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Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

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Federal Communications Commission
Office of the Secretary

In the Matter of	)	
	)	
Advanced Television Systems	)	
and Their Impact on the	)	
Existing Television Broadcast	)	
Service	)	
	)	MM Docket No. 87-268
Review of Technical and	)	RM-5811
Operational Requirements:	)	
Part 73-E, Television	)	
Broadcast Stations	)	
	)	
Reevaluation of the UHF	)	
Television Channel and Distance	)	
Separation Requirements of Part	)	
73 of the Commission's Rules	)	

COMMENTS OF TIME INCORPORATED

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Dated: November 18, 1987

SUMMARY

Time Inc. agrees with the Commission's assessment in the Notice that high definition television has the potential to be the most significant development in home-entertainment since the introduction of color television. If that potential is to be fully realized, the development and implementation of HDTV must be approached carefully. Decisions made in haste, without a full exploration of the technical, economic and consumer implications, may have the effect of limiting the benefits of HDTV. Significant research and development is necessary before HDTV can be implemented. The Commission should not prejudice that research and development by prematurely adopting a technical standard. Rather, the Commission should adhere to its current practice of encouraging an environment in which the marketplace can resolve standards issues. This approach, which has worked well for the American consumer, is even more justified with respect to HDTV, given the nascent stage of the technology.

Consumers should be given every opportunity to receive the highest quality television picture possible. Therefore, Time Inc. supports efforts by broadcasters to enhance the current NTSC picture. We will work with broadcasters to improve NTSC and to ensure that any improvements will be consistent with efficient distribution of a high quality broadcast signal by cable systems.

Consistent with this position to provide consumers with the highest possible picture quality, Time Inc. believes that each medium should be able to deliver HDTV in a way that is optimal for that medium. Artificially restricting the quality a particular medium can deliver will necessarily limit consumer benefits. In addition, any such restrictions would severely hamper a medium's ability to compete with other distribution media, such as video cassettes, which will not be limited in quality by regulation.

From Time Inc.'s perspective, two things are certain about HDTV: first, the enormous installed base of NTSC receivers will not be rendered obsolete, and second, we are committed to spending the necessary resources, consistent with consumer demand, to make HDTV a reality for the American consumer.

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COMMENTS OF TIME INCORPORATED

Time Incorporated ("Time Inc.") submits these comments in response to the Commission's Notice of Inquiry in the above-captioned proceeding, released August 20, 1987 ("Notice").

I. Introduction

In the Notice the Commission recognizes that high definition television ("HDTV") represents perhaps the most significant development in home-entertainment since the introduction of color television. Time Inc. agrees that HDTV has the potential to

bring wide-ranging and important new benefits to American consumers. Over the past two years Time Inc. has spent considerable time and resources analyzing the technical, economic and consumer issues related to HDTV.

Home Box Office, Inc. ("HBO"), a wholly-owned subsidiary of Time Inc. and the premier satellite-delivered pay program service, and American Television and Communications Corporation ("ATC"), the nation's second largest cable multiple system operator in which Time Inc. is the majority stockholder, are recognized leaders in HDTV.

As distributors of programming, both ATC and HBO regularly conduct assessments of the preferences of television viewers. Based on these assessments, we believe consumers will find HDTV an attractive new benefit. As a result, ATC and HBO have established ongoing relationships with television equipment manufacturers in Japan, Europe and the United States and have conducted numerous technical examinations of existing and planned HDTV transmission systems.[1]

In addition, ATC and HBO are both members of the Center for Advanced Television Studies ("CATS"), an organization involved in television resesarch, and are in the process of contracting for

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[1] HBO President Joseph Collins and ATC Chairman and Chief Executive Officer Trygve Myhren were both recently appointed to the FCC's Industry Advisory Committee on HDTV.

independent research on HDTV by organizations such as the Massachusetts Institute of Technology. ATC and HBO have also hosted a number of HDTV demonstrations for industry and government groups, and met with federal agencies to discuss ways to accelerate HDTV research. HBO produced a widely circulated "White Paper" on HDTV (which is attached). Finally, in connection with HDTV demonstrations held in October, HBO conducted consumer research on HDTV, the results of which are now being tabulated.

ATC and HBO are also increasingly involved with program production and origination. Through its HBO Video unit, HBO is involved in the home video (video cassette) business. In addition, HBO is engaging in original productions of sports, comedy, music and drama programs. Many ATC cable systems produce local programs. Thus, Time Inc. has further interest in HDTV.

While the Notice focuses almost entirely on broadcast distribution of HDTV, we believe HDTV is a broader, television issue. The development and implementation of HDTV will impact every segment of television distribution, from program production to receiver manufacturing. HDTV will affect every distribution medium that delivers television programming to the American consumer, including broadcasting, cable, satellites and VCRs.

The last time the Commission addressed television video distribution formats was in 1953 when it adopted the technical formats for color broadcast television transmissions proposed by the second National Television System Committee (NTSC).[2] At that time, the Commission had to concern itself only with a set of technical formats affecting broadcast television.[3] As the Commission embarks on its investigation of the next generation of television video improvements, however, it must face the reality of a much more diversified video distribution universe.

Today, the Commission confronts an environment where video is delivered by many technologies -- broadcast television, cable television, satellites, point-to-point microwave, MDS/MMDS, and through direct connections of VCRs and disk players to television sets.

The Commission has encouraged the development of these various television distribution technologies[4] -- many of which

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[2] Amendment of Color Television Rules, 10 RR 1501 (1953). In 1984, the Commission considered, but declined to adopt one specific technical standard for a stereo sound component of the NTSC signal. Television SCA Use, 55 RR 2d 1642 (1984).

[3] To a much lesser extent, video intercity relay microwave facilities were considered. In 1951, when the Commission issued a Public Notice seeking further input on a color television system, it listed, as one of seven criteria, a requirement that any system proposed be capable of transmitting color over intercity microwave facilities. Amendment of Color Television Rules, 10 RR at 1504.

[4] See, e.g., Community Antenna Television, 36 FCC 2d 143 (1972); Multipoint Distribution Service, 45 FCC 2d 616 (1974); Direct Broadcast Satellite, 90 FCC 2d 676 (1982).

have vastly different characteristics and capabilities. The Commission has concluded that consumers are better served if they have a diversity of program sources and distribution outlets from which to choose.[5]

The implications for cable television customers are enormous and cannot be ignored. The most recent figures indicate that 47 percent of United States households now receive their television over cable.[6] By the time HDTV is available in the United States, now estimated to be by 1990, it is expected that well over half the country will receive their television by cable. The Commission acknowledges that HDTV may be available in the "non-broadcast video marketplace"[7] and it should thus consider the implications and importance of HDTV for the cable industry. Otherwise, the benefits of this new technology may be lost to almost 50 million cable homes.

As explained in more detail below, Time Inc.'s principal positions are as follows:

1. Considerable research and development are necessary before the appropriate standard or standards can be identified. Therefore, the Commission should not

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[5] Id.

[6] Kagan Media Index Newsletter, October 1987 (reporting September 1987 data).

[7] Notice at ¶ 88.

establish any HDTV standard, but should give the marketplace time to develop and reach a consensus on the appropriate standard or standards which are necessary to implement HDTV for consumers;

2. Each distribution medium should be allowed to deliver HDTV in a way that is optimal for that medium -- HDTV quality should not be artificially limited to that provided by the least capable distribution medium;

3. Time Inc. supports enhancements to the current broadcast television standard ("NTSC") that are compatible with existing television sets and which allow retransmission of broadcast signals by cable operators without loss of quality or significant costs; and

4. If broadcasters ultimately agree on a standard and want the FCC to mandate that broadcast standard, we would not oppose such a development, assuming the mandated standard met the requirements of low cost and high quality cable distribution without interference to other services.

II. Enhanced Broadcast Television and HDTV Will Significantly Benefit Consumers

As an initial matter, it is important to define the terms which we use in describing advanced television systems. We place these systems in two categories: enhancements to NTSC and HDTV. Enhancements to NTSC include any improvement to NTSC that is based on the original NTSC standard. These enhancements develop in an evolutionary manner -- they have been occurring since the inception of NTSC and will continue to occur. An example of enhancements to NTSC is the system which NBC recently developed through the David Sarnoff Research Center and General Electric/RCA Consumer Electronics. That system somewhat improves picture quality to 420 lines of resolution which will be transmitted in 6 MHz and offer a 16:9 aspect ratio.[8]

The distinction between enhancements to NTSC and HDTV is essentially a question of resolution. Systems which provide greater than 800 lines of resolution (in both the horizontal and vertical direction), a 16:9 aspect ratio and digital audio qualify as HDTV. An example of a system that meets the criteria is the MUSE system developed in Japan by NHK Research Laboratories.[9]

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[8] The NBC proposal may make the signal so fragile that it will be subject to severe degradation when passed through cable systems. In addition, the NBC system is not satellite transmittable.

[9] The MUSE system was developed specifically for satellite and VCR distribution and research is underway to determine its

As noted, HDTV has the potential to revolutionize television for American consumers. The NTSC system, now 50 years old, has numerous shortcomings, including: (1) limited color resolution; (2) cross color -- spurious colors appearing in areas of high luminance detail, (3) cross luminance -- a cross-hatch pattern at the edge of brightly colored images, (4) a flickering effect around the borders of objects on the screen, (5) the image of a line crawling up or down the screen and (6) limited sound quality.[10] NTSC supplies only approximately 330 lines of viewable resolution, which offers a less sharp image when compared with proposed enhanced systems.

HDTV, on the other hand, will offer viewers an experience similar to a movie theatre, or even watching live action through a window. HDTV will provide significantly improved horizontal and vertical detail and resolution, resulting in a sharper image and truer color. Our analyses indicate that consumers will be particularly impressed by the more realistic aspect ratio and superior sound available in HDTV. HDTV will also rid the television screen of distortions and other artifacts which negatively impact the consumer's viewing experience.

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viability for cable. As demonstrated for broadcast, MUSE would occupy 12 MHz.

[10] See Notice at ¶ ¶ 9-16; Schreiber, Improved Television Systems: NTSC and Beyond, SMPTE Journal, August 1987, at 735.

These changes are not merely technical advancements. They go to the very essence of the television medium and will create a new experience for the American people. In short, HDTV will transform American television.

III. The Public Interest Will Benefit by Development of Television Formats Which Allow Each Delivery Medium to Reach Its Optimal Quality

All HDTV systems consist of three main components: (1) production and program origination, (2) distribution, and (3) display. For the reasons discussed below, Time Inc. does not believe that a single, end-to-end HDTV system will emerge which will employ one production standard, one distribution standard, and one display standard. More likely, there will be a single production standard (or a second with an appropriate interface), multiple distribution standards and display units (television sets) capable of receiving multiple distribution formats. Using interface devices between the production and distribution components, several HDTV systems can be assembled with each system designed to maximize effectiveness and quality.[11] Given sufficient consumer demand, multi-standard HDTV television sets will be developed.

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[11] For example, one set of components may be assembled to provide motion pictures in "mini" theaters. Another set may be more effective for providing surgical training to physicians. Yet another set of components may be assembled to provide closed-circuit sporting events (e.g., boxing matches) to large auditoriums.

A. Production and Program Origination

The marketplace has gone a long way toward selecting an HDTV production standard. The 1125/60 program production system developed by NHK in Japan has become the accepted standard in the United States and Canada.[12] It has been approved by the Society of Motion Picture and Television Engineers ("SMPTE"). Production equipment employing this standard is being produced by at least 35 manufacturers.[13] European countries have resisted the adoption of that system and are developing a separate HDTV production system using European technology and resources. Nevertheless, based on the current situation, it does not appear that government intervention in the area of HDTV production standards is necessary. A de facto standard is likely to occur in North America. Any other standards that might develop will be capable of interfacing with the HDTV distribution systems that program originators desire to use.

The Commission need not be overly concerned with HDTV production and program origination. Whatever production and program origination standard is employed, it will have to be capable of producing programs that can be converted or translated into an appropriate format that allows the programs to be transmitted over the selected medium. If a program originator

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[12] The system uses 1125 scan lines with a field rate of 60 Hz.

[13] HDTV Newsletter, January 10, 1987, at 8.

desires to distribute HDTV programs over a medium within the Commission's jurisdiction (i.e., broadcast television), the originator will employ a production system that is compatible with or that can interface with whatever requirements the Commission imposes on that medium. Likewise, the choice of a production system will be governed by the capabilities of the display equipment (i.e., television receivers) possessed by the consumers to which the production is targeted.

B. Distribution Medium

1. Time Inc. Supports Television Broadcaster Efforts to Improve NTSC

The broadcast industry has begun a significant and important effort to improve the current NTSC television picture standard. Time Inc. supports this effort. We have and will continue to work with broadcasters to develop enhancements to NTSC compatible with cable delivery so as to provide consumers with high quality signals.

Broadcast programming is an important element of the overall cable television program offering. As a result, we support a policy that broadcast pictures should be of the highest quality possible within the physical limitations of the broadcast signal and within cable technical constraints. Enhancing the NTSC

picture is important not only because of the obvious benefits to consumers, but also because it is essential if broadcasters are to meet the competitive challenge posed by other distribution media, such as VCRs, which will in the near future be offering consumers significantly improved picture quality. As distributors of broadcast programming, we support improvements that will maintain the competitiveness of that programming.[14]

It is important that cable consumers be able to receive an enhanced quality NTSC broadcast signal without significant cost or system alteration and with a picture quality at least as good as over-the-air viewers could receive in the Grade A contour of the station. It is in both the cable and broadcast industries' interest to achieve this result. In this context, we urge the broadcast industry to develop NTSC enhancements within the current 6 MHz spectrum allocation plan.

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[14] Through marketplace forces, enhancements to NTSC will be backward-compatible so that consumers will be able to receive an acceptable quality broadcast picture without having to purchase a new television set. Consumers will demand backward-compatibility and broadcasters support backward-compatibility. It will not be necessary for the Commission to mandate such backward-compatible broadcast standards. Of course, some existing televisions may not be able to deliver an enhanced picture. However, any NTSC enhancement approach should not render those much older television sets unable to receive broadcast pictures at all. On the contrary, as the Commission recognizes in the Notice, NTSC enhancements must -- and will -- take into account the 214 million television set base and will not obsolete a significant portion of that base.

Considerable research, development and testing by the affected industries must be done, of course, before any standard for enhanced NTSC gains general acceptance. Although Time Inc. is not prepared to endorse any enhanced NTSC proposal at this time, we are encouraged that some system proponents are attempting to achieve NTSC enhancements within 6 MHz. Time Inc. believes, based on work done at the Massachusetts Institute of Technology and the Sarnoff Research Institute, that it may be possible to achieve a significantly improved NTSC signal without additional channel capacity.

NTSC enhancements that exceed 6 MHz bandwidth signal could cause the following problems for cable delivery:

a) Cable systems are configured in channels of 6 MHz and this accommodates broadcast distribution -- one broadcast channel requires one cable channel. Expanding NTSC beyond 6 MHz could cause severe technical problems for cable distribution of broadcast signals. Because of the nascent state of enhanced NTSC technology, there are insufficient data available to fully analyze the potential technical difficulties with cable carriage of broadcast signals beyond 6 MHz. However, it does appear that greater than 6 MHz broadcast signals would require new cable converters, whether the signal was delivered contiguously or on non-contiguous channels. In the former case, new converters with wider bandwidth capacity could be required and in the latter new

converters with the ability to tune two separate channels would be necessary. Both of these situations would add considerable complexity to existing converters used by cable systems. The cost to replace these converters would be enormous.

b) Cable broadcast reception equipment at cable system headends might have to be replaced. Equipment with broader band receivers and modulators could be necessary to receive broadcast signals of greater than 6 MHz. Headend equipment with the ability to receive and process two separate signals would be required if broadcasters deliver enhanced NTSC via two non-contiguous channels. If broadcasters go beyond 6 MHz, particularly if they deliver the signal in non-contiguous parts, there may also be significant problems with harmonically related carriers used by cable systems to minimize interference beats and, finally, with ghosting and airplane flutter.

c) Cable does not have unlimited channel capacity and adding capacity is expensive, a cost that would be borne by consumers. If a cable operator chooses to carry a 9 MHz or 12 MHz enhanced NTSC signal, it would have to devote one-and-one-half or two full channels to a single broadcast signal. The consequences are obvious. A typical 36-channel cable system could overnight become an 18 channel system. Consumers might not receive many of the program services which they now enjoy. Cable operators might be forced to drop several services in order to

devote two full channels to each single broadcast signal. Or, in the alternative, cable operators may carry fewer broadcast signals. Such a result is clearly not in the interest of consumers, cable operators, or broadcasters.

2. Must-Carry Considerations

Television broadcasters and cable operators have a strong incentive to cooperate to achieve enhanced NTSC and broadcast HDTV distribution standards that can be distributed by the cable industry without substantial technical modifications to cable systems. Because cable television is an important delivery medium for broadcast programming, it clearly is in the broadcasters' interest to ensure that any improvements in their signal quality be easily deliverable and available to cable subscribers. Likewise, once broadcasters begin transmitting in enhanced NTSC or HDTV, cable operators will desire to deliver popular broadcast signals to their viewers with quality as good as or better than the viewer can receive off the air. Therefore, the mutual interests of the broadcast and cable industries will motivate these industries to work together to arrive at enhanced NTSC and broadcast HDTV transmission standards that are compatible with cable distribution. Time Inc. will continue to work with television broadcasters to ensure this result.

Although the Notice does not specifically raise the must-carry rules, the technical problems discussed above should constitute a basis for denying must-carry status to broadcast signals of greater than 6 MHz. The Commission has traditionally considered the technical difficulties associated with imposing must-carry status and denied must-carry to broadcast services on that basis.[15] For example, the Commission rejected must-carry for subscription television services in 1980, noting that cable carriage of such programming "would impose burdens not associated with the carriage of conventional stations."[16] Similarly, in its decision not to impose must-carry obligations for broadcast stereo services, the Commission gave considerable weight to technical issues. In fact, in its 1984 Second Report and Order in that proceeding, the Commission pointed out that a number of broadcast parties took the position that "cable systems that encounter technical problems in retransmitting" broadcast stereo should be allowed to delete that service.[17] This position is, of

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[15] Signal Carriage Rules - STV, 77 FCC 2d 523 (1980), aff'd sub nom. WWHT v. FCC, 656 F. 2d 807 (D.C. Cir. 1981); Teletext Transmission (Report and Order), 53 RR 2d 1309 (1983), recon. in part, 101 FCC 2d 827 (1985), aff'd in part and reversed in part sub nom. Telecommunications Research and Action Center v. FCC, 801 F.2d 501 (D.C. Cir.), rehearing denied, 806 F.2d 1115 (D.C. Cir. 1986), cert. denied 107 Sup. Ct. 3196 (1987); Television SCA Use, 55 RR 2d 1642 (1984); Television Subcarrier Use (Mandatory Carriage of Stereo Sound), 57 RR 2d 1049 (1985).

[16] Signal Carriage Rules -- STV, 77 FCC 2d at 528.

[17] Television SCA Use, 55 RR 2d at 1647.

course, consistent with the Commission's intention when it originally conceived must-carry in 1965 that the rules "impose no substantial burden on the ordinary CATV operator."[18]

The Commission has also declined to impose must-carry where technology and consumer demand are not sufficiently mature. For example, in Television Subcarrier Use, the Commission did not require must-carry for stereo sound because it found that there would not be a rapid and major conversion to stereo transmissions by broadcasters and that stereo television set penetration would grow at a moderate rate.[19] In a separate statement, then Chairman Fowler and Commissioner Patrick stated what Time Inc. submits was the underlying premise of the Commission's decision to forego must-carry:

> We believe that this is quintessentially a situation where marketplace forces will accomplish what a prior Commission . . . would have tried to accomplish by imposing rules. We are of the view that the Commission cannot impose mandatory carriage unless and until we know that broadcasters and consumers will desire MTS and will be willing to pay for it, and that it will not be carried voluntarily by cable systems in response to market demand. Since MTS has not had the opportunity to develop, it is unreasonable to suggest that the heavy hand of government must interfere.[20]

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[18] First Report and Order in Docket 14895 and 15233, 38 FCC 2d 683, 702 (1965).

[19] 57 RR 2d at 1050, n. 2.

[20] Id. at 1051. A similar result was reached regarding mandatory carriage of broadcast teletext transmissions. Teletext Services, 101 FCC 2d at 839.

This is precisely the situation the various industries are in today with respect to enhanced NTSC and HDTV. Technology is evolving rapidly, and it is difficult to predict which systems will be embraced for the production, distribution and display functions, how rapidly these systems will be employed by the industries and how widespread will be consumer acceptance of HDTV.

It is true that in the cases cited above the Commission in part denied must-carry status because the services at issue were not considered "program related" and therefore not "analogous to the types of services that have traditionally been accorded must-carry status."[21] However, that argument does not diminish the fact that in each case the Commission gave strong consideration to technical problems and in specific instances cited such problems as a significant factor in denying must-carry. This is particularly instructive because the technical problems with HDTV may be more severe than in previous cases the Commission has considered.

Even if it is argued that enhanced NTSC or broadcast HDTV is a "program related" service, that finding would not necessarily suggest must-carry status. In the broadcast stereo proceeding,

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[21] Id. Although the Commission specifically did not base its decision denying must-carry on technical grounds, that is not surprising considering that it found "most well maintained cable systems" would not experience technical difficulties in "retransmitting teletext signals." Id.

the Commission concluded that stereo services were "program-related" and "part of the basic signal."[22] The Commission nonetheless declined to impose must-carry status.

Further, as the Commission points out in the instant Notice, there are three ways in which broadcasters could provide enhanced NTSC or broadcast HDTV. Two of these methods involve the delivery of broadcast enhancements separately from the existing television broadcast service. Thus, even if a cable operator was not forced to carry the enhancements, consumers could still receive the primary broadcast signal. In those situations, it could be argued that the original must-carry rationale -- to protect local broadcasters' competitive position and ability to produce local programming -- are not implicated by the enhancements since the primary program is still available to cable subscribers.

Moreover, requiring must-carry for greater than 6 MHz broadcast signals would give broadcasters a competitive advantage over other programmers who could not demand cable carriage of their HDTV programming but would have to negotiate for such carriage.

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[22] Television Subcarrier Use, 57 RR 2d at 1050.

On page 12 of the Notice the Commission states that "[i]f it is established, for example, that substantial improvements in television images can be achieved at reasonable cost using only the existing 6 MHz channel assignments, there may be no compelling need to consider altering the present allocation arrangement."[23] On page five of the Notice, the Commission states with respect to spectrum capacity of greater than 6 MHz that it is "highly desirable to resolve these matters as quickly as possible."[24]

These two statements are inconsistent. We agree with the Commission that enhanced NTSC within 6 MHz would be the optimal result. However, we are concerned that moving too quickly on the spectrum issue will unavoidably prejudice that result. Much work is still to be done in this area. If the Commission expands the current 6 MHz allocation, that will become the framework within which that work will be done. All chances for a 6 MHz solution will be lost. While we understand the desire of some to adopt a quick, short-term solution to the spectrum controversy, such an approach will create many more controversies in the future, only a few of which are discussed above. Time Inc., therefore, urges the Commission to proceed cautiously and to allow time for the optimal 6 MHz solution to evolve.

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[23] Notice at ¶ 103.

[24] Id. at ¶ 41.

3. Consumer Interests Dictate That Each Distribution Medium Be Free to Maximize the Quality of the Product It Delivers

Just as broadcasters should be permitted to improve the quality of their delivery system, so too should other video distribution media be given the freedom and encouragement to maximize the quality of their video services. This is logical given the Commission's history of authorizing and nurturing several video delivery alternatives. The Commission must be cautious lest it impose technical standards for one medium that would prevent another medium from realizing its full potential for the delivery of high quality video signals to television viewers. To do so would be to deny consumers benefits they should receive.

A mandatory technical standard is premature and could, in fact, preclude the broadcast industry from maximizing the quality of its distribution medium. Moreover, the premature adoption of a standard that is inferior and that has not achieved industry acceptance could slow the development of HDTV, as was the case with the initial color television standard adopted by the Commission, which was incompatible with the existing black and white system.[25] Finally, because it will be necessary for the

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[25] Amendment of Color Television Rules, supra, n. 2, at 1513.