Comply with Digital Television Construction Schedule*, 18 FCC Rcd 7174 (2003).

[354] *Notice*, 18 FCC Rcd at 18412.

[355] *Id. citing* 47 U.S.C. § 159.

[356] Entravision Comments at 9; APTS/PBS Comments at 12; NTA Comments at 28.

[357] Joint Commenters Comments at 25.

174. We will adopt the application fees for digital LPTV, TV translator and Class A stations applicable to analog stations.[358] LPTV and TV translator stations will file digital conversion applications and applications for digital companion channels on FCC Form 346. Class A stations will file digital conversion applications and digital companion channel applications on FCC Form 301-CA. In all cases, these applications will be filed as a minor change without an application filing fee (as is the case with analog minor change applications in these services).[359] The NTA supports this approach.[360] This approach is similar to the one that full-service television stations followed when they sought their paired digital channel.[361]

175. Applications for new or major change digital LPTV and TV translator stations will also be filed on FCC Form 346, will be treated as an application for a new station or major change, and will pay the standard application fee. Requests for Special Temporary Authority (STA), for extension of construction permit, for assignment or transfer of a digital-only station, for a station license and for renewal of license will be filed in the same manner as analog stations and will pay the same application fees for these filings.[362]

176. We reject the Joint Commenters' suggestion that we lower the application fees for stations in "rural areas."[363] The Joint Commenters do not offer any manner by which to define the term "rural areas" nor do they give any significant reason why these stations should be permitted to pay a significantly lower application fee. All applications require the same use of Commission resources and the application filing fees should be applied regardless of the location of the station.

177. With respect to regulatory fees, a decision will be made in the context of the Commission's annual regulatory fee rulemaking. However, we note that full-service television stations do not pay a separate regulatory fee for their paired digital channel and we will not, therefore, propose a separate regulatory fee for those stations in the low power television service that obtain a digital companion channel. In addition, we will propose that LPTV, TV translator and Class A stations that choose to convert on-channel to digital (and have a single facility) should continue to pay the corresponding regulatory fee for their service.[364]

7. Ancillary and Supplementary Use Fees

178. Section 336(e) of the Communications Act requires that we collect a fee from digital stations that offer ancillary and supplementary services on a subscription basis.[365] In the *Notice* we noted

[358] Eligible noncommercial educational stations will continue to be exempt from application and regulatory fees. *See* 47 C.F.R. § 1.1162(e) and 47 U.S.C. § 159(h)(1).

[359] The Media Bureau will implement the necessary changes to all forms used in the low power television service for use with digital stations. Such changes will be announced in a subsequent Bureau Public Notice.

[360] NTA Comments at 28.

[361] *See Advanced Television Systems and Their Impact upon the Existing Television Broadcast* Service, 12 FCC Rcd 12809 (1997).

[362] As is the case with full-service television broadcasters' paired DTV channel, the low power broadcaster's companion digital channel will be considered part of its station's analog license and may not be separately assigned to a third party.

[363] *See* Joint Commenters Comments at 25.

[364] We note that Class A stations are treated as LPTV stations with respect to regulatory fees.

[365] *See* 47 U.S.C. § 336(e); *see also* 47 C.F.R. § 73.624(g).

that these fees relate to the DTV eligibility provisions given in Section 336(a) (*i.e.*, full-service DTV broadcasters).[366] We sought comment on whether to impose fees for ancillary and supplementary services provided by digital low power stations even if the fees are not statutorily required. We also asked what the basis should be for such fees, and we sought comment on whether to follow the approach applicable to full-service DTV broadcasters (*i.e.*, an annual fee in the amount of 5% of a station's gross revenue from feeable services). Alternatively, we asked if we should not levy such fees.

179. The majority of the commenters supported imposition of the 5% fee to digital LPTV stations that provide ancillary and supplementary services.[367] The CBA, APTS/PBS and Vermont Educational support the imposition of the 5% ancillary and supplementary fee.[368] The CBA states that Class A/LPTV stations should have the "same freedom as full power stations to offer ancillary services."[369] The CBA adds that "[T]he benefits to the public are the same, and revenue benefits accrue to both licensees and the government."[370] Bruno does not believe that stations should be required to pay the 5% fee until they reach a threshold of $3,000,000 gross sales per year.[371] Bruno states that this was determined by the Commission in the closed captioning rules to be a "reasonable threshold for station to be able to contribute to public interest funding requirements."[372]

180. We will apply annual fees for ancillary and supplementary services provided by digital LPTV and TV translator stations on a subscription basis. We will mirror the approach applicable to full-service DTV broadcasters, and we will impose an annual fee in the amount of 5% of a station's gross revenue from feeable services. This was the approach the Commission adopted when it concluded that Class A stations should be subject to the fee.[373] As the Commission stated in that proceeding, "this action furthers the Commission's goal of encouraging the transition of television broadcasting from analog to digital operation. By enabling Class A stations to generate additional revenues from ancillary or supplementary services, we seek to encourage the early conversion of Class A stations from analog to digital operation."

181. The Commission also imposed the 5% fee to LPTV stations involved in the digital data service "pilot project" set forth in Section 336(h) of the Act.[374] When the Commission set up that pilot project in 2001, it noted that, under Section 336(h)(6), Congress mandated that the Commission collect "an annual fee or other schedule or method of payment comparable to any fee imposed under the authority of this Act on providers of similar services."[375] We agree with the Commission's finding that: "Based on the

[366] *Notice*, 18 FCC Rcd at 18412.

[367] Eagle mistakenly believes that we proposed that all digital Class A and LPTV stations be required to pay 5% of their yearly gross revenues to the Commission. *See* Eagle Comments at 1. We only proposed that stations providing ancillary and supplementary services on a subscription basis pay a fee equal to 5% of the gross revenues derived from such services.

[368] CBA Reply Comments at 11; APTS/PBS Comments at 10; Vermont Educational Comments at 3.

[369] CBA Reply Comments at 11.

[370] *Id.*

[371] Bruno Comments at 8.

[372] *Id.*

[373] *See Establishment of Class A Television* Service, 16 FCC Rcd 8244, 8258 (2001).

[374] *See* 47 U.S.C. § 336(h).

[375] *See Implementation of LPTV Digital Data Service Pilot* Project, 16 FCC Rcd 9734, 9743 (2001).

statute, we believe that the services that will be offered by LPTV licensees in the pilot project (digitally-based interactive broadcast services and wireless Internet access) are similar to certain of the services, including ancillary or supplementary services that may be offered by Digital Television (DTV) licensees. . . . Not only are the digital data services that may be provided by LPTV stations similar to those that may be provided by DTV licensees, but, in addition, we believe that a fee of five percent will not discourage the provision of these services just as we noted that it would not dissuade DTV broadcasters from offering such DTV ancillary or supplementary services." Consistent with those earlier pronouncements, we conclude that imposition of a 5% fee for the provision of feeable ancillary and supplementary services by digital LPTV stations is appropriate and will not discourage the provision of these services. The same ancillary and supplementary services that are feeable if provided by full-service stations shall be feeable if provided by LPTV stations.[376]

8. International Coordination

182. In establishing rules for digital LPTV, TV translator and Class A stations, we are mindful of our obligations under our existing bilateral agreements with Canada and Mexico regarding the authorization of LPTV service in the common border areas.[377] We recognize that existing bilateral agreements do not contain provisions for digital LPTV, TV translator or Class A stations. Under the existing agreements, analog LPTV and TV translator stations have secondary status with respect to Canadian and Mexican primary television stations and allotments and must not cause interference to the reception of these stations, nor are LPTV and TV translator stations protected against interference from these stations.

183. As stated in the *Notice*, we will work over time to update the current bilateral agreements to include provisions for digital LPTV and TV translator stations and also for digital Class A stations.[378] In the interim, we will attempt to obtain the approval of such stations in the border area on a case-by-case basis. Any digital low power or Class A stations authorized on this basis will be subject to conditions resulting from the coordination process and any final bilateral agreements reached with Canada and Mexico. We disagree with the MSTV/NAB that authorizing digital companion channels to LPTV and translator stations in the border areas will complicate the process of full-service stations obtaining authorizations for their digital services in the border areas.[379] In this regard, the NTA "does not believe that unspecified impacts on international agreements should be the basis of a determination that very large segments of the United States should not receive free digital television."[380]

G. Station Operation

1. Unattended Operation

184. LPTV and TV translator stations may be operated unattended subject to certain

[376] *See* 47 C.F.R. 73.624(c).

[377] Agreement on the Assignment of Low Power Television Stations along the Border, Sept. 14, 1998, United States-Mexico; Agreement on VHF and UHF Television Broadcasting Channels, Jan. 5, 1994, United States-Canada.

[378] *Notice*, 18 FCC Rcd at 18414.

[379] MSTV/NAB Comments at 8.

[380] NTA Reply Comments at 8.

requirements to guard against interference and outages of tower lighting.[381] In the *Notice* we proposed to apply the analog regulatory provisions to digital LPTV and TV translator operations.[382] Bonneville supports our proposal noting that rural television translator networks often involve hundreds of translator stations in remote areas.[383] Given the fact that unattended operation has not been problematic under the existing rule for analog stations, we adopt our proposal and we will apply the current rule for unattended operation for digital LPTV and TV translator operations.

2. Time of Operation

185. LPTV and TV translator stations are not required to adhere to a minimum operating schedule because we desire to facilitate flexible LPTV station operations and to minimize the cost of regulatory compliance. While there is no minimum operating schedule, TV translator stations are required to "provide service to the extent that such is within its control and to avoid unwarranted interruptions in the service provided."[384]

186. In the *Notice* we sought comment on whether to require minimum hours of operation for digital TV translator and/or LPTV stations and, if so, how to structure the requirement.[385] CBA, Commercial, and Venture oppose adding a minimum operating requirement for digital stations in the low power service.[386] CBA argues that these stations are "not likely to waste second-channel digital facilities that they were not compelled to construct in the first place."[387] To encourage low power television service stations to convert to digital operation and to experiment with innovative services, CBA recommends that the Commission "eschew simulcasting requirements."[388] Entravision and the Joint Commenters, however, support a minimum operating schedule similar to DTV full-power and Class A stations.[389] Entravision recommends that "in urban areas this requirement be 6 A.M. to 11 P.M., while in rural areas it [apply between] 7 A.M. to 10 P.M., local time."[390]

187. We find no compelling reason to adopt a minimum operating schedule for new digital stations in the low power television service. While there will be a competitive environment for digital spectrum in some areas, we believe that LPTV and TV translator licensees that undertake the challenge to construct and operate new digital facilities are unlikely to waste their resources and allow these stations to remain "dark" for extended periods of time. We also desire to allow stations the flexibility to operate their digital facilities. Some stations may desire to operate their digital facilities 24 hours a day and some may desire to operate them according to a program schedule. Requiring minimum operating hours could discourage some stations from seeking digital facilities and could stifle innovation for those stations.

---

[381] *See* 47 C.F.R. § 74.734. For example, if a transmitter site cannot be promptly reached at all times, technical means must be provided to turn the transmitter on and off from a location that is readily accessible.

[382] *Notice*, 18 FCC Rcd at 18398-9.

[383] Bonneville Comments at 9.

[384] 47 C.F.R. § 74.763(a).

[385] *Notice*, 18 FCC Rcd at 18398.

[386] CBA Comments at 18; Venture Comments at 6-7; Commercial Reply Comments at 11-12.

[387] CBA Comments at 18.

[388] CBA Comments at 18.

[389] Entravision Comments at 4; Joint Commenters Comments at 8.

[390] Entravision Comments at 4.

Regard simulcasting of programming for stations with companion digital channels, the *Notice* did not propose, nor will we adopt such a requirement for these stations.

3. Station Identification

188. The *Notice* sought comment on appropriate means of station identification for digital TV translator and low power TV stations.[391] International radio regulations provide that radio transmissions "should be capable of being identified either by identification signals or by other means" and that the signals of broadcast stations contain such identifying information as call sign and station location.[392] The *Notice* inquired as to what identifying information should be required. We also asked about the means of station identification for heterodyne translator rebroadcast and LPTV signal retransmission. The *Notice* proposed that DTV broadcast stations be permitted to identify translators rebroadcasting their signals and that satellite service providers be permitted to identify LPTV stations retransmitting their programming. We sought comment on the technical means and related costs of inserting locally generated identification information into the digital bit stream being retransmitted. Finally, we asked about identification requirements for digital LPTV stations that originate local programming, inquiring whether such stations should be required to provide visual or aural identification in the manner of DTV broadcast stations and about equipment and cost to station licensees.

189. Few parties commented on these issues and very little information was provided on the technical means for station identification and related costs. APTS/PBS opposes a unique identification requirement for digital TV translators.[393] It suggests that "customized station identification" would be difficult and expensive and that such requirements should apply only to translators operating with an effective radiated power of 10 kW or more. NTA also opposes a translator identification requirement,[394] contending that the current Morse Code identification alternative in the LPTV rules serves no practical purpose.[395] APTS/PBS and NTA submit that a translator output signal would contain sufficient information to identify the DTV broadcast station whose signal is being rebroadcast, which should satisfy international station identification provisions with regard to the translator.[396]

190. A few commenters suggest technical means for digital translator station identification. Riverton submits data from which it concludes that frequency shift keying could be used to transmit a station's call sign in International Morse Code.[397] According to Greg Best, a heterodyne translator could be modified to enable a 10 kHz shift of its output signal through the use of a Morse Code generator that would control the shift keying of the local oscillator frequency of the translator's upconverter stage.[398]

---

[391] *Notice*, 18 FCC Rcd at 18399.

[392] *See* ITU RR 19.1, 19.4, 19.16, 19.17.

[393] APTS/PBS Comments at 15.

[394] NTA Comments at 20.

[395] 47 C.F.R. § 74.783. This rule provides an option for transmission of a station's call sign in International Morse Code through the mechanism of "frequency shift keying" of the aural and visual carrier frequencies. This is accomplished by shifting a translator's local oscillator frequency. NTA states that a specially designed receiver would be required to convert to the frequency shifts to an audible and readable signal. NTA Comments at 20.

[396] APTS/PBS Comments at 15; NTA Comments at 21.

[397] Riverton Comments at 3 (concluding that frequency shifts of 10 kHz would not adversely affect the bit error rate of a DTV signal); *see also* Elko Comments at 3.

[398] Greg Best Comments at 8.

David Hale of LARCAN USA states that a regenerative-based translator will accommodate insertion of a station's call sign.[399]

191. Kent Parsons recommends that digital translator stations be identified by their primary DTV broadcast station or through the use of a regenerative translator.[400] With regard to LPTV stations that retransmit programming received via satellite feeds, Joint Commenters suggest that we encourage service providers to embed in their signals the station identification information of their LPTV station affiliates, "since many small LPTV stations have extremely limited video insertion capabilities."[401] For those LPTV stations receiving two or more satellite-fed program services, Joint Commenters submit that identification of the LPTV station on any one of these should meet our requirements, and that digital LPTV station identification should be required only at the beginning and end of the broadcast day.[402]

192. Although we recognize the value of the ITU provisions for station identification, we conclude that we cannot at this time establish identification requirements for digital LPTV and TV translator stations, nor do we believe it would be appropriate to attempt to "bootstrap" our current analog identification requirements for digital station operations.[403] The record in this proceeding lacks sufficient technical and cost information from which to develop standards for this purpose. We do not wish to impose requirements that could now be cost prohibitive for licensees of translator and LPTV stations, thereby discouraging their conversion to digital operation.

193. We agree with NTA that the current Morse Code identification alternative in the rules should not be applied to digital station operations.[404] As NTA points out, a specially designed receiver would be required to discern a call sign transmitted in International Morse Code through frequency shift keying of a station's local oscillator frequency. Thus, we believe such a manner of identification would have little utility in the digital world and would increase equipment costs. Also, while it may be possible to insert a translator station's call sign into a regenerative translator or, alternatively, a PSIP generator, we have no information in the record on the practical utility of this approach for station identification.

194. Until we have sufficient information to consider means of implementing the type of station identification provisions contemplated in the ITU regulations, we believe that digital TV translator and LPTV stations could be practically identified by other means. As NTA notes, a station can be located by triangulation on its signal. We agree with APTS/PBS that the identity of a digital translator could be ascertained from information on its parent station in the DTV broadcast signal. In most cases, viewers of a digital LPTV station could identify the station using the on-line resources in our web site on the basis of the TV channel number and the name of their community. For these reasons, we will not establish at this

[399] Larcan Comments at 1; *see also* Sgrignoli Reply Comments at 3.

[400] Parsons Comments at 14.

[401] Joint Commenters Comments at 18.

[402] *Id*.

[403] For example, Section 74.783 of our rules provides an alternative in which TV broadcast stations may identify within specific time intervals the translators rebroadcasting their programming. "Two such identifications shall be made between 7:00 a.m. and 9:00 a.m. and 3:00 p.m. and 5:00 p.m. each broadcast day at approximately one hour intervals during each time period. Television stations which do not begin their broadcast day before 9:00 a.m. shall make these identifications in the hours closest to these time periods at the specified intervals." 47 C.F.R. § 74.783. However, DTV broadcast stations subject to the May 1, 2002, and May 1, 2003, DTV construction deadlines are required to operate, at a minimum, during the prime time hours specified in our rules. Thus, such DTV stations are not generally required to operate during the time intervals specified for the identification of analog transmitters.

[404] NTA Comments at 20.

time identification requirements for digital LPTV and TV translator stations. We recommend that practical and affordable means for the identification of such stations be addressed by study groups through the auspices of the ITU. We also encourage operators of digital LPTV and TV translator stations to experiment with possible means for identifying their stations. We plan to revisit this issue in a future periodic review proceeding.

4. Call Signs

195. In the *Notice* we sought comment on an appropriate set of call sign suffixes for digital LPTV, TV translator, and Class A stations.[405] We noted that call signs for analog LPTV and translator stations consist of the letter K or W followed by the station's assigned channel number and two additional letters.[406] LPTV and Class A stations may use four letter call signs with the designated suffices "-LP" and "-CA" respectively.[407] We sought comment on whether these existing call sign formats should be altered for digital stations. We suggested, for example, use of the following suffixes for digital operation: "-LD" for digital LPTV and "-CD" for digital Class A stations.

196. Some commenters support use of new suffixes for digital stations in the low power television service.[408] NTA also suggests using the suffix "-DT" for TV translator stations.[409] The Joint Commenters suggest that the "DT" suffix be used for Class A stations, and that no special suffix be used to identify digital TV translator stations.[410] Venture suggests using the following suffixes to help consumers recognize the station is digital: "-DA" for Class A stations and "-DL" for LPTV stations.[411] Byron St. Clair suggests using the following suffixes: "-DT" for TV translators, and "-AD" for digital Class A stations.[412] Bruno argues that the use of analog suffixes "-LP" and "-CA" has "caused serious confusion in the public and in the advertising marketplace."[413] Bruno maintains that it is necessary to explain to advertisers its ads will appear on its station even though the station has a call sign with an "-LP" suffix.[414] Bruno suggests allowing all digital stations – full-service and low power – the flexibility to use the "-DT" suffix "to keep viewers and advertisers from being confused about what they are watching."[415]

197. We adopt the following call sign suffixes for new digital stations in the low power and Class A television services. As proposed in the *Notice* digital LPTV stations will be identified with the suffix "-LD" and digital Class A stations with the suffix "-CD." This system will prevent confusion with other call sign combinations as well as possible technical problems. We understand that PSIP generators can accommodate six character call signs. We will, therefore, use the single letter "D" as the suffix for identifying digital translators and those digital LPTV stations assigned the five character letter/number call

[405] *Notice*, 18 FCC Rcd at 18412.

[406] *See* 47 C.F.R. § 74.783(d).

[407] *See* 47 C.F.R. § 73.3550.

[408] Entravision Comments at 9; NTA Comments at 28.

[409] NTA Comments at 28.

[410] Joint Commenters Comments at 24.

[411] Venture Comments at 8-9.

[412] St. Clair Reply Comments at 2.

[413] Bruno Comments at 7.

[414] *Id*.

[415] Bruno Comments at 7; *see also* International Comments at 4; KHEM Reply Comments at 2.

sign so that their call signs will not extend beyond six characters (*e.g.*, K20AA-D). We will not allow LPTV and Class A stations to use the suffix "-DT." That suffix has been reserved for use by full-service DTV stations. We believe it is necessary for proper station identification to avoid using the same suffix for both full-service and low power digital stations. Using "-DT" for digital stations in the low power stations would *create* confusion for viewers, not eliminate it.

5. Broadcasting Auxiliary Service Frequencies

198. LPTV stations may be authorized to use television broadcast auxiliary service (BAS) spectrum to operate such stations as remote pickup, studio-to-transmitter links and point-to-point relays.[416] TV translator stations may be authorized to operate translator relay stations. LPTV and TV translator stations use BAS spectrum on a secondary basis, subject to displacement by full-service television stations. In the *Notice* we proposed to extend the BAS eligibility provisions to permit digital LPTV and TV translator stations to operate in the same bands and for the same purposes as analog LPTV and TV translators, subject to the BAS rules governing digital operations.[417]

199. The Joint Commenters maintain that Class A stations and LPTV stations in urban areas should be permitted to use BAS frequencies on the same basis as full-service television stations and that TV translators should continue to use BAS frequencies on a secondary basis.[418] The Joint Commenters' recommendation is based on their proposal that digital Class A and LPTV station in urban areas be licensed on a primary, interference-protected basis. Class A stations are now permitted to use BAS frequencies on a primary basis, and we clarify here that its status also applies to digital Class A stations (*i.e.*, those authorized Class A stations that convert to digital operation on their analog channels). We reject the Joint Commenters' proposal, and we will not license BAS frequencies assigned to LPTV stations with primary regulatory status. As proposed in the *Notice*, all BAS frequencies assigned to digital LPTV and TV translator stations will be on a secondary basis.

6. Digital Class A TV Area for Locally Produced Programming

200. Class A TV stations are required to broadcast "locally produced" programming, which our rules define as programming produced with a station's predicted Grade B contour or at the station's main studio.[419] In the *Notice* we clarified that the station's predicted analog Grade B contour would also define the area for the locally produced programming of digital Class A TV stations and sought comment on whether the station's digital service contour should be used for this purpose.[420] CBA submits that it would be more reasonable to define this area as the larger of the station's analog Grade B contour or the noise-limited contour of its digital station or commonly owned group of stations.[421]

201. The statutory qualifications for Class A TV regulatory status include a provision related

[416] *See* 47 C.F.R. §§ 74.432 and 74.632.

[417] *Notice*, 18 FCC Rcd at 18413.

[418] Joint Commenters Comments at 25.

[419] 47 C.F.R. §§ 73.6000 and 73.6001. This area is also defined to include "the contiguous predicted Grade B contours of any of the stations in a commonly owned group."

[420] *Notice*, 18 FCC Rcd at 18413.

[421] CBA Comments at 2. We are not in this proceeding authorizing Class A licensees a separate channel for digital Class A operations, but rather, licensees are permitted on-channel conversions of their analog stations for digital operation. Thus, the area defined as the station's Grade B contour refers to the area associated with the licensee's former analog operation.

to programming produced with the "market area served by such station, or the market area served by a group of commonly controlled low-power stations that carry common local programming produced within the market area served by such group."[422] The statute does not define the term "market area." In the Report and Order establishing the Class A TV service, we defined the market area as the area within a station's predicted Grade B contour, finding that this would be a realistic area in which local programming would be produced.[423] Significantly, we did not define the market area to be the area within the station's protected signal contour, which is smaller than the area within a station's Grade B contour.

202. We chose protected signal contour values for digital stations Class A stations that would produce protected services areas comparable in size to a Class A station's associated analog area. We did not choose to protect the area defined by our DTV noise-limited contours,[424] which we noted are comparable to the analog Grade B contour.[425] We agree with CBA that the DTV noise-limited contours would offer a more direct basis for defining the market area of a digital Class A station for purposes of locally produced programming. Also, upon conversion to digital operations, a Class A station's former Grade B contour will no longer exist. For these reasons, we will define the market area for the locally produced programming of a digital Class A station as the area within the predicted DTV noise-limited contour based on the station's authorized facilities. These contour values are: 28 dBu for Channels 2-6, 36 dBu for Channels 7-13, and 41 dBu for Channels 14-51.

203. In connection with our clarification of the digital Class A TV area for locally produced programming, KM asks that we define the term "locally produced programming."[426] KM suggests that we define "locally produced programming" as programming that is "locally originated." KM notes that the term "locally originated" was used by Congress when it created the Class A service in the CBPA and that it is defined in Section 74.701(h) of the rules.[427]

204. We decline KM's suggestion to adopt "locally originated" as the definition of "locally produced programming." To begin with, we did not seek comment on this issue in the *Notice*, and our intent was only to determine whether or not to adopt the analog Grade B contour approach for determining the Class A TV area for locally produced programming. In any event, KM has confused two different terms. As set out in Section 74.701(h) of the rules, "local origination" refers to the location of the transmission of a program and not to the location of program production.[428] A program produced elsewhere may be considered "locally originated" if its transmission is generated at the transmitter site of a low power television or television translator station. "Locally produced programming" must be produced in some area proximate to the community.

[422] 47 U.S.C. § 336(f)(2).

[423] *See Class A Report and Order* at ¶ 18.

[424] *See* 47 C.F.R. § 73.622(e). The DTV noise-limited signal contours are defined to have the following values: 28 dBu for Channels 2-6, 36 dBu for Channels 7-13, and 41 dBu for Channels 14-69.

[425] *Notice*, 18 FCC Rcd at 18384.

[426] KM Comments at 16-18.

[427] KM Comments at 16-17 *citing* H.R. Report No. 384, 106th Cong., 2d Sess. 6.

[428] 47 C.F.R. § 74.701(h).

H. Other Technical Issues

1. Power Limits

205. In the *Notice* we asked for comment on the adequacy of the digital effective radiated power ("ERP") limits adopted for low power TV and TV translator stations in our DTV proceeding:[429]

Channels	Peak Analog ERP	Average Digital ERP
2 - 13	3 kW	300 Watts
14-69	150 kW	15 kW

206. The *Notice* indicated that digital "average" power levels 10 dB below those of analog "peak" power levels produce analog and digital service areas of approximately comparable size. Of the few commenters addressing power issues, some recommend that we distinguish between Low Band VHF (channels 2 – 6) and High Band VHF (channels 7 – 13) stations in setting ERP limitations. Specifically, they submit that if the Low Band limits are to remain at 3 kW (analog) and 300 watts (digital), the limits for High Band should be set to larger values proportional to the differences between Low Band and High Band VHF power limits for full-service TV and DTV stations.[430] With respect to the analog vs. digital power ratio of 10 dB, there is general agreement among commenters that this is a reasonable distinction, at least for the time being, [431] although a few commenters argue that higher digital powers are justified at this time. Commenters present no arguments or data specifically addressing whether or not these digital ERP levels are congruent with the contour values we proposed for digital LPTV and TV translator stations: 43 dBu for channels 2 – 6, 48 dBu for channels 7 – 13, and 51 dBu for channels 14 – 69.

207. We remain satisfied that the existing ERP limits for analog and digital low power stations are adequate and appropriate for the corresponding signal contour values, and we are not changing these limits.[432] No commenter has demonstrated that the ERP limits would be inadequate for digital signal coverage of the communities and areas typically served by LPTV and TV translator stations. Conversely, some commenters maintain that lower ERP limits for TV translator stations would be beneficial in many circumstances. Kent Parsons states that "while the established power limits may be adequate for urban or near urban service, they are extremely high for rural translator service."[433] Gary Sgrignoli comments that "these maximum powers appear to be fairly large for most translator operations and therefore probably reflect the requirements of LPTV stations that often reside in urban areas rather than translators that reside in rural areas. Obviously, lower transmitted power produces less interference, which then allows more DTV stations to be utilized."[434] We agree that station operations with ERP levels below the maximum permissible values may be appropriate in many circumstances, particularly where outdoor receiving antennas are used. We encourage station licensees to confine their operations to ERP levels deemed

[429] *Advanced Television Systems and Their Impact upon the Existing Broadcasting Services,* 12 FCC Rcd (1997), ¶ 147; *see also* 47 C.F.R. § 74.735

[430] *See*, for example, CBA Comments at 15 (proposing analog and digital ERP limits of 9.5 kW and 900 watts, respectively, for channels 7-13). *See* also the full-service TV and DTV ERP limits in §§ 73.614(b) and 73.622(f), respectively.

[431] *See*, *e.g.,* NTA Comments at 14.

[432] As noted, *supra*, we are also adopting 30-watt and 3-watt transmitter output power limits for UHF and VHF heterodyne digital translators.

[433] Parsons Comments at 12.

[434] Gary Sgrignoli Reply Comments at 11.

necessary for adequate signal coverage. Operating in this manner will further reduce the potential for interference and help to maximize spectrum use.

2. Out-of-Channel Emission Limits

208. In the *Notice* we sought data and analyses regarding appropriate emission mask(s) for digital low power TV and TV translator stations.[435] We asked if there is a need for multiple masks with differing performance requirements and associated costs and, if we were to adopt multiple masks in our rules, whether we should explicitly prescribe situations that would require use of the more restrictive mask or whether the choice should be left to station operators. We asked if the mask(s) adopted in this proceeding should also apply to digital Class A TV stations. We sought comment on our proposal to utilize a 500 kHz resolution bandwidth as a standard reference for determining compliance with out-of-channel emission limits.

209. The *Notice* specifically sought comment on two emission masks proposed by Gary Sgrignoli: a "Simple" mask and a "Stringent" mask. The decibel attenuation requirements of these masks are given below, where Δf is the frequency difference in MHz between the mask measurement point and the edge of the 6 MHz channel beyond which the measurement is being taken. Emission attenuation levels are measured in a 500 kHz resolution bandwidth and compared to the total average power in the 6 MHz channel.

Simple mask

$A\ (dB) = 46 + (\Delta f^2 / 1.44)$	for $\Delta f = 0.0$ MHz to 6.0 MHz
$A\ (dB) = 71$	everywhere else

Stringent mask

$A\ (dB) = 47$	for $\Delta f = 0.0$ MHz to 0.5 MHz
$A\ (dB) = 47 + 11.5\ (\Delta f - 0.5)$	for $\Delta f = 0.5$ MHz to 3.0 MHz
$A\ (dB) = 76$	everywhere else

210. The Simple mask is identical in attenuation to the emission mask for DTV broadcast stations originally chosen by the Commission.[436] Subsequently, this emission mask was replaced by the current and more restrictive DTV mask[437] The Simple mask can be described as having two components: (1) a quadratic curve which starts at 46 dB of attenuation below the total in-band power of the digital signal (35 dB below the in-band flat top digital spectrum), increasing to 71 dB of attenuation at the edge of each first-adjacent channel (60 dB below the in-band flat-top digital spectrum) and (2) a horizontal line denoting an ultimate attenuation level of 71 dB at all frequencies greater than and less than 6 MHz from the upper and lower channel edges, respectively. The total integrated unweighted "splatter" power within this mask, as measured in each first-adjacent channel, is approximately 39 dB below the total average digital signal power in the 6 MHz channel. The Stringent mask can be described as having 3 components: (1) a "shelf" or flat curve that, for the first 500 kHz each side of the 6 MHz channel, lies 47 dB below the average power in the channel (36 dB below the in-band flat-top digital spectrum), (2) a linear curve decreasing to an attenuation level of 76 dB at 3 MHz on each side of the channel edge (65 dB below the in-band flat-top digital spectrum), and (3) a horizontal line denoting an ultimate attenuation level of 76 dB

[435] *Notice*, 18 FCC Rcd at 18391-3.

[436] *Advanced Television Systems and Their Impact upon the Existing Television Broadcast Services* (*Sixth Report and Order*), 12 FCC Rcd 14588 (1997) at ¶195.

[437] 47 C.F.R. § 73.622(h)(1).

at all frequencies greater than 3 MHz from the upper channel edge and less than 3 MHz from the lower channel edge.

211. Numerous commenters address issues involving low power digital emission masks.[438] Most favor the use of multiple emission masks, and several propose additional "grandfathered" masks for the digital conversion of existing analog low power stations. These masks have somewhat lesser emission attenuation than those of the Simple mask.[439] NTA suggests that we adopt the use of three masks based on specific levels of digital transmitter output power.[440] It proposes that digital transmitters with "large" power (*e.g.*, above 30 watts for UHF channels) be required to meet the Stringent mask, while those using "small" transmitters should meet the Simple mask. According to NTA, stations operating with "very small" transmitters (up to 1 watt for VHF channels and up to 6 watts for UHF channels) should, in lieu of any mask, be required to attenuate out-of-channel emissions by at least 28 dB in any 500 kHz measurement bandwidth.[441] NTA proposes an additional mask for analog translators with an output power not exceeding 100 watts when custom-modified for digital operations: [442]

$A\ (dB) = 40.6 + 3.33\ \Delta f$	for $\Delta f = 0.0$ MHz to 6.0 MHz
$A\ (dB) = 60.6 + ((\Delta f - 6)\ (6.37))$	for $\Delta f = 6.0$ MHz to 7.5 MHz
$A\ (dB) = 70$	for $\Delta f = 7.5$ MHz and beyond

212. Although the attenuation of this mask flattens out at a value only 1 dB less than the Simple mask (*i.e.*, 70 dB vs. 71 dB), this attenuation value occurs at 7.5 MHz from the channel edge, as compared to 6 MHz for the Simple mask. Also, NTA's "grandfathered" mask ranges from approximately 5 - 10 dB less attenuation than the Simple mask in the Δf segment between 0 and 6 MHz.

213. In considering what mask(s) would be appropriate for low power digital stations, we seek to balance the performance benefits and costs of the available alternatives. As noted by Sgrignoli and others,[443] one important benefit of the Simple mask is that it requires the installation of only a 3-section band pass filter at the transmitter output, compared to the more complex and expensive 5-section band pass mask filter required for compliance with the Stringent mask. Another benefit of the 3-section filter over a 5-section filter is the lower degradation of a transmitted digital signal's signal-to-noise (S/N) ratio. Laboratory tests have shown that a 27 dB S/N is achievable without using precorrection circuitry in digital transmitters with 3-section filters, while the same transmitters typically achieve only a 22 dB S/N when a 5-section filter is used.[444] This occurs because, as more sections are added to a filter in order to achieve greater out-of-channel attenuation of emissions, the filter produces increased amount of on-channel distortion (*e.g.*, group delay). Precorrection circuitry installed in the digital transmitter - circuitry that partially compensates for distortion - can restore the output S/N from the 5-section mask filter back to at least 27 dB. Such circuitry would, of course, increase the cost of new transmitting equipment as well as

[438] *See*, *e.g.*, MSTV/ NAB Comments at 16; APTS/PBS Comments at 14-15; Elko Comments at 2; Greg Best Comments at 3-7; Joint Commenters Comments at 14; NTA Comments at 14-18; Parsons Comments at 11-12; Riverton Comments at 9-10; Venture Comments at 6; and Gary Sgrignoli Reply Comments at 8.

[439] *See*, *e.g.*, Greg Best Comments at 4; Riverton Comments at 10.

[440] NTA Comments at 16-17.

[441] *Id*.

[442] *Id*.

[443] Gary Sgrignoli Reply Comments at 11.

[444] Gary Sgrignoli Paper "DTV Repeater Emission Mask Analysis," *IEEE Transactions on Broadcasting*, March 2003, Volume 49, Number 1, at 35.

the complexity and cost of modifying existing analog transmitting equipment for digital operation. Gary Sgrignoli notes that, for full-service DTV operations, the Advanced Television Systems Committee has recommended a minimum S/N of 27 dB and that linear precorrection of transmitter distortion is routinely utilized at facilities where, otherwise, this standard would not be met.[445] No similar standard has been suggested for low power digital operations, and none was proposed in the *Notice*.

214. As noted by Sgrignoli and others, the primary benefit of the Stringent emission mask is that it could provide a means for using TV channels for low power operations that might not be achievable with the Simple mask, particularly some co-sited operations involving first adjacent channels.[446] With such operations, licensees must adequately safeguard against "side band splatter" interference from transmissions in adjacent channels. The amount of power from a transmitter that spills into adjacent channels, especially the first-adjacent channels above and below the channel in use, is heavily influenced by the shape of the attenuation pattern of the mask filter used with the transmitter. Although the "flattened" attenuation values of the Stringent and Simple masks are 76 dB and 71 dB, respectively, these values are reached differently. The Stringent mask flattens out at a separation of +/- 3 MHz from the channel edge of the potentially interfering station, while the 71 dB attenuation of the Simple mask is not reached until a separation of +/- 6 MHz. The result of these differences is that significantly less out-of-channel transmitter splatter, integrated over the 6 MHz bandwidths of the two first-adjacent channels, is permitted by the Stringent mask.

215. As noted, many low power licensees may face difficulties securing companion channels for digital operations. We believe co-sited adjacent channel operations will offer a promising means of meeting spectrum availability challenges. Such operations may require more stringent attenuation of out-of-channel emissions to prevent adjacent channel interference, but at a somewhat greater cost to station operators. In other situations, lesser emission filtering may suffice, with a cost savings to station licensees. For this reason, we will adopt two digital emission masks for the LPTV service, the Simple and Stringent masks. We will permit station operators the flexibility to select the mask most suitable for their operations, even though this will increase the complexity of application processing.

216. We seek emission mask requirements for digital low power operations that balance performance, cost, and administrative complexity. On this basis we conclude that the attenuation of out-of-channel emissions of digital LPTV and TV translator stations should at least meet the specifications of the Simple emission mask described above, regardless of transmitter power level. If a station licensee chooses to utilize filtering which meets the attenuation requirements of the Stringent mask, whether installed on an existing transmitter which has been converted for digital use or installed as part of a newly purchased transmitter, that licensee will be permitted to conform to the less stringent D/U ratios we are adopting for that mask. In the *Notice* we proposed that station operators be required to file a minor change application to seek a change of emission mask. We adopt this proposal because the two masks are associated with adjacent channel D/U ratios used in our interference prediction studies.

217. While we understand the cost-saving rationale behind NTA's proposed "grandfathered" mask, we do not believe that it provides sufficient out-of-channel suppression to facilitate efficient spectrum use. Given the congested spectrum environment that now exists in many locations, we do not believe an emission mask with lesser attenuation specifications than those of the Simple mask is generally desirable. Permissible use of a third mask would also further increase administrative complexity in our

[445] *Id.* at 33.

[446] Gary Sgrignoli Reply Comments at 12. He also notes that the Stringent mask might be needed when "an NTSC signal is 'sandwiched' in-between" two digital signals and the adjacent channel splatter from both of these add to cause interference.

application process. Due to the limited budgets of many stations in the LPTV service, we will, however, make an accommodation to stations converting existing analog transmitters for digital operation that may be unable to meet directly the requirement of the Simple mask at the channel edge. In this regard, we will permit station licensees to reduce their digital transmitter output power to levels that would "equivalently" meet this out-of-channel emission requirement.

218. In the *Notice* we asked if the emission mask(s) adopted for digital LPTV stations should be extended to digital stations in the Class A television service.[447] Currently, Class A digital stations must meet the emission mask required for DTV broadcast stations.[448] Class A TV, LPTV, and TV translator stations operate with the same power limits and will be subject to the same interference standards and prediction methodology. Accordingly, we will apply the LPTV emission mask requirements (and associated D/U ratios) to digital Class A TV stations. No commenter opposed this action.

219. The attenuation values for the Simple and Stringent emission masks are referenced to a bandwidth of 500 kHz, which we proposed and are adopting as the standard reference bandwidth for calculations and measurements of out-of-channel attenuation.[449] This is the same reference bandwidth to be employed for DTV mask calculations and measurements.[450] If an alternate bandwidth is utilized for any reason, it should be converted to the 500 kHz reference value by use of the formula:

$$A\ (dB) = A_{alternate} + 10\ Log\ (BW_{alternate} / 500)$$

where A(dB) is an attenuation measured or calculated referenced to a 500 kHz bandwidth and $A_{alternate}$ is an attenuation measured or calculated which is referenced to a bandwidth, $BW_{alternate}$, other than 500 kHz. For example, an out-of-channel attenuation, $A_{alternate}$ calculated or measured as 68 dB as referenced to a bandwidth, $BW_{alternate}$, of 1000 kHz, would correspond to 71 dB of attenuation in a 500 kHz bandwidth (*i.e.*, $71 = 68 + 10\ Log\ (1000/500)$).

220. The *Notice* noted the request of NTIA that we sufficiently limit emissions to protect operations in the three radio navigation satellite service ("RNSS") microwave bands (*i.e.*, from radio frequency harmonic emissions falling in these bands): 1164-1188 MHz, 1215-1240 MHz and 1559-1610 MHz, [451] and it asked whether the Simple and Stringent masks would provide adequate protection. In *exparte* filings, Gary Sgrignoli and the U.S. GPS Industry Council ("Council") submit differing approaches for protecting the RNSS bands.[452] Other parties provide results of measurements of 2nd and 3rd

[447] *Notice*, 18 FCC Rcd at 18392.

[448] 47 C.F.R § 73.622(h)(1).

[449] *Notice*, 18 FCC Rcd at 18395.

[450] 47 C.F.R. § 73.622(h)(2).

[451] *See* letter of July 30, 2003, from Frederick R. Wentland, Associate Administrator, NTIA Office of Spectrum Management, to Edmond J. Thomas, FCC Office of Engineering and Technology.

[452] *See* Gary Sgrignoli Supplemental Reply Comments, filed April 6, 2004 (proposing that emissions of digital TV translator and LPTV stations in the RNSS bands be limited to 10 microwatts in any 500 kHz bandwidth - the emission power equal to that of a 1 Megawatt UHF DTV station operating with the Commission's DTV mask, with emissions attenuated by 110 dB below the in-channel average digital power); *see* also Written *Ex Parte* presentations of F. Michael Swiek, Executive Director of the U.S. GPS Industry Council, filed April 26, 2004 (providing analysis and concluding that low power digital stations should meet approximately the same 110 dB attenuation below in-channel power applicable to full-service DTV stations).

harmonic emissions and cost information on emission filtering. [453]

221. The Council subsequently submitted a modified RNSS protection proposal reflecting its discussions with the NTA and LPTV industry technical advisers.[454] This proposal specifies requirements for filtered attenuation of 2nd and 3rd harmonic emissions falling in the RNSS bands. These requirements would apply only to digital LPTV and TV translator stations that operate on TV channels for which such harmonics are generated (*i.e.*, channels 22-24, 36-38 and 65-69). As set forth below, with minor modification, we adopt the protection requirements proposed in the Council's letter of July 26, 2004, into our digital LPTV rules:

> In addition to the harmonic limits set by the emission mask, specific 'Out of Band' protection must be provided in the frequency ranges corresponding to the GPS bands: L5 (1164-1215 MHz); L2 (1215-1240 MHz) and L1 (1559-1610 MHz). This special requirement applies specifically to digital LPTV and translator stations operating on channels 22-24, 36-38, and 65-69.[455]
>
> 1) A type certified transmitter specifically certified for use on one or more of the above channels must include filtering with an attenuation of 85 dB in the GPS band which will have the effect of reducing harmonics in the GPS bands from what is produced by the digital transmitter, and this attenuation must be demonstrated as part of the certification application.
>
> 2) For an installation on one of the above channels with a digital transmitter not specifically type certified for the channel, a low pass filter or equivalent device rated by its manufacturer to have an attenuation of at least 85 dB in the GOS bands, which will have the effect of reducing harmonics in the GPS bands from what is produced by the digital transmitter, and must be installed in a manner that will prevent the harmonic content from reaching the antenna. A description of the low pass filter or equivalent device with the manufacturer's rating or a report of measurements by a qualified individual shall be retained with the station license. Field measurements of the second or third harmonic output of a transmitter so equipped are not required.[456]

[453] *See* Supplemental Engineering Field Study of R. Kent Parsons, filed May 28, 2004 (concluding that with the addition of low pass filtering, interference would not occur to GPS reception and that suitable filters are available in the price range of $275.00-$475.00); *see* also Supplemental Reply Comments of Riverton Freemont TV Club, Inc., filed June 7, 2004 and the supplemental *ex parte* filing of the U.S. GPS Council dated May 20, 2004.

[454] *See* letter dated July 26, 2004, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission from Raul R. Rodriguez, Esq. Counsel for the U.S. GPS Council.

[455] We note that while the GPS Council refers to these emissions as "out-of-band" (*see* letter from the GPS Council to Ms. Marlene Dortch, July 26, 2004), these are more properly termed "harmonic emissions".

[456] *Id*. at 3. The Council notes that its modified GPS protection proposal recognizes "that power in the second and third harmonics are at least 25 dB below carrier power. Consequently, we modified the attenuation specification included in our original comments to reflect this knowledge." *Id*. at 2.

NTA filed an *ex parte* letter recommending that we adopt the Council's proposal and include the above text in our rules for digital LPTV and TV translator stations.[457] Subsequently, CBA filed an *ex parte letter* stating that it has consulted with the NTA on this matter and "concurs with NTA's position and recommendation."[458] NTIA also supports the above RNSS protection requirements.[459]

222. In conjunction with the Simple and Stringent mask filters we are adopting for digital low power stations, we believe the 85 dB filter requirement will adequately protect the various RNSS operations.[460] The record clearly indicates that filters meeting this requirement are readily available at prices that should not be financially burdensome to most station operators. Significantly, this approach permits LPTV and TV translator operators to rely on manufacturers' specifications and does not require station operators to make field measurements of 2nd and 3rd harmonic output levels. Also, as proposed by the Council, we will apply the 85 dB filtering requirement only to digital LPTV and TV translator station operations on channels 22-24, 36, 38, and 65-69. This filter requirement and the associated emission limits are for the protection of GPS operations only from possible harmonic emissions from digital LPTV and TV translator station operations and does not apply to other possible sources of emissions in the GPS bands.[461]

3. Other Transmission System Facilities Issues

223. Section 74.750 of our rules requires that analog transmitters operated at LPTV and TV translator stations must either be "certificated for licensing" by the Commission or qualify for use under the TV broadcast rules in Part 73, which provide a verification procedure.[462] The rule provides specific technical requirements that must be met before the Commission will certify LPTV and TV translator

[457] *See* letter dated July 30, 2004, to Ms, Marlene H. Dortch, Secretary, Federal Communications Commission from George R. Borsari, Jr., Esq. and Anne Thomas Paxson, Esq., Counsel for the National Translator Association.

[458] *See* letter dated August 5, 2004, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission from Peter Tannenwald, Esq. Counsel for the Community Broadcasters Association.

[459] See letter of August 27, 2004, from Frederick R. Wentlend, Associate Administrator, NTIA Office of Spectrum Management, to Edmund J. Thomas, FCC Office of Engineering and Technology.

[460] We note that the emission masks we are adopting for broadcast protection are based on signal attenuation below the digital average power in a station's 6 MHz channel. In contrast, the RNSS protection requirements are based on filter specifications (*i.e.*, an attenuation of 85 dB in the GPS bands).

[461] For example, other out-of-band emission limitations to protect GPS operations from transmitters operating on frequencies near the GPS bands are addressed in the GMPCS Rulemaking. *See generally* Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements, IB Docket 99-67, *Report and Order and Further Notice of Proposed Rulemaking*, 17 FCC Rcd 8903 (2002), *Second Report and Order*, 18 FCC Rcd 24423 (2003).

[462] 47 C.F.R. § 74.750. The certification procedure is set forth in Sections 2.907 and 2.1031-2.1060 of the rules, 47 C.F.R. §§ 2.907 and 2.1031-2.1060; the verification procedure is set forth in Sections 2.902 and 2.951-2.962 of the rules, 47 C.F.R. §§ 2.902 and 2.951-2.962. Under the certification procedure, applicants (equipment manufacturers or responsible parties) submit descriptions of equipment, measurement data, and other information to the Commission in an application for grant of equipment authorization. The Commission reviews this submission and, if it finds the device to be in compliance with the applicable rules, issues a grant of equipment authorization. Under the verification procedure, the equipment manufacturer or responsible party conducts appropriate measurements to determine whether a device is in compliance with the rules and then "self-approves" the device. There is no requirement for notification to or approval by the Commission. However, the manufacturer/responsible party must maintain records of the equipment design, test procedure, report of test results and other information and must submit this information to the Commission upon request.

transmitters. In the *Notice* we sought comment on whether the LPTV certification requirement should be extended to the digital transmitters used at these stations or whether the TV/DTV verification procedure should be used.[463] If we adopted a certification requirement, we asked if we should certify a transmitter or translator as a whole, including output filtering or also certify individual components (*e.g.*, the front-end digital processor and final RF amplifier). In this regard, the *Notice* considered equipment standards related to signal reception and technical quality and those related to interference avoidance.

224. NTA supports the certification procedure, noting that full-service stations (subject to verification) must undertake a proof of performance. NTA submits that many LPTV and translator stations are installed by persons that lack the skills and/or test equipment to conduct a proof of performance, and that digital signals are more complex than analog signals.[464] Some commenters support certification of transmitter components.[465] One party supports the verification procedure.[466]

225. We will adopt our certification procedure for new digital LPTV and TV translator transmitters. Specifically, we are amending Part 74 of our rules to require that any newly manufactured transmitters sold for digital operations at LPTV or TV translator stations after the effective date of this *Report and Order* shall be subject to the equipment certification provisions of Part 2 of our rules. We are taking this action because we believe that certification of new equipment is an effective means of assuring that our technical standards, especially our out-of-channel emission mask requirements, will be met. We agree with NTA that the certification process has worked well with respect to analog stations in the LPTV service and that some station licensees, lacking the necessary skills or resources to verify compliance with our equipment standards, may wish to rely on transmitter manufacturers in this regard. We are primarily concerned about compliance with standards intended for interference avoidance, related to the characteristics of the transmitted output signals. Therefore, we will certify new digital translator and LPTV transmitters as self-contained units, including emission mask filters; tests of the transmitter output waveform must be made at the output port of the final filter. This will ensure that the components of a transmitter are properly interfaced to produce an output signal in compliance with our technical standards.

226. *Equipment Standards Related to Signal Reception and Technical Quality.* In the *Notice* we proposed not to require specific standards related to signal quality (*i.e.*, standards designed to enhance the signal viewability or reliability). Unlike an analog signal, which is subject to various degrees of picture degradation, a digital signal received above a particular threshold level will produce a satisfactory visual image, while a signal below this level will produce no picture. A digital signal of poor quality (*e.g.*, low signal-to-noise ratio) will generally decrease service reliability and, as NTA points out, reduce a station's coverage area.[467] Some commenters stress the importance maintaining an adequate signal-to-noise ratio ("SNR") and a means for determining SNR of a transmitted signal.[468] Clearly, in-band signal performance characteristics such as SNR should be important to station operators. We believe these concerns should be left to the market place; station operators will want to provide service technically attractive to their viewers. In this regard, we will require transmitter manufacturers or other responsible

[463] *Notice*, 18 FCC Rcd at 18397.

[464] NTA Comments at 19.

[465] Riverton Comments at 4 (certify the transmitter final amplifier and emission mask); Parsons Reply Comments at 1 (certify the exciter front-end of a translator).

[466] Greg Best Comments at 7 (however, in the event of a certification procedure, certify the entire transmitter, including emission mask filter).

[467] NTA Comments at 18.

[468] *See*, for example, Parsons Reply Comments at 1.

parties to certify only that digital TV translator and LPTV transmitters provide signals that are viewable on receiving equipment designed for the Commission's DTV transmission standard (*i.e.*, the ATSC 8-VSB standard).

227. *Equipment Standards for Interference Avoidance*. In the *Notice* we indicated two principal areas of concern related to transmitter standards for interference avoidance: sufficient attenuation of out-of-channel emissions and the ability of a transmitter to operate within it rated output power.[469] We proposed that digital LPTV transmitters and TV translators must comply with the emission mask(s) we adopt herein. We also asked if we should establish a tolerance level for deviation from the rated output power and a specific means of power control, such as automatic level control. We noted that excessive power could result in co-channel interference and also cause a rapid rise in the level of out-of-channel emissions. We sought comment on whether to adopt any other equipment standards for digital translators and transmitters in the LPTV service.

228. Several parties commented on these issues, generally agreeing that compliance with our out-of-channel emission limits should be a required element for transmitter certification. Parsons proposes that the output power of a translator "must be maintained and not exceed more than 5% of its authorized power."[470] CBA states that it "does not object to automatic power limiters, but it does not believe that a licensee should be required to use equipment that automatically boosts a falling power level because of the potential distortion that such equipment may introduce into a digital signal."[471] Greg Best asserts that "[I]t is required to implement some form of power output limit on this equipment. This power limit should be based on a sample taken at the output of the mask filter. Automatic gain control should be permitted in digital translators." For equipment placed into service after these rules are adopted, he recommends that the power output variation be limited to no more than 0.5 dB.[472] As a condition for permitting the digital conversion of analog translators, Riverton recommends limiting output power variations to +/- 1 dB "for an input increase of 20 dB, and a decrease of 10 dB when the translator has been optimized for digital transmission."[473] Regarding other standards issues, Greg Best proposes that we limit the translator frequency tolerance to +/- 1 kHz, noting that "the frequency tolerance of multiple hop translator systems can stack up in the same direction."[474]

229. We adopt what we believe to be the minimally necessary transmitter requirements for interference avoidance, recognizing that compliance with additional standards could increase equipment costs and be burdensome for stations operating on limited budgets. Thus, the following requirements must be met before we will certify LPTV and TV translator digital transmitters. First, out-of-channel emissions measured at the output terminals of the transmitter (including all output filtering) and at the transmitter's rated output power must meet at least the specifications of the "Simple" emission mask. Transmitters may be certificated for use with either the Simple or Stringent masks, as well as with the additional filtering for harmonic emission protection of Radio Navigation Satellite Service ("RNSS") frequency bands. We will assign different FCC identifier numbers to transmitters with different emission filtering specifications: (1) Simple emission mask, (2) Simple emission mask plus RNSS filtering protection, (3) Stringent emission mask and (4) Stringent emission mask plus RNSS filtering protection. A transmitter certificated to meet

[469] *Notice*, 18 FCC Rcd at 18396.

[470] Parsons Comments at 14.

[471] CBA Comments at 15.

[472] Greg Best Comments at 7.

[473] Riverton Comments at 2.

[474] Greg Best Comments at 8. *See* also KNME Comments at 3.

RNSS protection requirements must employ filtering that attenuates harmonic emissions in the RNSS bands by at least 85 dB.[475]

230. An LPTV or TV translator digital transmitter will be certified at its rated digital average output power level. Similar to our analog equipment requirement, we will require that a heterodyne digital translator maintain the average digital output power constant within 1 dB when the strength of the input signal is varied over a range of 30 dB.[476] Further, we will not permit the digital average output power of any digital translator or LPTV transmitter to exceed the maximum rated value under any condition.[477] Based on the record, we believe this power tolerance, which is slightly more restrictive than the peak power tolerance for analog transmitters, could readily be met by transmitter manufacturers. This tolerance should also ensure a relatively stable emission mask. We will not specify a method of maintaining transmitter output power within the required limits, but will leave this decision to transmitter manufacturers. We will require the transmitter to be suitably equipped to display the average digital transmitter output power. To further ensure the stability of the emission mask, we will require the local oscillator frequency in the RF channel upconverter of the transmitter to be maintained within 10 kHz over a temperature range between 0 and 40 degrees Centigrade and variations in the main power supply voltage between 85 and 115 percent.[478] Because of cost considerations and to facilitate flexible use of existing equipment, we will not require the 1 kHz tolerance that is recognized by the ATSC as acceptable in cases where no interference is expected.[479] However, we encourage manufacturers to design such upconverters with this tolerance. We expect that compliance with a 10 KHz tolerance will not be problematic for digital LPTV stations or translators operating in the regenerative transmission mode. However, this tolerance could constrain the operation of heterodyne translators in "multiple hop" networks, because frequency deviations from nominal values accumulate as signals are retransmitted through such networks. For this purpose, we encourage licensees to employ regenerative-based digital translators.

4. Modification of Transmission Systems

231. In the *Notice* we sought comment on issues involving modification of existing analog LPTV and TV translator transmitters for digital operation.[480] We noted that our rules permit manufacturers to obtain authorizations for changes to the mechanical or electrical characteristics of certified equipment and to supply field modification kits to station operators (*e.g.*, to substitute solid state modules for vacuum tube modules). Station licensees are not required to have approval to make such equipment changes, but are required to notify the Commission upon completion.

232. Several commenters recommend that existing stations be permitted to convert their

[475] As discussed above, this protection requirement applies only to station operations on channels 22-24, 36, 38, and 65-69.

[476] The power output of regenerative translators is independent of the strength of the input signal.

[477] Analog low power LPTV and TV translator transmitters must maintain the peak visual power output constant within 2 dB when the strength of the input signal is varied over a range of 30 dB and prevent the peak visual power output from exceeding the maximum transmitter power output rating under any circumstances. *See* 47 C.F.R. § 74.750(c)(4).

[478] This power supply voltage range is specified for analog low power transmitters in § 74.750(c). The selected temperature range, we believe, encompasses the ambient temperature at most transmitter installations.

[479] See, "Guide to Use of the ATSC DTV Standard" at Section 8.5.6., available at www.atsc.org.

[480] *Notice*, 18 FCC Rcd at 18397.

existing analog equipment for digital operation if certain technical requirements are met.[481] NTA recommends that if a transmitter is modified by the installation of a kit supplied by an equipment manufacturer and tested according to the manufacturer's instructions, it should be considered as meeting our equipment certification requirements.[482] For analog equipment modified for digital use without a manufacturer-supplied kit, NTA recommend that such modifications be allowed if the licensee makes "appropriate measurements, particularly calibration of the power meter and of the out of band spurious emissions" and these measurements are "retained as part of the station's permanent record."[483] Greg Best submits that conversion of analog transmitters for digital operation would be "significantly more cost effective than requiring new generation power amplifiers to be employed at all sites."[484]

233. We will adopt provisions to permit the modification of existing analog LPTV and TV translator transmitters for digital operation. We recognize that many translator and LPTV stations operate on very limited budgets and that, accordingly, their digital operations may depend on the use of their existing equipment (*e.g.*, use of the final RF amplifier in an analog transmitter they have on hand). We will extend our policies and procedures for analog field modification kits to analog-to-digital conversion and to modifications of digital transmitters. Manufacturers may seek authorization to modify certificated analog equipment for digital operation. Upon our approval, they may supply station operators with kits containing modules or discrete components that can be retrofitted into an analog LPTV or translator transmitter, together with installation and testing procedures and a label with a new FCC identifier and model number.

234. We are therefore amending our rules to authorize this process as long as the following requirements are met: (1) Field modifications are carried out by a person or persons qualified for such work; (2) modification kits, when installed at heterodyne TV translator stations, are fitted only to transmitters which, when modified for digital operation, will produce a power output of no more than 30 watts of digital average power for UHF transmitters and 3 watts for VHF transmitters; (3) the final amplifier stage of an analog transmitter modified for digital output shall not have an average digital output power greater than 25% of its previous peak sync NTSC output power unless the amplifier has been specifically refitted or replaced for higher power operation;[485] (4) after installation of the modification kit, the transmitter is performance-tested in accordance with instructions supplied by the manufacturer and demonstrated to comply with our digital low power transmitter certification requirements, including compliance with RNSS filtering protection requirements, as applicable; (5) a record of the materials provided by the manufacturer and the results of tests and measurements is maintained with the station's records for a period of not less than two years and will be made available to the Commission upon request;

[481] *See*, for example, CBA Comments at 14; Elko Comments at 2; Greg Best Comments at 3 and Reply Comments at 4; NTA Comments at 19-20; Riverton Comments at 2.

[482] With regard to equipment changes that we have approved, the manufacturer includes with the modification kit a label giving a new FCC identifier, which is to be affixed to the transmitter.

[483] NTA Comments at 20; *See* also, Riverton Comments at 2.

[484] Greg Best Comments at 3.

[485] This requirement stems from the approximate 6 dB relationship between levels of NTSC peak and digital average power. Absent special circumstances (*e.g.*, an upgrading of the power handling capacity of the amplifier, we are concerned that permitting a greater power conversion ratio could result in excessive degradation of the quality of the digital signal, as well as an increase in the amount of unwanted out-of-channel power. As Parsons notes in his comments, "one should strive for the out-of-band shoulders to be near 36 dB down at the output of the translator, with a minimum in-band signal to noise ratio of 27 dB. We have been able to accomplish these numbers even with older translator power amplifiers using bi-polar output transistors while producing 25% of the rated analog power." Parsons Comments at 14.

and (6) that the licensee notifies the Commission upon completion of the transmitter modifications.

235. We will not require that the original manufacturer of the transmitter and the manufacturer of the modification kit be the same entity, as this would be impractical, perhaps impossible in some cases. Rather, with respect to meeting our certification requirements, we will require that the manufacturer of the modification kit install and test the kit on each model of transmitter to which it can be retrofitted and submit those results in accordance with the certification procedures in Part 2 of our rules. A unique authorization will be issued for each combination of transmitter and associated kit. The person who installs the kit at the LPTV or TV translator station becomes, as provided by Rule Section 2.909, the party responsible for compliance of the transmitter with all applicable provisions of the rules unless that party is working under the specific authority of the certification grantee.[486] These procedures require that suitable tests and measurements be done by qualified person(s) after the transmitting equipment is installed in order to determine its compliance with all applicable technical requirements and the results of these tests and measurements be kept on file by the licensee and made available for Commission inspection and review upon request.

236. We will also permit modification of analog transmitting equipment for digital operation without the use of a manufacturer's kit (*i.e.*, "custom" modifications). In so doing, we are concerned about potential problems that could arise if such work is not done properly. Nevertheless, we agree with NTA and other commenters that such modifications should be permitted if certain restrictions are met: (1) The modifications are carried out by a person or persons qualified to perform such work; (2) no modifications are performed that will enable a heterodyne digital TV translator to operate with a power output exceeding 30 watts for UHF stations and 3 watts for VHF stations; (3) the final amplifier stage of an analog transmitter modified for digital output is not operated at an average digital output power greater than 25% of its previous peak sync NTSC power output level unless the amplifier has been specifically refitted or replaced for higher power operation; (4) after completion of the modifications, the transmitter is performance-tested and demonstrated to comply with our digital low power transmitter certification requirements, including compliance with RNSS protection filtering requirements, as applicable; (5) a record including a description of the nature of the modifications and test procedures and the results of tests and measurements is maintained with the station records for a period of not less than two years and will be made available to the Commission upon request; and (6) that the licensee notify the Commission upon completion of the modification(s) and certify compliance with our transmitter certification requirements.

237. With regard to the conversion of existing analog transmitters for digital operation, we believe it necessary to make some accommodation for those stations operating analog transmitters that would not comply with out-of-channel emission specifications of the Simple emission mask at the channel edge. Based on testing of a sample of existing analog translator with a band pass filter at the transmitter output, Greg Best concludes that "[T]he general shape of the simple mask can be met by most equipment but not the shoulder levels."[487] He indicates that out-of-channel emissions for the tested equipment fell about 6 dB short of the requirements of the Simple mask. He states that "No amount of filtering can practically compensate for the adjacent channel interference introduced by the power amplifier 'shoulder'

[486] This rule states, in pertinent part: "The following parties are responsible for the compliance of radio frequency equipment with the applicable standards: (a) In the case of equipment which requires the issuance by the Commission of a grant of equipment authorization, the party to whom that grant of authorization is issued (the grantee). If the radio frequency equipment is modified by any party other than the grantee and that party is not working under the authorization of the grantee pursuant to § 2.929(b), the party performing the modification is responsible for compliance of the product with the applicable administrative and technical provisions in this chapter.

[487] Greg Best Comments at 3.

(i.e., 500 kHz segment just outside the digital channel)."[488] He submits that the emission mask of such equipment be "grandfathered" for a period not to exceed five years.[489] Sgrignoli suggests the following approach for addressing this concern:

> "In order to combat this increased adjacent channel splatter (shelves less than 35 dB due to the use of some older translator units) and to keep all the splatter interference the same, I agree with the principle that the in-band average power be reduced one dB for every dB that the close-in shelves are less than 35 dB down from the flat-top part of the in-band spectrum. This way, the total adjacent channel splatter energy would have the same interference power (assuming the same splatter spectral shape exists), but the in-band power is de-rated."[490]

238. Because of budgetary considerations, we understand that some station operators may want to use their existing analog power amplifiers for digital operations. In order to ensure "equivalent" compliance with the attenuation requirement of the Simple mask a the channel edge, we will adopt the above approach in connection with the on-channel conversion of existing analog transmitters for digital operation, and illustrate its use. First, we will generally assume that the nominal digital transmitter output power of such a station is 6 dB below the analog output power used to determine the station's authorized ERP. Second, based on measurements, the station operator should determine the emission mask attenuation at the channel edges and determine the difference of the measured value from the required value of 35 dB (below flat-top or, alternatively, 46 dB below the average in-band digital power). Suppose the measured emission shortfall is 5 dB. To ensure equivalency with the Simple mask requirement, the operator would be required to further reduce the digital output power by this amount and apply for a digital authorization with an ERP at least 11 dB less than the authorized ERP of the analog station being modified for digital use (*i.e*, 6 dB plus 5 dB). We will require operators meeting our mask requirements in this manner to certify equivalent compliance on the basis of signal measurements and the appropriate power reduction. We emphasize that this procedure will only apply to the on-channel conversion of existing analog transmitters for digital operation.[491]

239. As noted, we are permitting station operators substantial flexibility to use their existing

[488] Greg Best Reply Comments at 3.

[489] *Id.*

[490] Sgrignoli Reply Comments at 12.

[491] We recognize that a potential exists with this approach for an inaccurate future depiction of "masking" interference. This inaccuracy will arise where our interference prediction software assumes the authorized digital low power facility is meeting the Simple mask and that the associated adjacent channel D/U signal strength ratios apply. Because of the equivalent power reduction, the digital station would meet the requirements to protect adjacent channel stations. However, as part of the broadcast environment, the masking effects of this station would factor into the analysis of other proposed stations. In this regard, the digital station's adjacent channel emissions would actually be equivalent to those that a higher power digital station would produce, thus potentially creating some adjacent channel interference that is not predicted by the prediction software. In other circumstances, the facilities proposed in a future application would be accepted where predicted interference from this facility would fall in an area that already is predicted to receive interference from an already-authorized station (*i.e.*, where the existing station would meet the mask requirements). However, in this case, such a future application proposal would need to protect an area that receives unpredicted interference. We believe this situation will not occur often and will have only a minor impact on the facilities future digital low power stations can operate. In our view, the greater impact will be "masking" due to co-channel interference, and that will be accurately determined by this approach.

analog equipment for digital operation, which we believe, will facilitate off-air digital service to translator-served communities. Nonetheless, we would prefer the use of transmitters designed for digital operation, including translator use of a regenerative DTV receiver/processor. In our future consideration of the end of the DTV transition for LPTV and TV translator stations, we may wish to consider a termination date for permitting custom conversion of analog transmitters for digital operation, including the mask equivalence procedure described above. We do not believe that there should be an unlimited period available for the custom-conversion of old (and perhaps obsolete) analog transmitting gear, when there will be an increasing availability of new equipment at a reasonable cost that will produce uniformly high quality digital signals. We may address this issue in a future proceeding.

5. PSIP

240. In the *Report and Order* in our Second DTV Periodic Review proceeding, we adopted into our DTV transmission standard the ATSC Program System and Information Protocol ("PSIP") standard (ATSC A/65B).[492] Therein, we described the principal features and benefits of PSIP:

> PSIP is data that is transmitted along with a station's DTV signal that tells DTV receivers information about the station and what is being broadcast. PSIP provides a method for DTV receivers to identify a DTV station and to determine how a receiver can tune to it. PSIP identifies both the DTV channel and the associated NTSC channel and enables DTV receivers to associate the two channels, thereby making it easier for viewers to tune to the DTV station even if they do not know the channel number. In addition to identifying the channel number, PSIP tells the receiver whether multiple program channels are being broadcast and, if so, how to find them. It also identifies whether the programs are closed captioned, and conveys available v-chip information, among other things.[493]

The ATSC A/65B PSIP standard offers a standard means of channel navigation and many other benefits to consumers, including the transmission of an electronic program guide. We therefore concluded that its adoption into our DTV transmission standard would serve the public interest. We also indicated that we would address the implications of PSIP to LPTV and TV translator stations in the digital low power proceeding[494]

241. The Second Periodic Review *Notice of Proposed Rule Making* requested comment on issues concerning the implications of PSIP on the operation of TV translator facilities.[495] We requested comment on how the proper PSIP information is to be provided on TV translator rebroadcasts and who should be responsible for ensuring that the information is provided. We also requested comment regarding the costs of providing PSIP information on TV translators as well as any other concerns that translator operators might have in implementing PSIP in their digital operations. Commenters agree that

---

[492] *See Second Periodic Review of the Commission's rules and Policies Affecting the Conversion to Digital Television*, *Report and Order*, FCC 04-192, released September 7, 2004 ("*Second Periodic Report and Order*"). *See* also "Program and System Information for Broadcast and Cable," Advanced Television Systems Committee, Doc. A/65B, Rev. B to PSIP for Terrestrial Broadcast and Cable ("ATSC A/65B") (Mar. 18, 2003).

[493] *Id*.

[494] *Id*.

[495] *See Second DTV Periodic Review NPRM*, at ¶123.

the PSIP standard now adopted by the Commission accommodates translators.[496]

242. We are generally requiring a digital TV translator to rebroadcast all programs and signals of a DTV broadcast station, which includes a station's PSIP information. Only in limited situations would a digital translator need to modify the incoming PSIP information from its primary DTV station. For example, it is possible that a translator may rebroadcast a distant DTV station having the same major channel number (NTSC channel) as another broadcast station being received directly in the translator-served community. The ATSC A/65B standard addresses this situation as follows: "For a translated signal, the major/minor channel numbers shall remain the same as the original broadcast station unless the major channel conflicts with a broadcaster operating in the service area of the translator. In that case, the translator shall change the major number to a non-conflicting number."[497] This provision for use of major channel numbers provides a uniform methodology to access DTV services, and we are adopting it for translator rebroadcasts. As a second possibility, the operator of a digital translator system may seek to rebroadcast two DTV stations with the same major channel number (*e.g.*, in multiple-hop networks). This situation will also require one of the translators to change the major channel to a non-conflicting number, perhaps the number of the translator output channel. We believe the resolution of this situation is best left to mutual agreement among the licensees of the translator and involved DTV stations. We understand that regenerative translators can be equipped for this purpose, and we will require use of regenerative technology in these situations.[498] Finally, we are permitting translator operators to enter into agreements with the licensees of two or more DTV broadcast stations to multi-cast individual program streams of these stations on the translator output channel, which will also require the use of regenerative technology. Through the transport stream identifiers ("TSID") of the DTV stations involved in this arrangement, the ATSC A/65B PSIP standard provides a receiver navigation mechanism to permit such multiplexing of individual program streams from different sources. However, it does not provide a basis for determining the major channel number embedded in the translator output signal. We believe the resolution of this situation is also best left to the involved station licensees.

243. The *Notice* in this proceeding did not specifically consider the implications of PSIP for digital LPTV stations, including cost information, nor did our *Notice* in the *Second DTV Periodic Review* proceeding seek comment in this regard. Commenters generally did not address this issue.[499] As described above, the A/65B PSIP standard offers significant benefits to broadcasters and consumers, including channel navigation protocols to facilitate tuning of single and multiple program channels in the digital bit stream. It also specifies a means for the transmission of v-chip program ratings and closed captioning information.[500] In order to make these benefits available to viewers and provide an attractive service, we

[496] *See Second Periodic Report and Order*, *supra*. We received comments on these issues from the Consumer Electronics Association, and the Harris Corporation, and the joint comments of the Association for Public Television Stations, Corporation for Public Broadcasting and the Public Broadcasting Service.

[497] *See* ATSC A/65B, Annex B, Assignment of Major Channel Numbers for Terrestrial Broadcast in the U.S. (March 18, 2003). The major channel number in the PSIP Virtual Channel Table is generally a broadcaster's NTSC RF channel number; a DTV viewer tunes to this channel. Minor channel numbers identify specific programs and services (*e.g.*, channel 7.0 corresponds to the NTCS channel, 7.1, 7.2, … may indicate DTV HDTV or SDTV program channels).

[498] Heterodyne translators are simple "pass through" devices and, thus, are not designed to modify PSIP and other signal information.

[499] See MSTV/NAB Comments at 21 ("[D]igital LPTV stations, like full service stations, must have PSIP generation capability so that they will be compliant with the ATSC channel-mapping protocol.")

[500] The PSIP Event Information Tables ("EITs") contain Content Advisory Descriptors for broadcast programming for broadcasters that choose to provide v-chip blocking information and the Rating Region Table (continued....)

believe many licensees of digital LPTV stations may choose to implement the ATSC A/65B PSIP standard, at least those elements that facilitate tuning and channel navigation by DTV receivers.[501] We strongly encourage these licensees to implement ATSC A/65B PSIP in their station operations.[502] We are also mindful of the costs of full or partial implementation of PSIP, and we do not want to impose requirements that would financially burden stations that operate on limited budgets. We are concerned that we do not have an adequate record of these costs and their impact on LPTV station licensees, particularly the smaller stations. [503] As we begin to create opportunities for digital LPTV service, we do not want to impose costs that could discourage licensees from operating digital stations. Thus, for this reason, we will not at this time require digital LPTV stations to comply with the ATSC A65/B standard. Situations may arise, however, that may compel a station to become compliant with the PSIP navigational elements.[504] We also note that digital LPTV stations will be required to transmit closed captioning information that can be displayed on DTV receivers. The full implementation of PSIP would facilitate licensee compliance with this requirement.[505] We will revisit the PSIP implications for digital LPTV stations in a future DTV proceeding.

I. Digital Booster Stations

244. Our LPTV service rules include an analog TV booster station class, devices that amplify the signals of a TV broadcast station for retransmission on the same channel.[506] Only full-service TV broadcasters may operate TV boosters and for the limited purpose of serving areas of low signal strength within their Grade B contours (*e.g.*, terrain-shadowed areas). Booster may not be located outside of a station's Grade B contour, nor may the predicted Grade B contour of a booster extend beyond that of its primary TV broadcast station.[507] Applications for booster stations may be filed any time and without geographic restrictions on where these stations can be operated.

245. The *Notice* sought comment on whether we should establish a digital booster station class in the LPTV rules.[508] We contemplated that low power digital boosters could serve the same "fill-in"

(...continued from previous page)
("RRT"), which explains the content advisory rating systems being used. The ATSC PSIP standard also requires that the EITs contain the caption service descriptor to facilitate a DTV receiver's search for closed caption information.

[501] The following system tables and descriptors under ATSC A/65B related to tuning and channel navigation entail a one-time setup in the PSIP generation equipment: Transport Stream Identifier (TSID), Short Channel Name, Service Type, Modulation Mode, Source ID, and Service Location Descriptor.

[502] We clarify here that the transmissions of digital Class A stations are required to comply with our DTV broadcast transmission standard, which now incorporates the ATSC A/65B PSIP standard. Thus, digital Class A stations must comply with the ATSC PSIP standard in the same manner as full-service DTV broadcasters.

[503] *See* Harris Comments at 9 in the *Second DTV Periodic Review* proceeding, April 21, 2003("Based on Harris' experience as a manufacturer of broadcast station PSIP equipment, it currently would cost a DTV broadcast station $29,900 for full implementation of PSIP, including all Program and System tables, or $16,500 for full implementation of the PSIP System tables and limited implementation of the Program tables").

[504] For example, if the transmissions of a digital LPTV station impeded the PSIP-related tuning of a DTV broadcast station, we may require the LPTV station to implement PSIP to the extent it could eliminate the conflict.

[505] Captioning information can also be placed in the PMT table of the DTV bit stream.

[506] 47 C.F.R. § 74.701(i).

[507] 47 C.F.R. § 74.731(j).

[508] *Notice*, 18 FCC Rcd at 18410.

purpose of analog boosters and might also be useful in delivering digital television service to communities where other TV channels are unavailable. We asked what requirements should apply to the authorization and operation of digital low power booster stations; for example, whether eligibility to operate such stations should be extended to include Class A TV, LPTV, and TV translator licensees. If we were to analyze potential interference from boosters using the prediction methodology applicable to translators, we asked whether there is any reason to continue prohibiting boosters from serving areas outside a station's service contour (*i.e.*, as an alternative delivery mechanism to digital TV translators.) We also asked if we should apply to digital boosters the technical standards adopted for digital LPTV and translator stations.

246. Commenters are divided on whether we should establish a digital booster station class at this time and how it should be regulated. Several parties believe that digital boosters would be useful and they recommend that we create this station class in the LPTV service. [509] APTS/PBS notes that it previously submitted evidence that digital boosters are "a technically feasible and spectrum efficient means of distributing a digital signal to remote areas within a station's digital contour that are not ordinarily reached due to terrain or other factors."[510] Most parties favor limiting the use of digital boosters to full-service broadcasters or imply that we would do so.[511] Other parties submit that we should permit the use of a booster at locations outside of the protected contour of a licensee's main station.[512]

247. MSTV/NAB recommends that we not establish a digital booster station class and related rules at this time.[513] It notes that we are considering rules for distributed transmission systems ("DTS") in our *Second DTV Periodic Review* proceeding "as an alternative to the use of on-channel booster stations."[514] AFCCE suggests that digital boosters are "part of a larger issue regarding use of single frequency networks for full-service stations."[515]

---

[509] APTS/PBS Comments at 12; Entravision Comments at 8; Greg Best Consulting Comments at 8; KHEM-LP Reply Comments at 2; NTA Comments at 26; Southern Oregon Comments at 1; Sunbelt Comments at 2; T50/51 Telemundo Reply Comments.

[510] APTS/PBS Comments at 12 (citing its Petition for Rulemaking, *Enhancement of Broadband Access Through the Preservation of Public Television Translator Service and the Development of Digital Translators and Digital On-Channel Repeaters* (May 29, 2002). The *Notice* in this proceeding generally sought comment on this petition.

[511] APTS/PBS Comments at 12; Entravision Comments at 8; NTA Comments at 26; Southern Oregon Comments at 1; Sunbelt Comments at 3.

[512] APTS/PBS Comments at 13; Entravision Comments at 8; Greg Best Consulting Comments at 8; Sunbelt Comments at 3 (*See* also Rancho Palos Verdes Broadcasters Reply Comments at 4, which oppose Sunbelts comments in this regard.)

[513] MSTV/NAB Comments at 23. S*ee* also Joint Commenters Reply Comments at 38.

[514] *Id*. at 24. Distributed transmission systems involve the operation of multiple highly synchronized transmitters that could operate in single frequency networks. The Commission has sought comment on a range of issues for distributed systems including regulatory status, location and service area, power, interference protection and other technical standards. *See* Second DTV Periodic Review NPRM, ¶¶ 99-106. On August 4, 2004, the Commission adopted a *Report and Order* in this proceeding that (1) approved "in principle" the use of DTS technology, and (2) committed to commencing in the near future a separate "fast track" proceeding to propose rules for use of DTS. *See Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*, *Report and Order*, FCC 04-192, released September 7, 2004.

[515] AFCCE Comments at 5 (AFCEE states that until rules for distributed transmission systems are established, we should permit booster operation by special temporary authority (STA), confining the noise-limited signal contour of a booster to within the noise-limited contour of the associated DTV broadcast station, based on its authorized or allotted facilities).

248. At this time, we will not establish a digital booster station class in our LPTV service rules.[516] If such stations were to be authorized, we expect these would be primarily used by broadcasters to serve terrain-shadowed portions of their DTV service areas, in the manner of analog boosters. We concur with MSTV/NAB that we should resolve issues regarding distributed transmission systems before further considering whether to authorize on-channel digital boosters.

249. NTA maintains that there may be circumstances where the best output channel for a digital translator would be the input channel of its primary DTV broadcast station. It recommends that we make this option available to any prospective licensee under our translator rules.[517] NTA notes that the primary broadcast licensee, through its retransmission consent, would exercise control over where such operations could take place. We recognize that in some areas spectrum for digital companion channels will be extremely limited, especially during the full-service DTV transition. The NTA proposal has merit in that it would facilitate efficient use of available TV channels. Therefore, we will permit digital translator and LPTV stations to retransmit programming directly received on the same TV channel, but only if the licensee of the original input signal (*e.g.*, full-service DTV station licensee) has given its consent.[518] We will authorize such operations under our technical rules for digital translator and LPTV stations. While allowing operations that are technically equivalent to boosters, applications for these stations must be filed as a new TV translator or LPTV station. These stations will be subject to the same interference analysis we perform on other stations in the LPTV service.

J. Petition for Rule Making by APTS, PBS and CPB

250. APTS, PBS and CPB (referred to collectively as the "LPTV Petitioners") filed a Petition for Rulemaking (the "Petition") asking that the Commission initiate a proceeding to "ensure the delivery of noncommercial educational and public safety services to all Americans by protecting the existing system of translators and facilitating the development of . . . digital translators and digital on-channel repeaters."[519] In the *Notice* we sought comment on some of the requests sought by the LPTV Petitioners.[520] This included whether: (1) to authorize dual analog/digital channels for translators; (2) to allow interested translator operators to "flash-cut" from analog to digital; (3) to allow applications for new digital on-channel repeaters; (4) to provide on-channel repeaters the same interference protection granted to the main transmitter with which it is associated; and (5) to allow applications for new digital translators.

251. Given our actions herein, we believe we have addressed the issues raised by the LPTV Petitioners.[521] We adopt rules to allow existing translator stations to seek digital companion channels or to

[516] Nor will we amend of our rules (Section 74.733 - "UHF translator signal boosters") to permit translator licensees to operate low power analog booster stations, as recommended by NTA. NTA submits that operation of booster stations with an effective radiated power not exceeding 20 watts would be both useful and feasible. NTA Comments at 27. However, the *Notice* did not address this issue and we find it to be outside of the scope of this proceeding.

[517] NTA Comments at 27.

[518] We contrast such operations with the situation where the broadcast signal on the same TV channel as that of the translator output channel is not directly received by the translator, but via a relay station on a different frequency. The latter case is a translator rebroadcast of a TV broadcast station, but is not technically similar to the operation of a TV booster.

[519] APTS/PBS Petition for Rule Making at 3.

[520] *Notice*, 18 FCC Rcd 18413.

[521] In the *Notice* we declined to address certain issues raised by the LPTV Petitioners. *See Notice*, 18 FCC Rcd at 18415-18416.

convert on-channel from analog to digital. We adopt rules for the filing of applications for new digital translators on a first-come, first-served basis. Finally, we decided to not create a digital low power television booster service at this time. We conclude that our actions address the LPTV Petitioners' overall goals that we facilitate the transition from analog to digital operation for these translators.[522] We therefore dismiss the Petition as moot.

IV. ADMINISTRATIVE MATTERS

252. *Accessibility Information*. Accessible formats of this *Report and Order* (computer diskettes, large print, audio recording and Braille) are available to persons with disabilities by contacting Brian Millin, of the Consumer & Governmental Affairs Bureau, at (202) 418-7426, TTY (202) 418-7365, or at bmillin@fcc.gov.

253. *Paperwork Reduction Act of 1995 Analysis*. This document contains new and modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the new or modified information collection requirements and forms contained in this proceeding. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), we have assessed the effects of adopting these rules, and find that there may be an administrative burden on businesses with fewer than 25 employees. However, since this action is consistent with our mandate to ensure the successful transition from analog to digital television, we believe small businesses will also benefit from the requirements we adopt herein in that they will be permitted to participate in the digital transition In addition, the rules allow flexibility to operate low power digital television facilities, allowing stations new and unique sources of income, and for new entrants to seek digital television stations, which should substantially alleviate any burdens imposed on all businesses, including those with fewer than 25 employees.

254. Written comments by the public on the proposed information collection(s) are due 60 days from date of publication of this *Report and Order* in the Federal Register. Written comments must be submitted by the public, Office of Management and Budget and other interested parties on the proposed information collection(s) on or before 60 days from date of publication of this *Report and Order* in the Federal Register. In addition to filing comments with the Secretary, a copy of any comments on the information collection(s) contained herein should be submitted to Judith F. Herman, Federal Communications Commission, Room 1-A804, 445 12th Street, SW, Washington, DC 20554, or via the Internet to Judith-B.Herman@fcc.gov, and to Kristy L. LaLonde, OMB Desk Officer, Room 10234 NEOB, 725 17th Street, NW, Washington, DC 20503, or via the Internet to Kristy L. LaLonde@omb.eop.gov, or via fax at 202-395-5167.

255. *Regulatory Flexibility Act*. As required by the Regulatory Flexibility Act,[523] the Commission has prepared a Final Regulatory Flexibility Analysis ("FRFA") relating to this *Report and Order*. The FRFA is set forth in Appendix C.

V. ORDERING CLAUSES

256. **IT IS ORDERED** that pursuant to the authority contained in Sections 1, 4(i) and (j), 5(c)(1), 7, 301, 302, 303(f), 303(r), 303(u), 303(w), 303(x), 307, 308, 309, 316, 319, 324, 336(c), 336(f), 337,

[522] LPTV Petitioners' Petition for Rule Making at 3.

[523] *See* 5 U.S.C. § 604.

330(b), 330(c), 332(c) of the Communications Act of 1934, 47 U.S.C §§ 151, 154(i) and (j), 155(c)(1), 157, 301, 302, 303(f), 303(r), 303(u), 303(w), 303(x), 307, 308, 309, 316, 319, 324, 336(c), 336(f), 337, 330(b), 330(c), 332(c) that the Commission's rules **ARE HEREBY AMENDED** as set forth in Appendix *B,* and shall become effective 60 days after publication in the Federal Register except that rule sections that contain information collection requirements under the PRA shall not be effective until approved by OMB. The FCC will publish a document in the Federal Register announcing the effective date for those sections.

257. **IT IS FURTHER ORDERED** that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, **SHALL SEND** a copy of this *Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

258. **IT IS FURTHER ORDERED**, That the Commission will send a copy of this *Report and Order* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A
LIST OF COMMENTERS

Comments

Abacus Television, Turnpike Television, et. al. (Joint Commenters)
Access Spectrum, LLC (Access)
Adams Telecom (Adams)
Aloha Partners, L.P. (Aloha)
Annapolis Broadcasting Company, Inc. (Annapolis)
Arctic Slope Telephone Assn Coop., Inc.; Grand River Communications, Inc.; Kanokla Telephone Assn., Inc.; Peoples Telephone Coop., Inc.; Valley Telephone Coop. (Arctic)
Association of Federal Communications Consulting Engineers (AFCCE)
Association for Maximum Service Television, Inc. and The National Association of Broadcasters (MSTV/NAB)
Association of Public Safety Communications Officials International, Inc. (APCO)
Association of Public Television Stations and the Public Broadcasting Service (APTS/PBS)
Bonneville International Corp. (Bonneville)
Brey, Ronald J.
Bruno Goodworth Network, Inc. (Bruno)
Cavalier Group, LLC (Cavalier)
Cherryland Wireless, LLC (Cherryland)
Community Broadcasters Assn. (CBA)
Cooperative Television Assn. (CTA)
Cordillera Files\Common Files, Inc. (Cordillera)
Corr Wireless Communications, LLC (Corr)
Corridor Television, LLP; Rapid Broadcasting Co. (Corridor)
Cox Broadcasting, Inc.; Liberty Corp. (Cox)
Cruze Electronics (Cruze)
Datacom, LLC (Datacom)
Dept. of Special Districts of San Bernadino County, Calif. (San Bernardino County)
duTriel, Lundin & Rackley, Inc. (duTriel)
Elko Television District (Elko)
Engle Broadcasting (Engle)
Entravision Holdings, LLC (Entravision)
Fox Television Stations, Inc. and Fox Broadcasting Co. (Fox)
Greg Best Consulting, Inc. (Greg Best)
Harbor Wireless, LLC (Harbor)
H&R Production Group, LLC (H&R)
International Broadcasting Network (International)
Island Broadcasting Co. (Island)
KAET (TV) (Arizona State Univ.) (KAET)
KM Broadcasting, Inc. (KM)
Larcan USA, Inc. (Larcan)
Lin TV Corp. and Banks Broadcasting, Inc. (LIN)
Martin Group, Inc. (Martin)
Metrocast Corporation (Metrocast)
Miller, Keily
Motorola, Inc. (Motorola)
Mullaney Engineering, Inc. (Mullaney)
National Translator Assn. (NTA)

P&P Cable Holdings, LLC (P&P)
Parson, R. Kent (State of Utah) (Parson)
Paxson Communications Corp. (Paxson)
Pioneer Telephone Coop., Inc. (Pioneer)
QUALCOMM, Inc. (Qualcomm)
Renville County TV Corp. (Renville)
Riverton Freemont TV Club, Inc. (Riverton)
Rural 700 MHz Band Licensees (Rural 700 MHz)
Selective TV, Inc. (Selective)
Snoop, Donald R.
Southern Oregon Public Television, Inc. (Southern Oregon)
St. Clair, B.W. (St. Clair)
Sunbelt Television, Inc. (Sunbelt)
TV-61 San Diego, Inc.
United Telephone Assn., Inc. (UTA)
Venture Technologies Group, Inc. (Venture)
Vermont Educational Television (Vermont Educational)
Viacel
Vulcan Spectrum, LLC (Vulcan)
Wardell, Ed; Wardell, Jane
WatchTV, Inc.
Willmar Assembly of God Church
Word of Life Ministries (Word)
Wyoming Pubic Television (Wyoming)

Reply Comments/Ex Parte Comments

Abacus Television, Turnpike Television, et.al.
Association for Maximum Service Television, Inc. and the National Association of Broadcasters
Association of Public Television Stations and The Public Broadcasting Service
Bruno Goodworth Network, Inc.
Commercial Broadcasting Corp.
Corridor Television, LLP and Rapid Broadcasting Co.
Cox Broadcasting, Inc. and The Liberty Corp.
Dept. of Special Districts of San Bernardino County, Calif.
Fiori, John
Greg Best Consulting, Inc.
Greg Best Consulting, Inc. for University of New Mexico
Idaho Public Television Stations
International Broadcasting Network
Island Broadcasting Co.
Jackson, Martin J.
KUED-TV and KULC-TV
Larcan USA, Inc.
Lawrence, Kathy for College Media Advisers
Motorola, Inc.
National Translator Assn.
Ogden Valley TV Translator Special Service District
Page, Kevin L. for KHEM-LP
Parsons, R. Kent (State of Utah)

Paxson Communications Corp.
Rancho Palos Verdes Broadcasters, Inc.
Renard Communications Corp.
Reynolds Media Inc.
Riverton Fremont TV Club, Inc.
Rural 700 MHz Band Licensees
Sgrignoli, Gary
Sheldahl, Douglas
Statewide Wireless Network of the New York State Office for Technology
Tiger Eye Broadcasting Corp.
Venture Technologies Group, LLC
WZBN TV, Inc.
Zenith Electronics Corp.
700 MHz Advancement Coalition

APPENDIX B
FINAL RULE CHANGES

For the reasons set forth in the preamble, Parts 73 and 74 of the U.S. Code of Federal Regulations is amended as follows:

PART 73 – RADIO BROADCAST SERVICES

1. The authority citation for Part 73 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 303, 334 and 336.

Subpart J – Class A Television Broadcast Stations

2. Section 73.6000 is revised by adding a new subparagraph (2) and renumbering existing subparagraph (2) as subparagraph (3).

§ 73.6000 Definitions.

* * * * *

(2) Produced within the predicted DTV noise-limited contour (see § 73.622(e) of this part) of a digital Class A station broadcasting the program or within the contiguous predicted DTV noise-limited contours of any of the digital Class A stations in a commonly owned group; or

* * * * *

3. Section 73.6016 is revised to read as follows:

§ 73.6016 Digital Class A TV station protection of TV broadcast stations.

Digital Class A TV stations must protect authorized TV broadcast stations, applications for minor changes in authorized TV broadcast stations filed on or before November 29, 1999, and applications for new TV broadcast stations that had been cut-off without competing applications or that were the winning bidder in a TV broadcast station auction as of that date, or that were the proposed remaining applicant in a group of mutually-exclusive applications for which a settlement agreement was on file as of that date. This protection must be based on meeting the requirements of § 74.793 (b)-(d) and (f) of this chapter. An application for DTV operation of an existing Class A TV station or to change the facilities of a digital Class A TV station will not be accepted if it fails to protect these TV broadcast stations and applications pursuant to these requirements.

4. Section 73.6017 is revised to read as follows:

§ 73.6017 Digital Class A TV station protection of Class A TV and digital Class A TV stations.

An application for digital operation of an existing Class A TV station or to change the facilities of a digital Class A TV station will not be accepted if it fails to protect authorized Class A and digital Class A stations in accordance with the requirements of § 74.793 (b)-(d) and (g) of this chapter. This protection must be afforded to applications for changes in other authorized Class A and digital Class A stations filed prior to the date the digital Class A applications is filed.

5. Section 73.6018 is revised to read as follows:

§ 73.6018 Digital Class A TV station protection of DTV stations.

Digital Class A TV stations must protect the DTV service that would be provided by the facilities specified in the DTV Table of Allotments in § 73.622 of this part, by authorized DTV stations and by applications that propose to expand DTV stations' allotted or authorized coverage contour in any direction, if such applications either were filed before December 31, 1999 or were filed between December 31, 1999 and May 1, 2000 by a DTV station licensee or permittee that had notified the Commission of its intent to "maximize" by December 31, 1999. Protection of these allotments, stations and applications must be based on meeting the requirements of § 74.793 (b)-(e) of this chapter. An application for digital operation of an existing Class A TV station or to change the facilities of a digital Class A TV station will not be accepted if it fails to protect these DTV allotments, stations and applications in accordance with this section.

6. Section 73.6019 is revised to read as follows:

§ 73.6019 Digital Class A TV station protection of low power TV, TV translator, digital low power TV and digital TV translator stations.

An application for digital operation of an existing Class A TV station or to change the facilities of a digital Class A TV station will not be accepted if it fails to protect authorized low power TV, TV translator, digital low power TV and digital TV translator stations in accordance with the requirements of § 74.793 (b)-(d) and (h) of this chapter. This protection must be afforded to applications for changes filed prior to the date the digital Class A station is filed.

7. Section 73.6020 is revised to read as follows:

§ 73.6020 Protection of stations in the land mobile radio service.

An application for digital operation of an existing Class A TV station or to change the facilities of an existing Class A TV or digital Class A TV station will not be accepted if it fails to protect stations in the land mobile radio service pursuant to the requirements specified in § 74.709 of this chapter. In addition to the protection requirements specified in § 74.709(a) of this chapter, Class A TV and digital Class A TV stations must not cause interference to land mobile stations operating on channel 16 in New York, NY.

* * * * *

8. Section 73.6024 is revised by adding a new paragraph (d).

§ 73.6024 Transmission standards and system requirements.

(d) A digital Class A station must meet the emission requirements of § 74.794 of this chapter.

* * * * *

9. Section 73.6027 is added to read as follows:

§ 73.6027 Class A TV notifications concerning interference to radio astronomy, research and receiving installations.

An applicant for digital operation of an existing Class A TV station or to change the facilities of an existing Class A TV or digital Class A TV station shall be subject to the requirements of § 73.1030 – Notifications concerning interference to radio astronomy, research and receiving installations.

* * * * *

PART 74 – EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES

10. The authority citation for Part 74 is amended to read as follows:

Authority: 47 U.S.C. 154, 303, 307, 309, 336 and 554

Subpart G – Low Power TV, TV Translator, and TV Booster Stations

11. Section 74.701 is revised by adding new paragraphs (j) through (p):

§ **74.701 Definitions.**

* * * * *

(j) *Digital television broadcast translator station ("digital TV translator station")*. A station operated for the purpose of retransmitting the programs and signals of a digital television ("DTV") broadcast station, without significantly altering any characteristic of the original signal other than its frequency and amplitude, for the purpose of providing DTV reception to the general public.

(k) *Digital low power TV station ("digital LPTV station")*. A station authorized under the provisions of this subpart that may retransmit the programs and signals of a DTV broadcast station, may originate programming in any amount greater than 30 seconds per hour for the purpose of providing digital television (DTV) reception to the general public and, subject to a minimum video program service requirement, may offer services of an ancillary or supplementary nature, including subscription-based services. (*See* § 74.790 of this part).

(l) *Digital Program Origination*. For purposes of this part, digital program origination shall be any transmissions other than the simultaneous retransmission of the programs and signals of a TV or DTV broadcast station or transmissions related to service offerings of an ancillary or supplementary nature. Origination shall include locally generated television program signals and program signals obtained via video recordings (tapes and discs), microwave, common carrier circuits, or other sources.

(m) *Existing low power television or television translator station.* When used in this Subpart G, the terms existing low power television and existing television translator station refer to an analog or digital low power television station or television translator station that is either licensed or has a valid construction permit.

(n) *Suitable in core channel.* When used in this Subpart G, the term "suitable in core channel" refers to a channel that would enable a digital low power television or television translator station to produce a protected service area comparable to that of its associated analog LPTV or TV translator station.

(o) *Companion digital channel*. When used in this Subpart G, the term "companion digital channel" refers to a digital channel authorized to an existing low power television or television translator station to be associated with the station's analog channel.

(p) *Digital conversion channel*. When used in this Subpart G, the term "digital conversion channel" refers to a channel previously authorized to an existing low power television or television translator station that has been converted to digital operation.

* * * * *

12. Section 74.703 is revised by adding new paragraphs (f) and (g) and renumbering existing paragraphs (f) and (g) as (h) and (i):

§ 74.703 Interference.

* * * * *

(f) It shall be the responsibility of a digital low power TV or TV translator station operating on a channel from channel 52-69 to eliminate at its expense any condition of interference caused to the operation of or services provided by existing and future commercial or public safety wireless licensees in the 700 MHz bands. The offending digital LPTV or translator station must cease operations immediately upon notification by any primary wireless licensee, once it has been established that the digital low power TV or translator station is causing the interference.

(g) An existing or future wireless licensee in the 700 MHz bands may notify (certified mail, return receipt requested), a digital low power TV or TV translator operating on the same channel or first adjacent channel of its intention to initiate or change wireless operations and the likelihood of interference from the low power TV or translator station within its licensed geographic service area. The notice should describe the facilities, associated service area and operations of the wireless licensee with sufficient detail to permit an evaluation of the likelihood of interference. Upon receipt of such notice, the digital LPTV or TV translator licensee must cease operation within 120 days unless: (1) it obtains the agreement of the wireless licensee to continue operations, (2) the commencement or modification of wireless service is delayed beyond that period (in which case the period will be extended), or (3) the Commission stays the effect of the interference notification, upon request.

* * * * *

13. Section 74.705 is amended by revising paragraph (e) to read as follows:

§ 74.705 TV broadcast analog station protection.

* * * * *

(e) As an alternative to the preceding paragraphs of this section, an applicant for a low power TV, TV translator or TV booster may make full use of terrain shielding and Longley-Rice terrain dependent propagation prediction methods to demonstrate that the proposed facility would not be likely to cause interference to TV broadcast stations. Guidance on using the Longley-Rice methodology is provided in *OET Bulletin No. 69* (but also see §74.793(d) of this part). Copies of *OET Bulletin No. 69* may be inspected during normal business hours at the: Federal Communications Commission, CY-C203, 445 12th Street, SW., Reference Information Center, Washington, DC 20554. This document is also available through the Internet on the *FCC Home Page* at http://www.fcc.gov.

14. Section 74.705 is amended by revising paragraph (e) to read as follows:

§ 74.707 Low power TV and TV translator station protection.

* * * * *

(e) As an alternative to the preceding paragraphs of this section, an applicant for a low power TV or TV translator station may make full use of terrain shielding and Longley-Rice terrain dependent propagation prediction methods to demonstrate that the proposed facility would not be likely to cause interference to low power TV, TV translator and TV booster stations. Guidance on using the Longley-Rice methodology is provided in *OET Bulletin No. 69* (but also see §74.793(d) of this part). Copies of *OET Bulletin No. 69*

may be inspected during normal business hours at the: Federal Communications Commission, Room CY-C203, 445 12th Street,
SW., Reference Information Center, Washington, DC 20554. This document is also available through the Internet on the *FCC Home Page* at http://www.fcc.gov.

15. Section 74.710 is added to read as follows:

§ 74.710 Digital low power TV and TV translator station protection.

(a) An application to construct a new low power TV, TV translator, or TV booster station or change the facilities of an existing station will not be accepted if it fails to protect an authorized digital low power TV or TV translator station or an application for such station filed prior to the date the low power TV, TV translator, or TV booster application is filed.

(b) Applications for low power TV, TV translator and TV booster stations shall protect digital low power TV and TV translator stations pursuant to the following requirements:

(i) An application must not specify an antenna site within the protected contour of a co-channel or adjacent channel digital low power TV or TV translator station, as defined in § 74.792 of this part.

(ii) The ratio in dB of the field strength of the low power TV, TV translator or TV booster station at the protected contour of a co-channel digital TV or TV translator station must meet the requirements specified in subparagraph (d)(1) of § 74.706.

(iii) The ratio in dB of the field strength of the low power TV, TV translator or TV booster station at the protected contour of a digital low power TV or TV translator station on the lower and upper adjacent channels must not exceed 49 dB and 48 dB, respectively.

(iv) The above analysis should use the propagation methods specified in paragraph (c) of § 74.706.

(c) As an alternative to the requirements of paragraph (b), an applicant for a low power TV, TV translator or TV booster may make full use of terrain shielding and Longley-Rice terrain dependent propagation prediction methods to demonstrate that the proposed facility would not be likely to cause interference to digital low power TV or TV translator stations, as described in § 74.707(e) of this part (*i.e.*, reduce the service population by no more than 0.5% within the station's protected contour based on the interference thresholds of § 73.623(c) of this chapter).

16. Section 74.786 is added to read as follows:

§ 74.786 – Digital channel assignments.

(a) An applicant for a new low power television or television translator digital station or for changes in the facilities of an authorized digital station shall endeavor to select a channel on which its operation is not likely to cause interference. The applications must be specific with regard to the channel requested. Only one channel will be assigned each station.

(b) Any one of the 12 standard VHF Channels (2 to 13 inclusive) may be assigned to a VHF digital low power television or television translator station. Channels 5 and 6 assigned in Alaska shall not cause harmful interference to and must accept interference from non-Government fixed operation authorized prior to January 1, 1982.

(c) UHF channels 14 to 36 and 38 to 51 may be assigned to a UHF digital low power television or television translator station. In accordance with § 73.603(c) of part 73, Channel 37 will not be assigned to such stations.

(d) UHF Channels 52-59 may be assigned to a digital low power television or television translator station for use as *a digital conversion channel*. These channels may also be assigned as a *companion digital channel* if the applicant is able to demonstrate that a *suitable in core channel* is not available. Stations proposing use of such channels shall notify all potentially affected 700 MHz wireless licensees not later than 30 days prior to the submission of their application (FCC Form 346). Applicants shall notify wireless licensees of the 700 MHz spectrum comprising the same TV channel and the adjacent channel within whose licensed geographic boundaries the digital LPTV or translator station is proposed to be located, and also notify licensees of co-channel and adjacent channel spectrum whose service boundaries lie within 75 miles and 50 miles, respectively, of their proposed station location. Specific information for this purpose can be obtained from the Commission's auction web site at http://www.fcc.gov/auctions.

(e) UHF Channels 60-69 may be assigned to a digital low power television or television translator station for use as a *digital conversion channel* only. Stations proposing use of such channels shall notify all potentially affect 700 MHz commercial licensees not later than 30 days prior to the submission of their application (FCC Form 346) in the manner provided by (d) of this part. Stations proposing use of channels 63, 64, 68 and 69 must secure a coordinated spectrum use agreement with the pertinent 700 MHz public safety regional planning committee and state administrator prior to the submission of their application (FCC Form 346). Coordination shall be undertaken with regional planning committee and state administrator of the region and state within which the digital LPTV or translator station is proposed to be located, and those of adjoining regions and states with boundaries within 75 miles of the proposed station location. Stations proposing use of channels 62, 65, and 67 must notify the pertinent regional planning committee and state administrator not later than 30 days prior to the submission of their application (FCC Form 346). Notification shall be made to the regional and state administrators of region and state within which the digital LPTV or translator station is proposed to be located, and those of adjoining regions and states with boundaries within 50 miles of the proposed station location. Information for this purpose is available at the above web site and also at the following internet sites: http://wireless.fcc.gov/publicsafety700MHzregional.html, http://wireless.fcc.gov/publicsafety/700MHz/state.html, and http://wireless.fcc.gov/publicsafety/700MHz/interop-contacts.html.

(f) Application for new analog low power television or television translator stations specifying operation above Channel 51 will not be accepted for filing. Applications for displacement relief on channels above 51 will continue to be accepted.

17. Section 74.787 is added to read as follows:

§ 74.787 – Digital licensing.

(a) *Applications for digital low power television and television translator stations.*

(1) *Applications for digital conversion*. Applications for *digital conversion channels* may be filed at any time. Such applications shall be filed on FCC Form 346 and will be treated as a minor change application. There will be no application fee.

(2) *Applications for companion digital channel*.

(A) A Public Notice will specify a time period or "window" for filing applications for *companion digital channels*. During this window, only *existing low power television or television translator stations* or licensees and permittees of Class A TV stations may submit applications for *companion digital channels*. Applications submitted prior to the initial window identified in the Public Notice will be returned as premature. At a subsequent time, a Public Notice will announcement the commencement of a filing procedure in which applications will accepted on a first-come, first-served basis not restricted to existing station licensees and permittees.

(B) Applications for *companion digital channels* filed during the initial window shall be filed in accordance with the provisions of §§1.2105 and 73.5002 regarding the submission of the short-form application, FCC Form 175, and all appropriate certifications, information and exhibits contained therein. To determine which applicants are mutually exclusive, applicants must submit the engineering data contained in FCC Form 346 as a supplement to its short-form application. Such engineering data will not be studied for technical acceptability, but will be protected from subsequently filed applications as of the close of the initial window period. Determinations as to the acceptability or grantability of an applicant's proposal will not be made prior to an auction.

(C) After the close of the initial window, a Public Notice will identify the short-form applications received during the window filing period which are found to be mutually exclusive. Such short-form applications will be resolved via the Commission's Part 1 and broadcast competitive bidding rules, Sections 1.2100 et seq., and Sections 73.5000 et seq. Such applicants shall be afforded an opportunity to submit settlements and engineering solutions to resolve mutual exclusivity pursuant to Section 73.5002(d).

(D) After the close of the window, a Public Notice will identify short-form applications received that are found to be non-mutually exclusive. All non-mutually exclusive applicants will be required to submit an FCC Form 346 pursuant to Section 73.5005. Such applications shall be processed pursuant to Section 73.5006.

(E) With regard to fees, an application (FCC Form 346) for *companion digital channels* shall be treated as a minor change application and there will be no application fee.

(3) *Construction permit applications for new stations, major changes to existing stations in the low power television service*. A Public Notice will specify the date upon which interested parties may begin to file applications for new stations and major facilities changes to existing stations in the low power television service. It will specify parameters for any applications that may be filed. Applications submitted prior to date announced by the Public Notice will be returned as premature. Such applications shall be accepted on a first-come, first-served basis, and shall be filed on FCC Form 346. Applications for new or major change shall be subject to the appropriate application fee. Mutually exclusive applications shall be resolved via the Commission's Part 1 and broadcast competitive bidding rules, Sections 1.2100 et seq., and Sections 73.5000 et seq. Such applicants shall be afforded an opportunity to submit settlements and engineering solutions to resolve mutual exclusivity pursuant to Section 73.5002(d).

(4) *Displacement applications*. A digital low power television or television translator station which is causing or receiving interference or is predicted to cause or receive interference to or from an authorized TV broadcast station, DTV station or allotment or other protected station or service, may at any time file a displacement relief application for change in channel, together with technical modifications that are necessary to avoid interference or continue serving the station's protected service area, provided the proposed transmitter site is not located more than 30 miles from the reference coordinates of the existing station's community of license. See Section 76.53 of this chapter. A displacement relief application shall be filed on FCC Form 346 and will

be considered a minor change and will be placed on public notice for a period of not less than 30 days to permit the filing of petitions to deny. These applications will not be subject to the filing of competing applications. Where a displacement relief application for a digital low power television or television translator station becomes mutually exclusive the application(s) for new analog or digital low power television or television translator stations, with a displacement relief application for an analog low power television or television translator station, or with other non-displacement relief applications for facilities modifications of analog or digital low power television or television translator stations, priority will be afforded to the displacement application for the digital low power television or television translator station to the exclusion of other applications. Mutually exclusive displacement relief applications for digital low power television and television translator stations shall be resolved via the Commission's Part 1 and broadcast competitive bidding rules, Sections 1.2100 et seq., and Sections 73.5000 et seq. Such applicants shall be afforded an opportunity to submit settlements and engineering solutions to resolve mutual exclusivity pursuant to Section 73.5002(d).

(b) *Definitions of "major" and "minor" changes to digital low power television and television translator stations.*

(1) Applications for major changes in digital low power television and television translator stations include any change in the frequency (output channel) not related to displacement relief or transmitting antenna location where the protected contour resulting from the change does not overlap some portion of the protected contour of the authorized facilities of the existing station.

(2) Other facilities changes will be considered minor.

18. Section 74.788 is added to read as follows:

§ 74.788 – Digital construction period.

(a) Each original construction permit for the construction of a new digital low power television or television translator station shall specify a period of three years from the date of issuance of the original construction permit within which construction shall be completed and application for license filed.

(b) Any construction permit for which construction has not been completed and for which an application for license or extension of time has not been filed, shall be automatically forfeited upon expiration without any further affirmative cancellation by the Commission.

(c) *Authority delegated.*

(1) Authority is delegated to the Chief, Media Bureau to grant an extension of time of up to six months beyond the relevant construction period for each original construction permit upon demonstration by the digital licensee or permittee that failure to meet the construction deadline is due to circumstances that are either unforeseeable or beyond the licensee's control where the licensee has take all reasonable steps to resolve the problem expeditiously.

(2) Such circumstances shall include, but shall not be limited to:

(A) Inability to construct and place in operation a facility necessary for transmitting digital television, such as a tower, because of delays in obtaining zoning or FAA approvals, or similar constraints;

(B) the lack of equipment necessary to obtain a digital television signal; or

(C) where the cost of construction exceeds the station's financial resources.

(3) The Bureau may grant no more than two extension requests upon delegated authority. Subsequent extension requests shall be referred to the Commission. The Bureau may deny extension requests upon delegated authority.

(4) Applications for extension of time shall be filed no earlier than 90 and no later than 60 days prior to the relevant construction deadline, absent a showing of sufficient reasons for filing within less than 60 days of the relevant construction deadline.

19. Section 74.789 is added to read as follows:

§ 74.789 – Broadcast regulations applicable to digital low power television and television translator stations.

The following rules are applicable to digital low power television and television translator stations:

Section 73.1030 - Notifications concerning interference to radio astronomy , research and receiving installations.

Sections 74.600- Eligibility for license.

Section 74.703 - Interference

Section 74.709 - Land mobile station protection.

Section 74.732 - Eligibility and licensing requirements.

Section 74.734 – Attended and unattended operation.

Section 74.735 - Power limitations.

Section 74.751 – Modification of transmission systems.

Section 74.763 – Time of operation.

Section 74.765 – Posting of station and operator licenses.

Section 74.769 - Copies of rules.

Section 74.780 – Broadcast regulations applicable to translators, low power, and booster stations (except Section 73.653 – operation of TV aural and visual transmitters and Section 73.1201 – station identification).

Section 74.781 - Station records.

Section 74.784 - Rebroadcasts.

20. Section 74.790 is added to read as follows:

§ 74.790 Permissible service of digital TV translator and LPTV stations.

(a) Digital TV translator stations provide a means whereby the signals of DTV broadcast stations may be retransmitted to areas in which direct reception of such DTV stations is unsatisfactory due to distance or intervening terrain barriers.

(b) Except as provided in paragraph (f) of this section, a digital TV translator station may be used only to receive the signals of a TV broadcast or DTV broadcast station, another digital TV translator station, a TV translator relay station, a television intercity relay station, a television STL station, or other suitable sources such as a CARS or common carrier microwave station, for the simultaneous retransmission of the programs and signals of a TV or DTV broadcast station. Such retransmissions may be accomplished by any of the following means:

(1) Reception of TV broadcast or DTV broadcast station programs and signals directly through space and conversion to a different channel by one of the following transmission modes:

(i) Heterodyne frequency conversion and suitable amplification, subject to a digital output power limit of 30 watts for transmitters operating on channels 14-69 and 3 watts for transmitters operating on channels 2-13 or,

(ii) Digital signal regeneration (*i.e.*, DTV signal demodulation, decoding, error processing, encoding, remodulation, and frequency upconversion) and suitable amplification; or,

(2) Demodulation, remodulation and amplification of TV broadcast or DTV broadcast station programs and signals received through a microwave transport.

(c) The transmissions of each digital TV translator station shall be intended for direct reception by the general public, and any other use shall be incidental thereto. A digital TV translator station shall not be operated solely for the purpose of relaying signals to one or more fixed receiving points for retransmission, distribution, or further relaying.

(d) Except as provided in (e) and (f) of this section, the technical characteristics of the retransmitted signals shall not be deliberately altered so as to hinder reception on consumer DTV broadcast receiving equipment.

(e) A digital TV translator station shall not retransmit the programs and signals of any TV broadcast or DTV broadcast station(s) without the prior written consent of such station(s). A digital TV translator may multiplex on its output channel the video program services of two or more TV broadcast and/or DTV broadcast stations, pursuant to arrangements with all affected stations, and for this limited purpose, is permitted to alter a TV broadcast and/or DTV broadcast signal.

(f) A digital TV translator station may transmit locally originated visual and/or aural messages limited to emergency warnings of imminent danger, to local public service announcements ("PSAs") and to seeking or acknowledging financial support deemed necessary to the continued operation of the station. Acknowledgments of financial support may include identification of the contributors, the size and nature of the contribution and the advertising messages of the contributors. The originations concerning financial support and PSAs are limited to 30 seconds each, no more than once per hour. Emergency transmissions shall be no longer or more frequent than necessary to protect life and property. Such originations may be accomplished by any technical means agreed upon between the TV translator and DTV station whose signal is being retransmitted, but must be capable of being received on consumer

DTV broadcast reception equipment. A digital TV translator shall modify, as necessary to avoid DTV reception tuning conflicts, the Program System and Information Protocol ("PSIP") information in the DTV broadcast signal being retransmitted.

(g) A digital LPTV station may operate under the following modes of service:

(1) For the retransmission of programming of a TV broadcast or DTV broadcast station, subject to the prior written consent of the station whose signal is being retransmitted;

(2) For the origination of programming and commercial matter as defined in § 74.701(l).

(3) Whenever operating, a digital LPTV station must transmit an over-the-air video program signal at no direct charge to viewers at least comparable in resolution to that of its associated analog (NTSC) LPTV station or, in the case of an on-channel digital conversion, that of its former analog LPTV station.

(4) A digital LPTV station may dynamically alter the bit stream of its signal to transmit one or more video program services in any established DTV video format.

(h) A digital LPTV station is not subject to minimum required hours of operation and may operate in either of the two modes described in paragraph (g) of this section for any number of hours.

(i) Upon transmitting a signal that meets the requirements of subparagraph (g)(3) of this section, a digital LPTV station may offer services of any nature, consistent with the public interest, convenience, and necessity, on an ancillary or supplementary basis in accordance with the provisions of § 73.624(c) and (g) of this chapter.

(j) A digital LPTV station may not be operated solely for the purpose of relaying signals to one or more fixed receiving points for retransmission, distribution or relaying.

(k) A digital LPTV station may receive input signals for transmission or retransmission by any technical means, including those specified in paragraph (b) of this section.

* * * * *

21. Section 74.791 is added to read as follows:

§ 74.791 – Digital call signs.

(a) *Digital low power stations*. Call signs for digital low power stations will be made up a prefix consisting of the initial letter K or W followed by the channel number assigned to the station and two additional letters and a suffix consisting of the letters –D.

(b) *Digital television translator stations*. Call signs for digital television translator stations will be made up a prefix consisting of the initial letter K or W followed by the channel number assigned to the station and two additional letters and a suffix consisting of the letter –D.

(c) *Digital low power television stations and Class A television stations.* Digital low power television and Class A television stations may be assigned a call sign with a four-letter prefix pursuant to Section 73.3550 of Part 73 of the rules. Digital low power stations with four-letter prefixes will be assigned the suffix –LD and digital Class A stations with four-letter prefixes will be assigned the suffix –CD.

22. Section 74.792 is added to read as follows:

§ 74.792 – Digital low power TV and TV translator station protected contour.

(a) A digital low power TV or TV translator will be protected from interference from other low power TV, TV translator, Class A TV or TV booster stations or digital low power TV, TV translator or Class A TV stations within the following predicted contours:

(1) 43 dBu for stations on Channels 2 through 6;

(2) 48 dBu for stations on Channels 7 through 13; and

(3) 51 dBu for stations on Channels 14 through 69.

(b) The digital low power TV or TV translator protected contour is calculated from the authorized effective radiated power and antenna height above average terrain, using the F(50,90) signal propagation method specified in § 73.625(b)(1) of this chapter.

23. Section 74.793 is added to read as follows:

§ 74.793 – Digital low power TV and TV translator station protection of broadcast stations.

(a) An application to construct a new digital low power TV or TV translator station or change the facilities of an existing station will not be accepted if it fails to meet the interference protection requirements in this section.

(b) Except as provided in this section, interference prediction analysis is based on the interference thresholds (D/U signal strength ratios) and other criteria and methods specified in §§ 73.623(c)(2)-(c)(4) of this chapter. Predictions of interference to co-channel DTV broadcast, digital Class A TV, digital LPTV and digital TV translator stations will be based on the interference thresholds specified therein for "DTV-into-DTV." Predictions of interference to co-channel TV broadcast, Class A TV, LPTV and TV translator stations will be based on the interference threshold specified for "DTV-into-analog TV." Predictions of interference to TV broadcast, Class A TV, LPTV and TV translator stations with the following channel relationships to a digital channel will be based on the threshold values specified for "Other Adjacent Channels (Channels 14-69 only)," where N is the analog channel: N-2, N+2, N-3, N+3, N-4, N+4, N-7 , N+7, N-8, N+8, N+14, and N+15.

(c) The following D/U signal strength ratios (dB) shall apply to the protection of stations on the first adjacent channel. The D/U ratios for "Digital TV-into-analog TV" shall apply to the protection of TV broadcast, Class A TV, LPTV and TV translator stations. The D/U ratios for "Digital TV-into-digital TV" shall apply to the protection of DTV, digital Class A TV, digital LPTV and digital TV translator stations. The D/U ratios correspond to the digital LPTV or TV translator station's specified out-of-channel emission mask.

	Simple Mask	Stringent Mask
Digital TV-into-analog TV	10	0
Digital TV-into-digital TV	-7	-12

(d) For analysis of predicted interference from digital low power TV and TV translator stations, the relative field strength values of the assumed antenna vertical radiation pattern in Table 8 in OET Bulletin 69 shall be doubled up to a value of 1.0.

(e) Protection to the authorized facilities of DTV broadcast stations shall be based on not causing predicted interference to the population within the service area defined and described in § 73.622(e) of this chapter, except that a digital low power TV or TV translator station must not cause a loss of service to 0.5 percent or more of the population predicted to receive service from the authorized DTV facilities.

(f) Protection to the authorized facilities of TV broadcast stations shall be based on not causing predicted interference to the population within the Grade B field strength contours defined and described in § 73.683 of this chapter, except that a digital low power TV or TV translator station must not cause a loss of service to 0.5 percent or more of the population predicted to receive service from the authorized TV broadcast facilities.

(g) Protection to the authorized facilities of Class A and digital Class A TV stations shall be based on not causing predicted interference to the population within the service area defined and described in §§ 73.6010 (a)-(b) and (c)-(d), respectively, of this chapter, except that a digital low power TV or TV translator station must not cause a loss of service to 0.5 percent or more of the population predicted to receive service from the authorized Class A TV or digital Class A TV facilities.

(h) Protection to the authorized facilities of low power TV and TV translator stations and digital low power TV and TV translator stations shall be based on not causing predicted interference to the population within the service area defined and described in §§ 74.707(a) and 74.792, respectively, of this part, except that a digital low power TV or TV translator station must not cause a loss of service to 2.0 percent or more of the population predicted to receive service from the authorized low power TV, TV translator, digital low power TV or digital TV translator station.

24. Section 74.794 is added to read as follows:

§ 74.794 – Digital emissions.

(a)(1) An applicant for a digital LPTV or TV translator station construction permit shall specify that the station will be constructed to confine out-of-channel emissions within one of the following emission masks: simple or stringent.

(2) The power level of emissions on frequencies outside the authorized channel of operation must be attenuated no less than following amounts below the average transmitted power within the authorized 6 MHz channel. In the mask specifications below, A is the attenuation in dB and Δf is the frequency difference in MHz from the edge of the channel.

(i) *Simple mask*: At the channel edges, emissions must be attenuated no less than 46 dB. More than 6 MHz from the channel edges, emissions must be attenuated no less than 71 dB. At any frequency between 0 and 6 MHz from the channel edges, emissions must be attenuated no less than the value determined by the following formula:

$$A\ (dB) = 46 + (\Delta f^2 / 1.44)$$

(ii) *Stringent mask*: In the first 500 kHz from the channel edges, emissions must be attenuated no less than 47 dB. More than 3 MHz from the channel edges, emissions must be attenuated no less than 76

dB. At any frequency between 0.5 and 3 MHz from the channel edges, emissions must be attenuated no less than the value determined by the following formula:

$$A(dB) = 47 + 11.5\ (\Delta f - 0.5)$$

(3) The attenuation values for the simple and stringent emission masks are based on a measurement bandwidth of 500 kHz. Other measurement bandwidths may be used and converted to the reference 500 kHz value by the following formula:

$$A(dB) = A_{alternate} + 10 \log (BW_{alternate} / 500)$$

where A(dB) is the measured or calculated attenuation value for the reference 500 kHz bandwidth, and $A_{alternate}$ is the measured or calculated attenuation for a bandwidth $BW_{alternate}$. Emissions include sidebands, spurious emissions and radio harmonics. Attenuation is to be measured at the output terminals of the transmitter (including any filters that may be employed). In the event of interference caused to any service by out-of-channel emissions, greater attenuation may be required.

(b) In addition to meeting the emission attenuation requirements of the simple or stringent mask (including attenuation of radio frequency harmonics), digital low power TV and TV translator stations authorized to operate on TV channels 22-24 (518-536 MHz), 36 (602-608 MHz), 38 (614-620 MHz) and 65-69 (776-806 MHz) must provide specific "out of band" protection to Radio Navigation Satellite Services in the bands: L5 (1164-1215 MHz); L2 (1215-1240 MHz) and L1 (1559-1610 MHz).

(1) An FCC-certificated transmitter specifically certified for use on one or more of the above channels must include filtering with an attenuation of not less than 85 dB in the GPS bands, which will have the effect of reducing harmonics in the GPS bands from what is produced by the digital transmitter, and this attenuation must be demonstrated as part of the certification application to the Commission.

(2) For an installation on one of the above channels with a digital transmitter not specifically FCC-certificated for the channel, a low pass filter or equivalent device rated by its manufacturer to have an attenuation of at least 85 dB in the GPS bands, which will have the effect of reducing harmonics in the GPS bands from what is produced by the digital transmitter, and must be installed in a manner that will prevent the harmonic emission content from reaching the antenna. A description of the low pass filter or equivalent device with the manufacturer's rating or a report of measurements by a qualified individual shall be retained with the station license. Field measurements of the second or third harmonic output of a transmitter so equipped are not required.

25. Section 74.795 is added to read as follows:

§ 74.795 – Digital low power TV and TV translator transmission system facilities.

(a) A digital low power TV or TV translator station shall operate with a transmitter that is either certificated for licensing based on the following provisions or has been modified for digital operation pursuant to § 74.796 of this part.

(b) The following requirements must be met before digital low power TV and TV translator transmitter will be certificated by the FCC:

(1) The transmitter shall be designed to produce digital television signals that can be satisfactorily viewed on consumer receiving equipment based on the digital broadcast television transmission standard in § 73.682(d).

(2) Emissions on frequencies outside the authorized channel, measured at the output terminals of the transmitter (including any filters that may be employed), shall meet the requirements of § 74.794, as applicable.

(3) The transmitter shall be equipped to display the digital power output (*i.e.*, average power over a 6 MHz channel) and shall be designed to prevent the power output from exceeding the maximum rated power output under any condition.

(4) When subjected to variations in ambient temperature between 0 and 40 degrees Centigrade and variations in power main voltage between 85% and 115% of the rated power supply voltage, the frequency stability of the local oscillator in the RF channel upconverter shall be maintained within 10 percent of the nominal value.

(5) The transmitter shall be equipped with suitable meters and jacks so that appropriate voltage and current measurements may be made while the transmitter is in operation.

(6) The following additional requirements apply to digital heterodyne translators:

(i) The maximum rated power output (digital average power over a 6 MHz channel) shall not exceed 30 watts for transmitters operating on channels 14-69 and 3 watts for transmitters operating on channels 2-13.

(ii) The transmitter shall contain circuits which will maintain the digital average power output constant within 1 dB when the strength of the input signal is varied over a range of 30 dB.

(d) Certification will be granted only upon a satisfactory showing that the transmitter is capable of meeting the requirements of paragraph (b) of this section, pursuant to the procedures described in § 74.750(e) of this part.

26. Section 74.796 is added to read as follows:

§ 74.796 – Modification of digital transmission systems and analog transmission systems for digital operation.

(a) The provisions of § 74.751 shall apply to the modification of digital low power TV and TV translator transmission systems and the modification of existing analog transmission systems for digital operation.

(b) The following additional provisions shall apply to the modification of existing analog transmissions systems for digital operation, including installation of manufacturers' certificated equipment ("field modification kits") and custom modifications.

(1) The modifications and related performance-testing shall be undertaken by a person or persons qualified to perform such work.

(2) The final amplifier stage of an analog transmitter modified for digital operation shall not have an "average digital" power" output greater than 25 percent of its previous NTSC peak sync power output, unless the amplifier has been specifically refitted or replaced to operate at a higher power.

(3) Analog heterodyne translators, when modified for digital operation, will produce a power output (digital average power over the 6 MHz channel) not exceeding 30 watts for transmitters operating on channels 14-69 and 3 watts for transmitters operating on channels 2-13.

(4) After completion of the modification, suitable tests and measurements shall be made to demonstrate compliance with the applicable requirements in this section including those in § 74.795. Upon installation of a field modification kit, the transmitter shall be performance-tested in accordance with the manufacturer's instructions.

(5) The station licensee shall notify the Commission upon completion of the transmitter modifications. In the case of custom modifications (those not related to installation of manufacturer-supplied and FCC-certificated equipment), the licensee shall certify compliance with all applicable transmission system requirements.

(6) The licensee shall maintain with the station's records for a period of not less than two years the following information and make this information to the Commission upon request:

(i) a description of the modifications performed and performance tests or, in the case of installation of a manufacturer-supplied modification kit, a description of the nature of the modifications, installation and test instructions and other material provided by the manufacturer.

(ii) results of performance-tests and measurements on the modified transmitter.

(iii) copies of related correspondence with the Commission.

(c) In connection with the on-channel conversion of existing analog transmitters for digital operation, a limited allowance is made for transmitters with final amplifiers that do not meet the attenuation of the Simple emission mask at the channel edges. Station licensees may obtain equivalent compliance with this attenuation requirement in the following manner:

(i) Measure the level of attenuation of emissions below the average digital power output at the channel edges in a 500 kHz bandwidth; measurements made over a different measurement bandwidth should be corrected to the equivalent attenuation level for a 500 kHz bandwidth using the formula given in § 74.794 of this section.

(ii) Calculate the difference in dB between the 46 dB channel-edge attenuation requirement of the Simple mask.

(iii) Subtract the value determined in the previous step from the authorized effective radiated power ("ERP") of the analog station being converted to digital operation. Then subtract an additional 6 dB to account for the approximate difference between analog peak and digital average power. For this purpose, the ERP must be expressed in decibels above one kilowatt: ERP(dBk) = 10 log ERP(kW).

(iv) Convert the ERP calculated in the previous step to units of kilowatts.

(v) The ERP value determined through the above procedure will produce equivalent compliance with the attenuation requirement of the simple emission mask at the channel edges and should be specified as the digital ERP in the minor change application for an on-channel digital conversion. The transmitter may not be operated to produce a higher digital ERP than this value.

APPENDIX C
FINAL REGULATORY FLEXIBILITY ANALYSIS

As required by the Regulatory Flexibility Act of 1980, as amended ("RFA"),[1] an Initial Regulatory Flexibility Analysis ("IRFA") was incorporated in the *Notice of Proposed Rule Making* ("*NPRM*").[2] The Commission sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. One comment was received on the IRFA. This Final Regulatory Flexibility Analysis ("FRFA") conforms to the RFA.[3]

A. Need for and Objectives of the Report and Order

1. The *Report and Order* (*R&O*) establishes a regulatory framework that will hasten the transition of LPTV and TV translator stations to digital operations while minimizing disruption of existing service to consumers served by analog LPTV and TV translator stations. These stations are a valuable component of the nation's television system, delivering over-the-air TV service, including locally produced service, to millions of viewers in rural and discrete urban communities. The Commission desires to facilitate, wherever possible, the digital transition of these stations, thereby enabling their viewers to realize the many benefits of digital broadcast television (DTV) technology. The rules and policies adopted in the *R&O* provide flexible and affordable opportunities for low power digital television service, both through the conversion of existing analog service and, where spectrum is available, new digital stations.

2. The *R&O* provides additional flexibility for existing broadcasters to transition to digital. The *R&O* declines to apply the full-service deadline for stations to cease analog operations finding that low power television broadcasters and their viewers do not have the resources to "flash-cut" from analog to digital and need additional time to identify available channels for digital use. Setting a transition deadline at some fixed time after the full-service transition would be less disruptive and minimize potential loss of service.

3. The *R&O* allows existing broadcasters the first opportunity to either immediately convert from analog to digital ("flash-cut") on their existing analog channel or to apply for a digital companion channel. This will provide existing broadcasters the flexibility to identify a workable digital channel for operation before new broadcasters are allowed to apply for channels. These applications will be filed as "minor changes," thus reducing the overall time and processing burden on the stations.

4. While the *R&O* concludes that digital flash-cut and companion channel applications filed by low power broadcasters are subject to auction (except Class A flash-cut applications), an opportunity is provided for applicants to find settlements or engineering solutions to avoid having to go to auction. This will facilitate the processing of applications and permit applicants to avoid having to use limited resources to bid for their digital channels.

5. Applicants that choose to flash-cut or file for digital companion channels will have greater flexibility to seek channels between 52-69 (with restrictions). This will enable numerous stations that otherwise could not find a digital channel with the opportunity to participate in the digital transition.

---

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *Notice*, 18 FCC Rcd 18365 (2003).

[3] *See* 5 U.S.C. § 604.

6. Stations will have the flexibility to choose the types of service to provide for their viewers. Translators will be limited to rebroadcasting programs and signals of full-service DTV stations without alteration to content or video format but may insert the types of local messages permitted for analog translators and may rebroadcast a DTV signal as an analog signal. LPTV stations must provide a free over-the-air video program service but have the freedom to use the remainder of their spectrum to offer ancillary services on the same basis as full-service DTV stations (including a 5% fee on gross revenues of feeable services).

7. The interference rules and methodology in the *R&O* provide the needed flexibility for stations to engineer new digital operations without undermining established interference protection rights of existing broadcasters. The equipment rules will enable stations to use much of their existing equipment, thus reducing the overall cost of digital implementation.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

8. There were no comments filed in response to the Initial Regulatory Flexibility Analysis.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

9. The RFA directs the Commission to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by the proposed rules.[4] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," small organization," and "small governmental jurisdiction."[5] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[6] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration ("SBA").[7]

10. In this context, the application of the statutory definition to television stations is of concern. An element of the definition of "small business" is that the entity not be dominant in its field of operation. We are unable at this time to define or quantify the criteria that would establish whether a specific television station is dominant in its field of operation. Accordingly, the estimates that follow of small businesses to which rules may apply do not exclude any television station from the definition of a small business on this basis and therefore might be over-inclusive.

11. An additional element of the definition of "small business" is that the entity must be independently owned and operated. It is difficult at times to assess these criteria in the context of media entities and our estimates of small businesses might therefore be over inclusive.

12. **Class A TV, LPTV, and TV translator stations.** The rules and policies apply to licensees of LPTV and TV translator, and to potential licensees in these television services. Certain rules and policies

[4] 5 U.S.C. § 604(b)(3).

[5] 5 U.S.C. § 601(b)(3).

[6] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[7] 15 U.S.C. § 632.

also apply to licensees of Class A TV stations. The Small Business Administration defines a television broadcasting station that has no more than $12 million in annual receipts as a small business.[8] Television broadcasting consists of establishments primarily engaged in broadcasting images together with sound, including the production or transmission of visual programming which is broadcast to the public on a predetermined schedule.[9] Included in this category are establishments primarily engaged in television broadcasting and which produce programming in their own studios.[10] Separate establishments primarily engaged in producing programming are classified under other NAICS numbers.

13. Currently, there are approximately 2,100 licensed LPTV stations, 600 licensed Class A stations, 4,700 licensed TV translators and 11 TV booster stations.[11] According to Commission staff review of the BIA Publications, Inc., Master Access Television Analyzer Database, virtually all LPTV broadcast stations, including LPTV stations that have converted to Class A status, have revenues of less than $12 million. We note, however, that under the SBA's definition, revenue of affiliates that are not LPTV stations should be aggregated with the LPTV station revenues in determining whether a concern is small. Our estimate may thus overstate the number of small entities since the revenue figure on which it is based does not include or aggregate revenues from non-LPTV affiliated companies. We do not have data on revenues of TV translator or TV booster stations, but virtually all of these entities are also likely to have revenues of less than $12 million and thus may be categorized as small, except to the extent that revenues of affiliated non-translator or booster entities should be considered.

14. **Cable and Other Program Distribution.** Cable systems often receive the television service transmitted over the cable system from a TV translator or LPTV station. Thus, cable systems may also be affected by the rules in the *R&O*. The SBA has developed a small business size standard for cable and other program distribution services, which includes all such companies generating $12.5 million or less in revenue annually.[12] This category includes, among others, cable operators, direct broadcast satellite ("DBS") services, home satellite dish ("HSD") services, multipoint distribution services ("MDS"), multichannel multipoint distribution service ("MMDS"), Instructional Television Fixed Service ("ITFS"), local multipoint distribution service ("LMDS"), satellite master antenna television ("SMATV") systems, and open video systems ("OVS"). According to Census Bureau data, there are 1,311 total cable and other pay television service firms that operate throughout the year of which 1,180 have less than $10 million in revenue.[13] We address below each service individually to provide a more precise estimate of small entities.

[8] 13 C.F.R. § 121.201 (North American Industry Classification System ("NAICS") Code 515120).

[9] Economics and Statistics Administration, Bureau of Census, U.S. Department of Commerce, 1997 Economic Census, Subject Series – Source of Receipts, Information Sector 51, Appendix B at B-7-8 (2000).

[10] Economics and Statistics Administration, Bureau of Census, U.S. Department of Commerce, 1997 Economic Census, Subject Series – Source of Receipts, Information Sector 51, Appendix B at B-7 (2000).

[11] *Public Notice*, "Broadcast Station Totals as of March 31, 2003" (May 5, 2003).

[12] 13 C.F.R. § 121.201 (NAICS Code 517510). This NAICS Code applies to all services listed in this paragraph.

[13] Economics and Statistics Administration, Bureau of Census, U.S. Department of Commerce, 1997 Economic Census, Subject Series – Establishment and Firm Size, Information Sector 51, Table 4 at 50 (2000). The amount of $10 million was used to estimate the number of small business firms because the relevant Census categories stopped at $9,999,999 and began at $10,000,000. No category for $12.5 million existed. Thus, the number is as accurate as it is possible to calculate with the available information.

15. **Cable Operators.** Under the Commission's rules, a "small cable company" is one serving fewer than 400,000 subscribers nationwide.[14] We last estimated that there were 1,439 cable operators that qualified as small cable companies.[15] Since then, some of those companies may have grown to serve over 400,000 subscribers, and others may have been involved in transactions that caused them to be combined with other cable operators. Consequently, we estimate that there are fewer than 1,439 small entity cable system operators that may be affected by the decisions and rules proposed in this *Notice*.

16. The Communications Act, as amended, also contains a size standard for a small cable system operator, which is "a cable operator that, directly or through an affiliate, serves in the aggregate less than 1% of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed $250,000,000."[16] The Commission has determined that there are 68,500,000 subscribers in the United States. Therefore, an operator serving fewer than 685,000 subscribers shall be deemed a small operator if its annual revenues, when combined with the total annual revenues of all of its affiliates, do not exceed $250 million in the aggregate.[17] Based on available data, we find that the number of cable operators serving 685,000 subscribers or less totals approximately 1,450.[18] Although it seems certain that some of these cable system operators are affiliated with entities whose gross annual revenues exceed $250,000,000, we are unable at this time to estimate with greater precision the number of cable system operators that would qualify as small cable operators under the definition in the Communications Act.

17. **Direct Broadcast Satellite ("DBS") Service.** Because DBS provides subscription services, DBS falls within the SBA-recognized definition of Cable and Other Program Distribution services.[19] This definition provides that a small entity is one with $12.5 million or less in annual receipts.[20] There are four licensees of DBS services under Part 100 of the Commission's rules. Three of those licensees are currently operational. Two of the licensees that are operational have annual revenues that may be in excess of the threshold for a small business.[21] The Commission, however, does not collect annual revenue data for DBS and, therefore, is unable to ascertain the number of small DBS licensees that could be impacted by these proposed rules. DBS service requires a great investment of capital for operation, and we acknowledge, despite the absence of specific data on this point, that there are entrants in this field that may not yet have generated $12.5 million in annual receipts, and therefore may be categorized as a small business, if independently owned and operated. Therefore, we will assume all four licensees are small, for the purpose of this analysis.

18. **Home Satellite Dish ("HSD") Service.** Because HSD provides subscription services, HSD falls within the SBA-recognized definition of Cable and Other Program Distribution services.[22] This

[14] 47 C.F.R. § 76.901(e). The Commission developed this definition based on its determinations that a small cable system operator is one with annual revenues of $100 million or less. *Implementation of Sections of the 1992 Cable Act: Rate Regulation*, Sixth Report and Order and Eleventh Order on Reconsideration, 10 FCC Rcd. 7393 (1995).

[15] Paul Kagan Associates, Inc., Cable TV Investor, Feb. 29, 1996 (based on figures for Dec. 30, 1995).

[16] 47 U.S.C. § 543(m)(2).

[17] 47 C.F.R. § 76.1403(b).

[18] Paul Kagan Associates, Inc., Cable TV Investor, Feb. 29, 1996 (based on figures for Dec. 30, 1995).

[19] 13 C.F.R. § 121.201 (NAICS Code 517510).

[20] *Id.*

[21] *Id*.

[22] 13 C.F.F. § 121.201 (NAICS Code 517510).

definition provides that a small entity is one with $12.5 million or less in annual receipts.[23] The market for HSD service is difficult to quantify. Indeed, the service itself bears little resemblance to other MVPDs. HSD owners have access to more than 265 channels of programming placed on C-band satellites by programmers for receipt and distribution by MVPDs, of which 115 channels are scrambled and approximately 150 are unscrambled.[24] HSD owners can watch unscrambled channels without paying a subscription fee. To receive scrambled channels, however, an HSD owner must purchase an integrated receiver-decoder from an equipment dealer and pay a subscription fee to an HSD programming package. Thus, HSD users include: (1) viewers who subscribe to a packaged programming service, which affords them access to most of the same programming provided to subscribers of other MVPDs; (2) viewers who receive only non-subscription programming; and (3) viewers who receive satellite programming services illegally without subscribing. Because scrambled packages of programming are most specifically intended for retail consumers, these are the services most relevant to this discussion.[25] As noted, *supra*, for the category Cable and Other Program Distribution, most of providers of these services are considered small.

19. **Multipoint Distribution Service ("MDS"), Multichannel Multipoint Distribution Service ("MMDS") Instructional Television Fixed Service ("ITFS") and Local Multipoint Distribution Service ("LMDS").** MMDS systems, often referred to as "wireless cable," transmit video programming to subscribers using the microwave frequencies of the MDS and ITFS services.[26] LMDS is a fixed broadband point-to-multipoint microwave service that provides for two-way video telecommunications.[27]

20. In connection with the 1996 MDS auction, the Commission defined small businesses as entities that had annual average gross revenues of less than $40 million in the previous three calendar years.[28] This definition of a small entity in the context of MDS auctions has been approved by the SBA.[29] The MDS auctions resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas ("BTAs"). Of the 67 auction winners, 61 met the definition of a small business. In addition, MDS includes licensees of stations authorized prior to the auction. As noted, the SBA has developed a definition of small entities for pay television services, which includes all such companies generating $12.5 million or less in annual receipts.[30] This definition includes multipoint distribution services, and thus applies to MDS licensees and wireless cable operators that did not participate in the MDS auction. Information available to us indicates that there are approximately 850 of these licensees and operators that do not generate revenue in excess of $12.5 million annually. Therefore, using the SBA small business size standard, we find that there are approximately 850 small MDS providers.

[23] *Id.*

[24] *Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming,* 12 FCC Rcd 4358, 4385 (1996) ("*Third Annual Report").*

[25] *Id.* at 4385.

[26] *Amendment of Parts 21 and 74 of the Commission's rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act – Competitive Bidding*, 10 FCC Rcd at 9589, 9593 (1995) ("*ITFS Order*").

[27] *See Local Multipoint Distribution Service,* 12 FCC Rcd 12545 (1997) ("*LMDS Order*").

[28] 47 C.F.R. § 21.961(b)(1).

[29] *See ITFS Order*, 10 FCC Rcd at 9589.

[30] 13 C.F.R. § 121.201 (NAICS Code 515210).

21. The SBA definition of small entities for Cable and Other Distribution services, which includes such companies generating $12.5 million in annual receipts, seems reasonably applicable to ITFS.[31] There are presently 2,032 ITFS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in the definition of a small business.[32] However, we do not collect annual revenue data for ITFS licensees, and are not able to ascertain how many of the 100 non-educational licensees would be categorized as small under the SBA definition. Thus, we tentatively conclude that at least 1,932 licensees are small businesses.

22. Additionally, the auction of the 1,030 LMDS licenses began on February 18, 1998, and closed on March 25, 1998. The Commission defined "small entity" for LMDS licenses as an entity that has average gross revenues of less than $40 million in the three previous calendar years.[33] An additional classification for "very small business" was added and is defined as an entity that, together with its affiliates, has average gross revenues of not more than $15 million for the preceding calendar years.[34] These regulations defining "small entity" in the context of LMDS auctions have been approved by the SBA.[35] There were 93 winning bidders that qualified as small entities in the LMDS auctions. A total of 93 small and very small business bidders won approximately 277 A Block licenses and 387 B Block licenses. On March 27, 1999, the Commission re-auctioned 161 licenses; there were 40 winning bidders. Based on this information, we conclude that the number of small LMDS licenses will include the 93 winning bidders in the first auction and the 40 winning bidders in the re-auction, for a total of 133 small entity LMDS providers as defined by the SBA and the Commission's auction rules.

23. **Satellite Master Antenna Television ("SMATV") Systems.** The SBA definition of small entities for Cable and Other Program Distribution services includes SMATV services and, thus, small entities are defined as all such companies generating $12.5 million or less in annual receipts.[36] Industry sources estimate that approximately 5,200 SMATV operators were providing service as of December 1995.[37] Other estimates indicate that SMATV operators serve approximately 1.5 million residential subscribers as of July 2001.[38] The best available estimates indicate that the largest SMATV operators serve between 15,000 and 55,000 subscribers each. Most SMATV operators serve approximately 3,000-4,000 customers. Because these operators are not rate regulated, they are not required to file financial data with the Commission. Furthermore, we are not aware of any privately published financial information regarding these operators. As noted, *supra*, for the category Cable and Other Program Distribution, most of providers of these services are considered small.

---

[31] *Id*.

[32] SBREFA also applies to nonprofit organizations and governmental organizations such as cities, counties, towns, townships, villages, school districts, or special districts, with populations of less than 50,000. 5 U.S.C. § 601(5).

[33] *See LMDS Order,* 12 FCC Rcd at 12545.

[34] *Id.*

[35] *See* Letter to Daniel Phythyon, Chief, Wireless Telecommunications Bureau (FCC) from A. Alvarez, Administrator, SBA (January 6, 1998).

[36] 13 C.F.R. § 121.201 (NCAIS Code 517510).

[37] *See Third Annual Report*, 12 FCC Rcd at 4403-4.

[38] *See Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming*, 17 FCC Rcd 1244, 1281 (2001) ("*Eighth Annual Report*").

24. **Open Video Systems ("OVS").** Because OVS operators provide subscription services,[39] OVS falls within the SBA-recognized definition of cable and other program distribution services.[40] This definition provides that a small entity is one with $ 12.5 million or less in annual receipts.[41] The Commission has certified 25 OVS operators with some now providing service. Affiliates of Residential Communications Network, Inc. ("RCN") received approval to operate OVS systems in New York City, Boston, Washington, D.C. and other areas. RCN has sufficient revenues to assure us that they do not qualify as small business entities. Little financial information is available for the other entities authorized to provide OVS that are not yet operational. Given that other entities have been authorized to provide OVS service but have not yet begun to generate revenues, we conclude that at least some of the OVS operators qualify as small entities.

25. **Electronics Equipment Manufacturers.** Rules adopted in this proceeding could affect manufacturers of digital transmitting and receiving equipment and other types of consumer electronics equipment. The SBA has developed definitions of small entity for manufacturers of audio and video equipment[42] as well as radio and television broadcasting and wireless communications equipment.[43] These categories both include all such companies employing 750 or fewer employees. The Commission has not developed a definition of small entities applicable to manufacturers of electronic equipment used by consumers, as compared to industrial use by television licensees and related businesses. Therefore, we will utilize the SBA definitions applicable to manufacturers of audio and visual equipment and radio and television broadcasting and wireless communications equipment, since these are the two closest NAICS Codes applicable to the consumer electronics equipment manufacturing industry. However, these NAICS categories are broad and specific figures are not available as to how many of these establishments manufacture consumer equipment. Census Bureau data indicates that there are 554 U.S. establishments that manufacture audio and visual equipment, and that 542 of these establishments have fewer than 500 employees and would be classified as small entities.[44] The remaining 12 establishments have 500 or more employees; however, we are unable to determine how many of those have fewer than 750 employees and therefore, also qualify as small entities under the SBA definition. Under the SBA's regulations, a radio and television broadcasting and wireless communications equipment manufacturer must also have 750 or fewer employees in order to qualify as a small business concern.[45] Census Bureau data indicates that there 1,215 U.S. establishments that manufacture radio and television broadcasting and wireless communications equipment, and that 1,150 of these establishments have fewer than 500 employees and would be classified as small entities.[46] The remaining 65 establishments have 500 or more employees;

[39] *See* 47 U.S.C. § 573.

[40] 13 C.F.R. § 121.201 (NAICS Code 515210).

[41] *Id.*

[42] 13 CFR § 121.201 (NAICS Code 334310).

[43] 13 CFR § 121.201 (NAICS Code 334220).

[44] Economics and Statistics Administration, Bureau of Census, U.S. Department of Commerce, 1997 Economic Census, Industry Series – Manufacturing, Audio and Video Equipment Manufacturing, Table 4 at 9 (1999). The amount of 500 employees was used to estimate the number of small business firms because the relevant Census categories stopped at 499 employees and began at 500 employees. No category for 750 employees existed. Thus, the number is as accurate as it is possible to calculate with the available information.

[45] 13 C.F.R. § 121.201 (NAICS Code 517510).

[46] Economics and Statistics Administration, Bureau of Census, U.S. Department of Commerce, 1997 Economic Census, Industry Series – Manufacturing, Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing, Table 4 at 9 (1999). The amount of 500 employees was used to estimate the number of small business firms because the relevant Census categories stopped at 499 employees and began at 500 employees.

(continued....)

however, we are unable to determine how many of those have fewer than 750 employees and therefore, also qualify as small entities under the SBA definition. We therefore conclude that there are no more than 542 small manufacturers of audio and visual electronics equipment and no more than 1,150 small manufacturers of radio and television broadcasting and wireless communications equipment for consumer/household use.

26. **Computer Manufacturers**. The Commission has not developed a definition of small entities applicable to computer manufacturers. Therefore, we will utilize the SBA definition of electronic computers manufacturing. According to SBA regulations, a computer manufacturer must have 1,000 or fewer employees in order to qualify as a small entity.[47] Census Bureau data indicates that there are 563 firms that manufacture electronic computers and of those, 544 have fewer than 1,000 employees and qualify as small entities.[48] The remaining 19 firms have 1,000 or more employees. We conclude that there are approximately 544 small computer manufacturers.

D. Description of Projected Reporting, Recordkeeping and other Compliance Requirements

27. The *R&O* contains additional reporting and recordkeeping requirements. For example, stations must file an application to either flash-cut to digital or for a companion digital channel. Applicants proposing digital channels 52-69 must make a certification in their application that no suitable channel 2-51 is available. In addition, applicants proposing to use digital channel 60-69 must certify that they have coordinated the use of their facilities with public safety entities. In addition, applicants in mutually exclusive groups may file settlements or engineering solutions with the Commission to avoid having to go to auction. Without these filings, stations cannot participate in the digital television transition. Factors that could make the digital transition time consuming are not likely to be related to whether the entity is small or large. These requirements will serve to promote the overall DTV transition and represent a temporary burden on stations. We expect that stations will be able to recoup the cost of these filings with advance DTV operation.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

28. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[49]

29. The Commission is aware that many low power licensees, including smaller entities, operate with limited budgets. Accordingly, every effort was taken to craft rules that impose the least possible burden on all licensees, including smaller licensed entities.

(...continued from previous page)
No category for 750 employees existed. Thus, the number is as accurate as it is possible to calculate with the available information.

[47] 13 C.F.R. § 121.201 (NAICS Code 334111).

[48] Economics and Statistics Administration, Bureau of Census, U.S. Department of Commerce, 1997 Economic Census, Industry Series – Manufacturing, Electronic Computer Manufacturing, Table 4 at 9 (1999).

[49] 5 U.S.C. § 603(b).

30. The *R&O* allows low power broadcasters additional time (as compared to full-service broadcasters) to transition from analog to digital service. The amount of additional time has not yet been determined. Allowing additional time for the low power DTV transition is less disruptive to low power broadcasters and will minimize potential loss of service. The Commission considered making low power broadcasters cease operating their analog facilities at the deadline applicable to full-service broadcasters but we found that this would result in many low power stations being unable to obtain the spectrum they needed to accomplish the digital transition. The Commission rejected this approach in order to prevent low power broadcasters from prematurely flash-cutting to digital and the loss of service that would result.

31. The *R&O* allows existing broadcasters the first opportunity to either flash-cut on their existing analog channel or to apply for a digital companion channel. This will provide existing broadcasters the flexibility to identify a workable digital channel for operation before new broadcasters are allowed to apply for channels. The Commission considered allowing applicants to seek new channels at the same time that incumbent stations seek companion channels but rejected this approach because new channels would use valuable spectrum that must be used by incumbent stations to successfully transition to digital.

32. The *R&O* concludes that digital flash-cut and companion channel applications filed by low power broadcasters are subject to auction (except Class A flash-cut applications). The Commission concluded that the statute provides the discretion in this case. At the same time, the Commission sought to alleviate the burden on all stations by allowing all applicants an opportunity to find settlements or engineering solutions to avoid having to go to auction. The Commission concluded that the settlement opportunity will facilitate the processing of applications and permit applicants to avoid having to use limited resources to bid for their digital channels.

33. The *R&*O allows applicants to seek digital channels between 52-69 on a limited secondary basis. The Commission found that this approach will provide stations with greater flexibility to seek channels where a core channel (between 2 and 51) cannot be identified. The Commission considered not allowing any additional licensing on these channels because of concerns of interference to new wireless and public safety users. This approach was rejected because it was found that limited use of channels 52-69 was necessary for the successful DTV transition of many LPTV and TV translator stations. This will enable numerous stations that otherwise could not find a digital channel with the opportunity to participate in the digital transition.

34. The *R&*O provides stations with the flexibility to choose the types of service to provide for their viewers. Translators will be limited to rebroadcasting programs and signals of full-service DTV stations without alteration to content or video format but may insert the types of local messages permitted for analog translators and may rebroadcast a DTV signal as an analog signal. LPTV stations must provide a free over-the-air video program service but have the freedom to use the remainder of their spectrum to offer ancillary services on the same basis as full-service DTV stations (including 5% fee on gross revenues of feeable services). We considered allowing LPTV and TV translator stations to operate without restrictions but that proposal was rejected because it would interfere with the Commission's overall DTV goals and the rules and policies adopted for full-service stations.

35. The *R&*O adopts interference rules and methodology to provide the needed flexibility for stations to engineer new digital operations without undermining established interference protection rights of existing broadcasters. The equipment rules will enable stations to use much of their existing equipment, thus reducing the overall cost of digital implementation. The Commission considered adoption of stricter rules but concluded that such rules would interfere with low power stations being able to successfully propose and construct new DTV facilities and to afford to convert their analog facilities.

F. Federal Rules Which Duplicate, Overlap, or Conflict with the Commission's Proposals

36. None.

G. Report to Congress

37. The Commission will send a copy of the Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[50] In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the Report and Order and FRFA (or summaries thereof) will also be published in the Federal Register.[51]

[50] *See* 5 U.S.C. § 801(a)(1)(A).

[51] *See* 5 U.S.C. § 604(b).

STATEMENT OF
CHAIRMAN MICHAEL K. POWELL

Re: Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translators, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations

A hallmark of the Commission's digital migration agenda has been ushering in the era of digital television and its many benefits for our citizens. In so doing, we have sought to bring the DTV transition to a successful conclusion so that we can reclaim spectrum for vital public safety and new, broadband wireless services. At the same time, one of the central goals of the entirety of the Commission's agenda is to bring universal availability of new, digital services to each and every American.

Today, we take a substantial step on all of these fronts as we set a course for translator services and low-power broadcasters to bring the benefits of the DTV transition to all corners of our country, including the most rural areas of the United States. By allowing these broadcasters—many of whom are public, municipally owned, minority or religious stations—to engage in a mini-digital broadcast television transition of their own, we signal our desire to prevent disruption of broadcast service to our nation's citizens during the DTV transition, while bringing them the benefits of the digital television enjoyed in the vast majority of markets today.

As we provide these broadcasters with the capability to receive a second channel so that they can fully participate in the DTV transition, it should be clear that use of this second channel will be short-lived. To my mind, bringing an end to this transition at the same time as the end of the full-power DTV broadcast transition is of utmost importance.

Through these steps and by embracing a hard date for both this and the end of the full-power DTV transition, we can bring our citizens the benefits of digital television, bring more "saving lives" spectrum to the public safety community and drive the development of innovative wireless broadband services to all Americans.

Our commitment to moving along the DTV transition has been unwavering as we begin to take the necessary steps to visualize and then realize the end of the DTV transition and the vast benefits of that end to our citizens and homeland and economic security. At the same time, we remain committed to opening up this spectrum for new wireless services, as demonstrated by our pursuit of the use of broadcast white spaces for new wireless broadband use. On both fronts, we continue to plan to move forward aggressively.

STATEMENT OF
COMMISSIONER MICHAEL J. COPPS
APPROVING IN PART, CONCURRING IN PART

Re: Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations

As I have traveled around the country, I have seen first-hand the tremendous benefits that low power television stations and translators bring to the American people. These stations help in significant ways to meet the needs of underserved audiences and to increase localism, competition, and diversity in our media. Hundreds of communities all across this country depend on these stations—often run by municipalities, schools, colleges, churches and small business—for free over-the-air television service. In some rural areas, they may be the only ones providing local news and information. In other areas, low power television stations may fill a void by airing programming, including non-English programming, geared to an under-represented community.

As with any other user of the public's airwaves, these stations have the responsibility to serve the public interest. Today, as analog stations, they generally do, often with great distinction. The digital transition will afford these stations new opportunities to serve their local communities. Our job is to ensure that these new opportunities are carried out in a manner that serves the interests of all the people, most assuredly including those in rural areas for whom digital low power television and translator stations hold such great promise. Today's order, on balance, should help us to promote the digital transition for these stations and achieve this objective.

On one aspect of the decision, however, I do not find the statute as clear as the decision states. In particular, the Order concludes that the auction exemptions clearly do not apply at all for temporary second channels to advance the digital transition. I think this is a debatable reading of the law and of the intent of Congress. We should be looking for ways to facilitate the digital transition for these small stations that often have limited capital to devote to deploying digital technology. I will therefore concur in part in this decision and I urge the Commission to use the means at its disposal to minimize costly conflicts among applicants.

Finally, I note that today's decision applies to low power and translator stations the same rules on use of spectrum for ancillary and supplementary services as were applied to full-service DTV stations. When we adopted the rules on ancillary and supplementary use, we recognized that the fundamental purpose of this spectrum is to provide free over-the-air broadcast services. We further indicated that we would regularly review our approach to permitted ancillary and supplementary services. Moreover, Congress directed us to reexamine our policies from time to time to adjust the fees charged for use of the spectrum for such services. It has been several years since we have undertaken any such analysis. As technology advances and we gain a clearer picture of how broadcasters in general are using the spectrum, I hope that the Commission will carry out such a review.

Thanks to the Bureau and our staffs for their hard work on this proceeding.

STATEMENT OF
COMMISSIONER JONATHAN S. ADELSTEIN
APPROVING IN PART AND CONCURRING IN PART

Re: Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations, Report and Order

I'm pleased we're moving the digital transition forward for low power television stations and the many viewers living in our rural communities who rely on them.

Thousands of translators and low power stations across our country fill a vital need as the primary source of over-the-air television for people in Rural America. As I've seen firsthand, often these stations are the only station in an area providing local news, weather, public affairs and emergency programming. They are operated by a diverse range of the public, including individuals, schools, churches, local governments, and minority groups. Their modes of operation and programming vary widely, with some stations airing the most locally-produced programming among all broadcasters and others broadcasting important news and information in several languages. The conversion to digital, and the ability to offer ancillary and supplementary services, should bring opportunities for even more innovation and local programming services for these stations.

Today's comprehensive item lays out the avenues available for the transition of low power services to digital. Opportunities for low power operators to convert existing stations and to apply for transitional companion channels where feasible will encourage the overall rollout of digital services in these areas. I am mindful of the dual challenges of limited spectrum availability and limited finances of many stations in the low power service. The Order appropriately protects full power broadcasters and other primary services like public safety and wireless services, while seeking to minimize any disruption to viewers who rely on low power operations.

Yet I do not find the statutory direction compelling the auction of mutually exclusive low power temporary companion channels as unambiguous as the item declares. The item's cursory analysis fails to take into account significant aspects of this unique situation, including the temporary nature of the licenses and their role in promoting the digital transition, the status of municipality-owned stations, and that some of these stations may ultimately be digital Class A stations subject to full power transmission standards. Wherever legally and practically possible, digital low power stations should be given the same ability to ensure a smooth transition for their viewers as full power stations. I trust that we will use engineering solutions extensively to resolve conflicts.

Despite today's positive step in accelerating the transition for low power stations, other work remains to be done. Issues involving the qualification of Class A stations and public interest responsibilities for digital operation have yet to be resolved. As I have emphasized with respect to full power stations, providing certainty on public interest requirements of broadcasters in the digital age is just as important as laying out further mechanics of the transition. We should not overlook this crucial step as we fulfill Congress's vision of an enhanced digital viewing experience for all Americans.