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

In the Matter of

Closed Captioning and Video Description
of Video Programming

MM Docket No. 95-176

Implementation of Section 305 of the
Telecommunications Act of 1996

Video Programming Accessibility

REPORT

Adopted: July 25, 1996

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By the Commission:

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I. INTRODUCTION

1. Section 713 of the Communications Act of 1934 ("Act"), as amended by the Telecommunications Act of 1996 ("1996 Act"), directs the Commission to conduct inquiries into the accessibility of video programming to individuals with hearing and visual disabilities.¹ This report is issued in compliance with this statutory requirement. It is based on information submitted by commenters in response to a *Notice of Inquiry* ("Notice") in this docket and publicly available information.²

A. Statutory Requirements

2. Section 713(a) requires the Commission to complete an inquiry within 180 days of enactment of the 1996 Act to ascertain the level at which video programming is closed captioned. A report on the results of this inquiry shall be submitted to Congress. Specifically, Section 713(a) directs the Commission to examine the extent to which existing or previously published programming is closed captioned, the size of the video programming provider or programming owner providing closed captioning, the size of the market served, the relative audience shares achieved and any other related factors. The Commission also is required to establish regulations and implementation schedules to ensure that video programming is fully

¹ Section 305 of the 1996 Act, Pub. L. 104-104, 110 Stat. 56 (1996), adds a new Section 713, Video Programming Accessibility, to the Act, 47 U.S.C. § 613.

² See *Closed Captioning and Video Description of Video Programming, Notice of Inquiry*, MM Docket No. 95-176, FCC 95-484, 11 FCC Rcd 4912 (1996) ("Notice"). Commenters are listed in the Appendix. We also received numerous letters and informal filings in this proceeding.

accessible through closed captioning within 18 months of the enactment of the section.³ The Commission will initiate the rulemaking required by the Act with the issuance of a notice of proposed rulemaking in the next several months.

3. Section 713(f) requires the Commission to commence an inquiry within six months after the date of enactment of the 1996 Act "to examine the use of video descriptions of video programming in order to ensure the accessibility of video programming to persons with visual impairments."⁴ The Commission must report to Congress on its findings, including an assessment of the appropriate methods and schedules for phasing video descriptions into the marketplace, technical and quality standards for video descriptions, a definition of programming for which video descriptions would apply, and other technical and legal issues that the Commission deems appropriate.

4. Section 713 is "designed to ensure that video services are accessible to hearing impaired and visually impaired individuals."⁵ The legislative history of this section states that it is Congress' goal "to ensure that all Americans ultimately have access to video services and programs particularly as video programming becomes an increasingly important part of the home, school and workplace."⁶ The House Committee recognized that there has been a significant increase in the amount of video programming that includes closed captioning since the passage of the Television Decoder Circuitry Act of 1990 ("TDCA").⁷ Nevertheless, the House Committee expressed a concern that video programming through all delivery systems should be accessible to persons with disabilities.⁸

B. Notice of Inquiry

5. On December 1, 1995, prior to the enactment of the 1996 Act, the Commission adopted the *Notice* in this proceeding. It sought information consistent with the legislation that was pending at that time and comment on a wide variety of issues relating to closed captioning and video description of video programming. This inquiry was intended to gather the information needed to assess the current availability, cost and uses of closed captioning and video description. In the *Notice*, the Commission asked specific questions regarding the importance of closed

³ See Section 713(b)-(e), 47 U.S.C. § 613(b)-(e), which are specific provisions relating to the rules the Commission must adopt.

⁴ 47 U.S.C. § 613(f).

⁵ Conference Report, H.R. Report 104-458 (1996), at 182.

⁶ *Id.* at 183.

⁷ House Report, H.R. Report 104-204, Part 1 (1995) at 113. As enacted, Section 713 adopted the House provisions on video accessibility with modifications. Conference Report at 184.

⁸ House Report at 113-114.

captioning to persons with hearing disabilities and of video description to persons with visual disabilities and sought information on other population groups that could benefit from the availability of these services. We requested data on the availability of video programming, both new and previously published, with closed captioning and video description. In the *Notice*, we asked questions regarding the availability of suppliers of closed captioning and video description, the costs of including these services and how they are currently funded.

6. The *Notice* also sought comment on the appropriate means of promoting wider use of closed captioning and video description in programming delivered by broadcast television, cable television, and other video providers. In particular, we sought comment on the general form any mandatory closed captioning or video description rules should take, if they are deemed necessary, including technical standards, quality standards, exemptions for classes of programmers or delivery systems, appropriate timetables for implementing any mandatory requirements and the scope of the Commission's jurisdiction to impose mandatory closed captioning or video description requirements on video service providers and program producers and owners.

7. Because the 1996 Act adopted the provisions concerning the availability of video programming with closed captioning and video descriptions which formed the basis of the Commission's December 1995 inquiry, the Commission decided to use the comments filed in that proceeding for the inquiries it is required to conduct pursuant to Sections 713(a) and (f) of the Act. In an *Order* adopted February 27, 1996, the Commission announced this decision and asked that commenters direct their comments towards the specific provisions of the statute.⁹

II. SUMMARY OF THIS REPORT

A. Scope of this Report

8. This report addresses each of the issues the Commission is required to examine under Section 713 with respect to closed captioning and video description of video programming. We examine the extent to which programming is currently closed captioned (Section III) and the amount of video description of video programming currently provided (Section IV). With respect to closed captioning, the statutory mandate directs the Commission to study the current status of this technology and its uses. Thus, we provide a general description of closed captioning, the population groups that can benefit from its availability, the methods and costs of closed captioning, the amount of programming now available with captions, current funding of captioning and a description of the quality and accuracy of today's closed captioning. In this report, we do not address issues raised in the *Notice* regarding proposals for specific rules, standards and implementation schedules for closed captioning, as they go beyond the scope of the inquiry requirements of Section 713(a). These matters will be considered in the context of a subsequent notice of proposed rulemaking that we will issue to consider proposed rules to fulfill

⁹ See *Closed Captioning and Video Description of Video Programming, Order*, MM Docket No. 95-176, FCC 96-71, 11 FCC Rcd 5783 (1996). The Commission also extended the time for filing comments.

the Congressional mandate that the Commission adopt rules to implement closed captioning requirements by August 8, 1997.¹⁰

9. Section 713(f) focuses the Commission's inquiry on the appropriate methods and schedules for phasing video description into the marketplace and standards for this technology, including technical and quality standards for video descriptions. In Section IV we provide a general discussion of the availability of video description and general information regarding the population groups that can benefit from its availability, the methods and costs of adding descriptions to video programming, the amount of programming now available with description and the current funding of this technology. As directed by the statute, we then address methods and schedules for phasing video description into the marketplace, including appropriate regulatory and technical requirements.

10. This report encompasses all types of available video programming with closed captioning and video description delivered to consumers through existing distribution technology. We report on the availability of broadcast commercial and noncommercial networks, basic and premium cable networks, syndicated and locally produced broadcast and cable programming with closed captions and video description. In addition to over-the-air broadcast television service and cable television service, we examine the availability of the delivery of closed captions and video descriptions to consumers by other multichannel video programming distributors ("MVPDs"). Among these distributors are direct-to-home ("DTH") satellite services, including direct broadcast satellite ("DBS") services and home satellite dishes ("HSD"), wireless cable systems using the multichannel multipoint distribution service ("MMDS"), instructional television fixed service ("ITFS") or local multipoint distribution ("LMDS"), satellite master antenna television ("SMATV") and local exchange carrier ("LEC") video services.¹¹

B. Summary of Findings

1. Closed Captioning

11. Captioning of video programming has existed since the early 1970s. Through the efforts of Congress, government agencies and a variety of private parties, captioned video programming has grown over the past 25 years so that it is now a common feature associated with the vast majority of popular prime time broadcast television programming. Congress'

¹⁰ Section 713(a). Specific requirements the Commission must consider when adopting regulations are specified in Sections 713(b)-(e) and comments directed at those provisions will be considered in the Notice of Proposed Rulemaking.

¹¹ See *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Second Annual Report*, CS Docket No. 95-61, FCC 95-491, 11 FCC Rcd 2060 (1996) ("*1995 Competition Report*"). This report provides detailed information regarding all available video distribution technologies.

passage of the Americans with Disabilities Act of 1990 ("ADA")¹² requiring the closed captioning of federally funded public service announcements, the Television Decoder Circuitry Act of 1990 ("TDCA")¹³ and the 1996 Act reflect a continuing national commitment to ensuring "that all Americans ultimately have access to video services and programs particularly as video programming becomes an increasingly important part of the home, school and workplace."¹⁴

12. Beneficiaries of Closed Captioning: The principal beneficiaries of closed captioning are the approximately 22.4 million persons who are hearing disabled. In 1995, 25 million decoder-equipped television sets were sold in the U.S. It is estimated that between 50 and 60 million U.S. homes can currently receive closed captioning.

13. Technology: Closed captioning is distributed on line 21 of the vertical blanking interval ("VBI") of broadcast and other analog television signals. Commission rules reserve line 21 for this service. Pursuant to the TDCA, since July 1, 1993, all television receivers with screen sizes 13 inches or larger must be capable of receiving and displaying closed captions. Cable television systems retransmitting broadcast signals must pass through closed captioning to the receivers of all subscribers. For those whose television receivers are not capable of decoding and displaying closed captioning, separate decoders may be purchased. Existing technology, however, can only decode Latin based alphabets and symbols, so captioning of some non-English language programming (Chinese, Japanese, Russian, Arabic, etc.) is not possible using this system. This transmission and display system is generally well established and functions effectively. Digital transmission systems under development are being designed to include closed caption capabilities.

14. Notwithstanding the capabilities of this transmission system, a variety of problems can occur in the captioning process. Captioning of prerecorded programming involves adding a written transcription or description of the spoken words and sounds which is generally carefully prepared and checked for accuracy. In the case of live programming, however, the real time stenographic process of adding the captions increases the number of mistakes.

15. In addition, as programming is duplicated or prepared for transmission, improperly adjusted signal processing equipment can delete line 21, introduce errors or result in captions not being synchronized with the video portion of the program. Time compression of programming to fit it into specific time blocks may destroy captions. Finally, interference and poor quality reception may impair caption quality, sometimes causing individual letters to appear as square white blocks. Closed captions may also cover other written information on the screen, such as emergency weather or school closing announcements.

¹² Pub. L. No. 101-336, § 2, 104 Stat. 328 (1990) (codified at 42 U.S.C. § 12101 *et seq.*).

¹³ Pub. L. No. 101-431, 104 Stat. 960 (1990) (codified at 47 U.S.C. §§ 303(u), 330(b)).

¹⁴ Conference Report at 183-184.

16. Cost: There is a wide range in the cost of closed captioning that reflects the method of adding the captions, the quality of those captions and the entity providing the captions. Organizations and suppliers that charge the most for their services are reported to provide the highest quality and most accurate captioning. For prerecorded programming, the captions are developed off-line using a script of the actual program. Estimates of the cost of this type of captioning range from \$800 to \$2500 per hour of programming. Captions for live programs can be created by specially trained stenotypists. Live captioning costs are estimated to be between \$150 and \$1200 an hour. Off-line captioning is typically more expensive than live captioning because additional resources are expended to edit and proofread the captions. Another method of captioning live programming uses computer software that converts a script into closed captioning. This method, known as electronic newsroom captioning, is virtually cost free once the equipment and software are purchased at a cost generally estimated to be between \$2500 and \$5000. For high budget programming that is distributed nationally and reused many times, such as theatrical films that may receive network broadcast, subscription, syndication, cable television and video tape distribution over a period of years, the costs involved represent only a minor portion of the total production expense and revenue flow. For less expensive programming, such as local cable originations, the cost of captioning could be a significant proportion of total expenditures.

17. Amount of captioning: There has been significant progress in the delivery of closed captioning of video programming, but the goal of making video programming through all delivery systems accessible to persons with disabilities is not yet realized. Virtually all nationally broadcast prime time television programming and nationally broadcast children's programming, news, daytime programming and some sports programming, both commercial and noncommercial, is captioned. New feature films produced in the U.S. that will be distributed by broadcast networks, cable networks, syndicators and local stations following their theatrical release are now captioned at the production stage. Many local stations caption their newscasts, at least the portion that is scripted. Many of the national satellite cable programming networks distribute programming containing closed captions. Cable operators also appear to provide some limited captioning of their local and regional programming. Other MVPDs essentially distribute programming that is produced for broadcast and cable use, and they generally deliver the programming with the existing captions intact.

18. Certain types of programming, however, are unlikely to be captioned, including non-English language programming, home shopping programming, weather programming that includes a large amount of visual and graphic information, live sports and music programming. Captions are less likely to be included in programming intended to serve smaller or specialized audience markets. Programming (e.g., sports), which is considered perishable because it may only be aired one time, is less likely to contain captions than programming that can be rerun by the original distributor or redistributed by others (e.g., in the syndication market).

19. Economic Support: There are four principal sources of economic support for closed captioning. Financial assistance provided by the Department of Education ("DOE") funds represents approximately 40% of the cost of all captioned video programming. This funding is

available only for programming that reaches the largest audiences -- national news, public affairs, children's programming, movies and prime time specials. The remaining support comes from a combination of directly credited corporate advertising support, charitable and foundation support and producers and distributors of programming. Public service announcements produced or funded by the Federal government must be captioned, pursuant to Title IV of the ADA.

20. Little information appears to be collected in any systematic fashion about the size of the audience for closed captioned programming or about the economic demand for captioned programming when programming is distributed on a subscription basis. Not all advertisers caption their own advertisements even when the advertisements appear in conjunction with programming that is captioned. Some distributors, such as those offering subscription based services (e.g., HBO, Cinemax), appear to believe that the inclusion of captions is rewarded by the marketplace as they are able to attract additional subscribers. It also is likely that all programmers and program providers could increase their audience shares if their video programming is accessible to the deaf and hard of hearing community and therefore benefit economically through the inclusion of captions.¹⁵

2. *Video Description*

21. Current Status: Video description includes a narration of the actions taking place in the video programming that are not reflected in the existing dialogue. It requires the development of a second script and uses the second audio programming ("SAP") channel. Video description has not had as far a reach as video captioning. Video description is currently included only on some programs distributed by the Public Broadcasting Service ("PBS") and a few other programs distributed by cable systems. Not all broadcast stations or other video distributors are able to transmit the SAP channel and only about half of the nation's homes have a television with the capability to receive the SAP channel. Unlike line 21 of the vertical blanking interval, which is reserved only for captioning, there is no dedicated or reserved transmission capacity for video descriptions. As a consequence, it competes with second language transmissions, including Spanish language, for use of the SAP channel. According to the National Center for Health Statistics, there are approximately 8.6 million individuals who are blind or visually disabled who might benefit from video description.

22. Because video description is a newer service there is a lack of experience with developing and assessing the best means for promoting its use. In addition, costs for video description are approximately one and a half times the costs associated with closed captioning similar programming. Video description also receives substantially less government funding, which has been a significant factor in promoting the development of closed captioning. Additional legal and technical issues exist. For example, video description requires the development of a second script, which raises creativity and copyright issues, and must use the second audio programming channel and thus must compete for use with other audio services,

¹⁵ See, e.g., National Association of the Deaf Comments ("NAD") at 28-29.

particularly the bilingual audio service. While it is expected that the implementation of digital technology may be more conducive to video description than the current technology because it will permit the transmission of multiple audio channels, given the high costs, lack of funding and unresolved copyright issues, video description is presently a developing service that faces many obstacles before it can become more accessible.

23. **Recommendation:** In enacting this section of the Act, Congress intended to ensure video accessibility to all Americans, including persons with visual disabilities. The general accessibility of video description is dependent on the resolution of certain technical, legal, funding and cost issues. Any schedule for expanding the use of video description would depend, in part, on implementation of advanced digital television. Implementation of advanced digital television can make the distribution of additional audio channels feasible and facilitate the implementation of video description. In addition to these technical problems, funding remains a fundamental issue that will effect any schedule for the widespread use of video description since it appears that advertising support alone is unlikely to be sufficient to fund this service, given the costs involved.

24. Congress has directed the Commission to assess the appropriate methods and schedules for phasing video description into the marketplace and to address certain technical and quality standards issues. The present record on which to assess video description, however, is limited and the emerging nature of the service renders definitive conclusions difficult. Thus, we believe that, at this time, the best course is for the Commission to continue to monitor the deployment of video description and the development of standards for new video technologies that will afford greater accessibility of video description. Specifically, we will seek additional information that will permit a better assessment of video description in conjunction with our 1997 report to Congress assessing competition in the video marketplace. This annual report is submitted in compliance with Section 628(g) of the Act, 47 U.S.C. § 548(g). In the context of this report, the Commission will be able to gather and evaluate information regarding the deployment of SAP channels and digital technology that will enable video providers and programmers to include video description. In seeking more information, we intend to focus on the specific methods and schedules for ensuring that video programming includes descriptions, technical and quality standards and other relevant legal and policy issues.

III. CLOSED CAPTIONING OF VIDEO PROGRAMMING

A. Introduction

25. Closed captioning is an assistive technology designed to provide access to television for persons with hearing disabilities. Captioning is similar to subtitles in that it displays the audio portion of a television signal as printed words on the television screen.¹⁶ To assist viewers with hearing disabilities, captions also identify speakers, sound effects, music and laughter. Captions were first used in the early 1970s in an "open" format, transmitted with the video so that they were visible to all viewers. PBS developed closed captioning in the 1970s. Closed captioning is hidden as encoded data transmitted within the VBI of the television signal, which, "when decoded, provides a visual depiction of information simultaneously being presented in the aural channel (captions)."¹⁷ A viewer wishing to see the closed captioning must use a set-top decoder or a television receiver with built-in decoder circuitry.

26. The Commission has long sought to promote closed captioning technology. In the 1970s, the Commission granted PBS a number of authorizations to conduct experimental transmissions using closed captioning, and in 1976, adopted rules that provide that line 21 of the VBI is to be primarily used for the transmission of closed captioning.¹⁸ The Commission's rules specify technical standards for the reception and display of such captioning.¹⁹ The Commission has also adopted technical standards for the cable carriage of closed captioning data that

¹⁶ See *Implementation of Television Decoder Circuitry Act, Report and Order*, GEN Docket No. 91-1, 6 FCC Rcd 2419, 2420 (1991) ("*TDCA R&O*"), recon. granted in part, *Memorandum Opinion and Order*, 7 FCC Rcd 2279 (1992). Further background information concerning closed captioning can be found in DuBow, "The Television Decoder Circuitry Act -- TV For All," 64 Temp. L. Rev. 609 (1991), and on the World Wide Web home page of the Caption Center of the WGBH Educational Foundation ("WGBH"): <http://www.wgbh.org/pages/captioncenter/captioncenterhome.html>. Copies of materials from the World Wide Web that are cited have been placed in the record of this proceeding.

¹⁷ See 47 C.F.R. § 73.682(a)(22). In particular, closed-captioning information may be transmitted on fields one and two of line 21 of the VBI. Standard television pictures are transmitted at a rate of 30 frames per second, with two interlaced fields comprising each frame. Each field begins with a VBI of 21 lines, during which the picture scanning beam is turned off (blanked) and is moved from the bottom of the screen to its starting position at the top of the screen. There are two VBIs transmitted per frame, one in each field. The placement of data within the VBI is described in terms of the particular blanking line used and the field (one or two) in which it occurs. See *Permissible Uses of the Vertical Blanking Interval, Notice of Proposed Rulemaking*, MM Docket No. 92-305, 8 FCC Rcd 90 n.1 (1992).

¹⁸ See *Captioning for the Deaf, Report and Order*, Docket No. 20693, 63 FCC 2d 378 (1976) ("*Captioning R&O*"). See also *Permissible Uses of the Vertical Blanking Interval, Report and Order*, MM Docket No. 92-305, 8 FCC Rcd 3613 (permitting enhanced closed-captioning and other broadcast-related information services on line 21, field 2 of the VBI).

¹⁹ *Id.*

accompanies programming carried on cable systems.²⁰ In addition, cable operators are required to carry the closed captioning data contained in line 21 of the vertical blanking interval as part of their must-carry obligations.²¹

27. To implement the TDCA, the Commission adopted regulations requiring all television broadcast receivers with screen sizes 13 inches or larger that were manufactured or imported on or after July 1, 1993, to be capable of receiving and displaying closed captions.²² By mid-1994, decoder-equipped television sets were in nearly 20 million American homes.²³ In 1995, 25 million decoder-equipped television sets were sold in the U.S.²⁴ It is estimated that between 50 and 60 million U.S. homes can currently receive closed captioning.²⁵

28. In addition to these efforts to promote closed captioning technology, the Commission, in 1976, adopted a rule requiring television licensees to transmit emergency messages in a visual format.²⁶ In 1990, Congress passed the ADA which requires all federally funded public service announcements to be closed captioned.²⁷ Aside from these requirements, however, neither Congress nor the Commission has mandated captioning of television programming. Instead, Congress and the Commission have relied on the voluntary efforts of program producers and providers to make television programming accessible to persons with hearing disabilities. As far back as 1970, the Commission has urged broadcast television

²⁰ 47 C.F.R. § 76.606; *Cable Television Technical and Operational Requirements, Report and Order*, MM Docket No. 91-169, 7 FCC Rcd 2021, 2031 (1992), *recon. granted in part, Memorandum Opinion and Order*, 7 FCC Rcd 8676 (1992).

²¹ 47 U.S.C. §§ 534(b)(3), 535(g)(1) and 47 C.F.R. §§ 76.62 (e) and (f).

²² 47 C.F.R. § 15.119; *TDCA R&O*, 6 FCC Rcd 2419.

²³ VITAC Comments at 12.

²⁴ Electronics Industries Association, Consumer Electronics Manufacturing Association ("CEMA") Comments at 4 *citing* Electronics Industry of America Market Research Department 1995 figures.

²⁵ VITAC Comments at 12; Joe Clark ("Clark") Comments at 6..

²⁶ 47 C.F.R. § 73.1250(h); *Emergency Messages -- Television, Report and Order*, Docket No. 20659, 61 FCC 2d 18 (1976), *recon. granted in part, Memorandum Opinion and Order*, 62 FCC 2d 565 (1977).

²⁷ 47 U.S.C. § 611. The ADA is a comprehensive civil rights statute that prohibits discrimination against individuals with disabilities in the areas of employment, state and local government services, and in private places of public accommodation such as restaurants, law offices, and movie theaters. *See generally* Burgdorf, "The Americans with Disabilities Act: Analysis and Implications of a Second-Generation Civil Rights Statute," 26 Harv. C.R.-C.L. L. Rev. 413 (1991). In addition to requiring the closed captioning of federally funded public service announcements, Title IV of the ADA amended the Communications Act of 1934 to require common carriers offering telephone voice transmission services to provide telecommunications relay services for individuals with hearing and speech disabilities. 47 U.S.C. § 225. The Commission has adopted regulations implementing this requirement. *See* 47 C.F.R. §§ 64.601-64.608.

licensees to undertake these voluntary efforts.²⁸ We have also "strongly encourage[d] cable operators to carry more closed-captioned video programming."²⁹

B. Audiences that Benefit from Closed Captioning

29. Providing persons with disabilities access to the "tremendously powerful television medium" serves an important public interest.³⁰ A recent study attests to the dominant role television plays in our society. It reports that nine out of ten Americans watch television on a regular basis.³¹ U.S. households spend an average of over seven hours every day watching television as a means of entertainment and relaxation and as a source of news and information.³² Most Americans depend on television to get their news, with 72% of Americans listing it as their primary news source.³³

30. Closed captioning makes television more accessible to persons with hearing disabilities. Indeed, the Commission on the Education of the Deaf has stated that "captioning of TV . . . is the most significant technological development for persons who are deaf."³⁴ In enacting the TDCA, Congress found that "closed-captioned television transmissions have made it possible for thousands of deaf and hearing-impaired people to gain access to the television

²⁸ *The Use of Telecasts to Inform and Alert Viewers With Impaired Hearing, Public Notice*, 26 FCC 2d 917 (1970) ("Use Public Notice") (alerting television licensees of the special needs of persons with hearing disabilities, and urging them to make use of visual as well as oral announcements of emergencies, position newscasters so as to permit the use of lip reading by viewers and feature visualization of materials in news, weather and sports programs). See also *Captioning R&O*, 63 FCC 2d at 389 ("We continue to encourage broadcast licensees . . . to make television a truly valuable medium for the hearing-impaired."); *Renewal Applications -- Los Angeles, Memorandum Opinion and Order*, 69 FCC 2d 451, 459 (1978) (rejecting renewal challenges based on licensees' failure to provide closed captioning, but "urg[ing] all television licensees to review the options presently available that, within reason, might provide some of the benefits of the medium of television for this nation's hearing impaired"), *recon. denied, Memorandum Opinion and Order*, 72 FCC 2d 273 (1979), *aff'd sub nom. Community Television of Southern California v. Gottfried*, 459 U.S. 498 (1983).

²⁹ *Implementation of 1992 Cable Act Rate Regulation, Report and Order and Further Notice of Proposed Rulemaking*, MM Docket No. 92-266, 8 FCC Rcd 5631, 5902 (1993).

³⁰ *Use Public Notice*, 26 FCC 2d at 918. See also *Captioning R&O*, 63 FCC 2d at 388 ("[W]e believe it is of the utmost importance that the hearing-impaired, a significant portion of our population, enjoy the tremendously powerful television medium.").

³¹ Roper Starch Worldwide, *America's Watching: Public Attitudes Toward Television 3* (1995) ("*Roper Study*"). A copy of this study has been placed in the record of this proceeding.

³² *Id.* at 6; Nielsen Media Research (1994).

³³ *Roper Study* at 17.

³⁴ See H.R. Rep. No. 767, 101st Cong., 2d Sess. 4 (1990) (legislative history of TDCA) citing *Towards Equality: Education of the Deaf*, A Report of the Commission on Education of the Deaf (1988).

medium, thus significantly improving the quality of their lives."³⁵ Closed captioning can thus offer great benefits to Americans with hearing disabilities. In addition, many other people, including children and adults learning to read, and people learning English as a second language, can also benefit from watching captioned programming.³⁶

1. *Persons with Hearing Disabilities*

31. The National Center for Health Statistics estimates that there are 22.4 million persons with hearing disabilities.³⁷ According to the National Association of the Deaf ("NAD"), 80% of these individuals have irreversible and permanent damage to their hearing.³⁸ People with varying degrees of hearing loss comprise 8.6% of the U.S. population.³⁹ Closed captioned programming provides individuals who are deaf and hard of hearing access to information regarding national and worldwide current events, local and community affairs and entertainment. Without captions, this critical link is often lost, making it more difficult for these individuals to have basic access to the information and knowledge which the rest of society takes for granted.⁴⁰ Many in the deaf and hard of hearing community view the issue of closed captioning in terms of basic civil rights and rights to equal access that should not be subject to a cost benefit analysis.⁴¹

32. Of the persons with hearing disabilities, 3.7 million are children. Approximately 15 out of every 1000 people under the age of 18 have some type of hearing disability.⁴² When programs are captioned, children who are deaf and hard of hearing, as well as adults, do not have to depend on family members to interpret the soundtracks of such programming. Captioning may thus help facilitate healthy family interaction and provide greater independence to children and adults with hearing disabilities. Similarly, the ability to enjoy watching or discussing television

³⁵ Section 2(2) of TDCA, Pub. L. 101-431, 104 Stat. 960, 47 U.S.C. § 303 note.

³⁶ National Captioning Institute ("NCI") Comments at 9-10.

³⁷ National Center for Health Statistics, Current Estimates from the National Health Interview Survey, 1994, Series 10, No. 193, at 93, Table 62.

³⁸ NAD Comments at 4 *citing* National Institute on Deafness and Other Communications Disorders.

³⁹ *Id.* at 4 *citing* National Center for Health Statistics.

⁴⁰ *Id.* at 3-4.

⁴¹ See, e.g., Dick Burkhalter ("Burkhalter") Comments at 2; Self Help for Hard of Hearing People ("Self Help") Comments at 2; Disability Law Center ("DLC") Comments at 1; David S. Evans ("Evans") Comments at 1; Joan Cassidy ("Cassidy") Comments at 4-5, 9.

⁴² NAD Comments at 7.

shows with peers may advance greater acceptance of a child or adult with a hearing disability into his or her own community.⁴³

33. Senior citizens comprise approximately 29% of the total population. It is well established that the U.S. population as a whole is aging due to advances in health care and the aging of the "baby boom" generation, the first members of whom are turning 50 in 1996. As the average age of the total population increases, the number of elderly people with hearing loss is expected to grow as well. According to NAD, 415 of every 1000 people over the age of 75 have some type of hearing disability.⁴⁴ Similarly, it is estimated that currently 22 million adults over the age of 65 have a hearing loss and that this number will nearly double to over 40 million within the next ten years as the baby boom generation ages.⁴⁵

2. *Children Learning to Read and Persons Learning English as a Second Language*

34. For both children with hearing disabilities and non-hearing disabled children learning to read, captioning can become an educational tool, turning the many hours of television they watch each week into a learning opportunity.⁴⁶ Captioning is useful in exposing children to patterns of spoken English, such as slang and idioms used in everyday dialogue, that are not always found in literature.⁴⁷ Studies have also demonstrated that captions can improve a student's reading comprehension and spelling, augment vocabulary and word recognition and increase overall motivation to read. Not only does captioned television capture students' attention, but its multi-sensory presentation of information makes learning new words and concepts easier.⁴⁸

35. Captioning can be useful as a key learning tool for the 30 million Americans for whom English is a second language ("ESL").⁴⁹ ESL students have two related needs that are addressed through closed captioned television.⁵⁰ First, they need to increase basic vocabulary. Vocabulary researchers agree that the overwhelming percentage of words a person knows are acquired through the contexts in which they are used. Through captioning situational uses of

⁴³ *Id.* at 8-9.

⁴⁴ *Id.* at 5.

⁴⁵ *Id.* at 6.

⁴⁶ *Id.* at 9-10.

⁴⁷ *Id.* at 7.

⁴⁸ WGBH Comments at 4-5.

⁴⁹ NAD Comments at 10.

⁵⁰ WGBH Comments at 5.

words and idioms, and shades of meaning and nuance, can be conveyed visually as well as verbally. Furthermore, ESL students benefit from seeing an immediate spelling of words just uttered.

3. *Illiterate Adults*

36. There are 26 to 27 million illiterate adults in the United States. In addition there are 72 million adults who lack the basic skills to fill out employment applications or to follow written job directions.⁵¹ Only 2% to 4% of American adults requiring literacy services are reached by the present public and private literacy programs.⁵² Captioning can provide opportunities for the illiterate to increase their reading fluency, to participate in the workforce and to enjoy literature, magazines, and newspapers for both knowledge and recreation.⁵³

4. *Others Who Benefit from Closed Captioning*

37. Captioning also can help non-hearing disabled viewers understand the audio portion of television programs in noisy locations such as airports, hotel lobbies, waiting rooms, public exercise facilities, restaurants and bars. Additionally, captioning can help people understand dialogue in quiet areas where they may need to lower or to turn off the volume on the television set.⁵⁴ For any reader, captioning can also be used to improve vocabulary skills and to help clarify dialogue that uses difficult vocabulary or dialogue in programming in which the speakers have accents that may be difficult to understand.⁵⁵

C. **Methods of Closed Captioning**

1. *Technical Issues*

38. Closed captioning is transmitted on line 21 of the VBI along with the video and audio portions of a program. The VBI is the unused lines in each field of a television signal, seen as a thick band when the television picture rolls over usually at the beginning of each field. The VBI is an integral part of the television signal that usually includes information to instruct the television receiver to prepare to receive the next field and may be used to transmit other information, including closed captioning. A consumer with a television set that has a built-in

⁵¹ *Id.* at 4.

⁵² *Id.*

⁵³ NAD Comments at 10-11.

⁵⁴ *Id.* at 11.

⁵⁵ *Id.*; WGBH Comments at 4-5.

closed captioning feature or a set top decoder can receive closed captioning information by activating this feature.

39. The introduction of advanced digital television ("ATV") may affect closed captioning in terms of both transporting and displaying relatively error-free closed captioning data. ATV could greatly improve the overall quality of closed captioning because it may permit more rapid transmission of data. With regard to ATV technology for transporting closed captioning data, the Commission has a pending proceeding soliciting public comments concerning the ability of ATV to include captioning and how the Commission should implement captioning requirements for ATV in the event it does not adopt a mandatory ATV standard.⁵⁶ A draft standard for advanced television closed captioning ("ATV-CC") has been prepared by the Television Data Systems Subcommittee ("TDSS") of the Consumer Electronics Manufacturers Association ("CEMA"). This ATV-CC standards setting effort is being carried out in cooperation with the Grand Alliance (a group of electronics industry representatives) and the Advanced Television Systems Committee ("ATSC"). Provisions have been made in the ATSC standard to transport closed captioning information in the form defined by the TDSS at a fixed data rate of 9600 bits-per-second for closed captioning.⁵⁷ This proposed transporting standard would significantly increase the data transmission rate from its current 480-bits-per-second, thereby facilitating faster transmission of both more and better quality closed captioning data.⁵⁸

40. In terms of the quality of closed captioning displayed, ATV could significantly increase user control over such display. Currently, the only control the user has over this display is whether to activate the closed captioning feature on his television set. The user has virtually no ability to customize the closed captioning display to his individual needs or preferences. The advent of ATV could permit major closed captioning enhancements, such as user selected caption sizes (i.e., caption "volume control"), a broader selection of type faces, fonts, character sets and symbols that could convey a wider range of meanings and a wide array of presentation options, including different colors and backgrounds.⁵⁹ In addition, ATV, through its enhanced ability to transport more closed captioning data at a faster rate, could allow a user to select captioning from a variety of languages on a menu displayed on the television screen.⁶⁰

⁵⁶ See *Advanced Television Systems and Their Impact Upon the Existing Broadcast Service, Fifth Further Notice of Proposed Rule Making*, MM Docket No. 87-268, FCC 96-207, 11 FCC Rcd 6235 (1996) ("*Fifth Further Notice*").

⁵⁷ *Fifth Further Notice*, 11 FCC Rcd at 6262 ¶ 70.

⁵⁸ Telephone Interview with Amnon Salomon, Director, Systems Development, NCI (July 10, 1996) ("*Salomon Interview*").

⁵⁹ CEMA Comments at 8-9; Telephone Interview with George A. Hanover, Vice President, Engineering, CEMA (July 10, 1996).

⁶⁰ Salomon Interview *supra* note 58.

41. Despite its technological potential, ATV would not automatically resolve all technical or logistical problems with closed captioning. For example, current television receivers, which are based on analog technology, cannot receive the digitized ATV signal with all of its potential closed captioning enhancements. Therefore, the ATV technology would be of no practical use until television sets capable of receiving and displaying ATV signals have become available.⁶¹ It should be noted that such television sets may be available in the near future, even though the widespread market penetration of such technology may not occur for many years. Advocates of improved closed captioning emphasize that the initial limited availability of ATV should not overshadow its potentially significant enhancement of closed captioning.⁶² However, it should also be noted that, even when digital receivers become available, the procedures for captioning programming will probably be the same in terms of time, cost and labor intensiveness. Therefore, the development of digital television technology may not make closed captioning any less expensive or time consuming.⁶³

2. *Types of Closed Captioning*

42. There are essentially four major types of closed captioning. The first type is "off line captioning." Under this method, the captioning service gets an advance copy of the script, tape or film before the program is aired. The audio portion of the program, including sound effects as well as dialogue, is transcribed and added in synchronization with the video content. After the program is captioned it is sent to a post-production company or to the program producer on a computer disk or via modem. The captioning is encoded by the post-production company or the producer onto line 21 of the VBI of the master tape to be telecast.⁶⁴ This method of captioning entails a labor intensive process to ensure that the captions are placed precisely where the corresponding audio appears and then locked into the proper position on the program tape. The captioners must ensure that the captions will appear at precisely the right moment in a precise location on the screen.⁶⁵ This type of captioning is used for feature films and many prerecorded entertainment programming, including prime time series and children's programs.⁶⁶

43. A second type of captioning is live encoded captioning. This type of captioning is also created off-line for prerecorded programming, such as daytime dramas and late night entertainment shows in advance of the time that the program is aired. Despite the name of this

⁶¹ CEMA Comments at 9.

⁶² Salomon Interview *supra* note 58.

⁶³ National Broadcasting Company ("NBC") Comments at 14-15.

⁶⁴ *Id.* at 2; Capital Cities/ABC Comments at 4.

⁶⁵ CBS Comments at 10-11.

⁶⁶ *Id.* at 10.

form of captioning, these captions are not encoded onto the program tape, but rather are transmitted with the program at the time it is aired. These captions are less precisely synchronized than off-line captions and are rolled from the bottom of the screen rather than appearing at precise locations on the screen. Live encoded captioning is often used where there are only a few hours between taping and airing and the final edits for the program are not completed until close to air time.⁶⁷ An example of a program that uses this type of captioning is the *Late Show With David Letterman*, where the broadcast occurs only a few hours after the show is taped.

44. A third type of captioning is automatic live-encoded captioning. Like live encoded captions, these off-line captions are not encoded onto the prerecorded program prior to airing, but are transmitted at the time of airing. However, these captions are encoded onto the program after the original airing so that the captions will be automatically transmitted when the program is rebroadcast.⁶⁸ A variant of this type of captioning is called "electronic newsroom captioning" in which the captions come from the text in the station's news script computers. Only text transmitted from the scripting computers onto the teleprompters is captioned. Therefore, unscripted material that does not appear on the teleprompters is not captioned.⁶⁹ The electronic newsroom captioning method is commonly used for local broadcast station newscasts.

45. The fourth type of captioning is "real time" or "live captioning." Live programming, such as news, sports and awards shows are typically "stenocaptioned." This method of captioning is used for breaking news and other types of live programming that are unscripted. Under this method, the captioner's computer is linked to the telecast operation center and the captioning material is created for telecast in "real time." A specially trained "stenocaptioner" transcribes the audio portion of the live program as it airs. Because of the transcription and computer processing required, real time captioning appears on the screen about three seconds after the corresponding audio content.⁷⁰

⁶⁷ *Id.* at 11-12.

⁶⁸ *Id.* at 12-13.

⁶⁹ Capital Cities/ABC Comments at 4.

⁷⁰ NBC Comments at 2; Capital Cities/ABC Comments at 4; CBS Comments at 13.

D. Cost of Closed Captioning

46. The cost of captioning video programming is a related factor that affects the extent to which programming is currently accessible with closed captioning.⁷¹ The cost of closed captioning depends on the method used and a variety of other factors, including the format, the length of the program, the required turnaround time, the payment schedule and the volume of captioning, with discounts often given when contracts include multiple programs and hours.⁷² Captioning off-line of prerecorded programs is typically more expensive than captioning for live shows because it requires additional staff for editing and proofreading the captions.⁷³ There are more than 100 suppliers of closed captioning services.⁷⁴ According to several commenters, since 1990, the costs of captioning have declined due to increased competition among service providers.⁷⁵ The larger, more experienced captioning agencies still charge relatively high rates, but are known for their level of quality.⁷⁶

47. A considerable amount of closed captioning is done under contract with outside vendors. Estimates of the cost of off-line captioning range from around \$800 an hour⁷⁷ to \$2500 an hour.⁷⁸ In addition, the encoding of the captions onto the program tape entails an additional expense of approximately \$200 for a half hour program to \$650 for a two hour program.⁷⁹ For example, NBC states that it costs between \$900 and \$1800 to caption its prime time series, \$1800 for a made for television movie or an episode of a miniseries and \$1200 for a Saturday morning

⁷¹ The House provision concerning video accessibility included a specific requirement that the Commission also examine the cost of closed captioning to programs and program providers. The 1996 Act simply directs the Commission to examine "any other related factors" in its inquiry. Conference Report at 182.

⁷² NCI Comments at 5; NAD Comments at 27; Californians for Television Access ("CTA") Comments at 4; VITAC Comments at 10.

⁷³ NAD Comments at 27; CTA Comments at 4-5.

⁷⁴ WGBH Comments at 20; Media Captioning Services Comments at 5. Lists of suppliers of closed captioning are provided in the NAD Comments, Attachment G, and CTA Comments, Exhibit B.

⁷⁵ Association of Late-Deafened Adults ("ALDA") Comments at 5; Schwartz, Woods & Miller Comments at 3; Gerald Dominick ("Dominick") Comments at 4.

⁷⁶ NBC Comments at 7. There are six major suppliers of captioning. The National Captioning Institute and WGBH/The Captioning Center are both not-for-profit providers. VITAC, Media Captioning Services, Captions, Inc. and Real-Time Captions, Inc. are commercial suppliers. Capital Cities/ABC Comments at 10.

⁷⁷ CBS Comments at 11; Capital Cities/ABC Comments at 7.

⁷⁸ Schwartz, Woods & Miller Comments at 10.

⁷⁹ CBS Comments at 11.

live action children's show.⁸⁰ ABC indicates that it pays approximately \$790 to \$1200 per hour for off-line captioning.⁸¹ The magnitude of these costs is explained in part by the ratio of time needed to create the captions to the length of the program, which can be as much as 20 or 30 hours for a one hour program.⁸² In addition, the cost of captioning a commercial is estimated at about \$250 per minute.⁸³ It also is reported that the off-line captioning of music videos costs about \$275 to \$400 for a short form video or \$2500 for a long form video of 60 minutes in length.⁸⁴

48. The estimated cost of contracting for the services needed to caption live programming ranges between \$300 and \$1200 per hour.⁸⁵ For example, the National Captioning Institute ("NCI") states that this would cost \$300 to \$750 per program hour for a national program and \$125 to \$300 for a local program hour.⁸⁶ VITAC, another vendor, states that its rate card indicates that real time captioning costs \$810 for an hour program.⁸⁷ Caption Colorado, states that it has been able to reduce the cost of real time captioning from between \$600 and \$700 per hour to \$120 per hour by obtaining television audio programming and delivering encoded captions through telephone lines.⁸⁸ Others estimate the average cost of live captioning to be between \$150 and \$800 per hour.⁸⁹

49. Captions often must be reformatted when programming is rebroadcast or distributed by a secondary video provider. For a secondary use, a program may be edited to fit a time period that is different from the original one and commercials may need to be inserted. This

⁸⁰ NBC Comments at 7-8.

⁸¹ Capital Cities/ABC Comments at 7.

⁸² WGBH Comments at 1; NBC Comments at 7. CBS estimates this ratio as eight to one. CBS Comments at 11.

⁸³ F&V Channel ("F&V") Comments at 4; CaptionMax Comments at 2.

⁸⁴ Recording Industry of America ("RIAA") Comments at 2. RIAA also states that music videos can be captioned in-house with the purchase of \$20,000 of equipment.

⁸⁵ See, e.g., NAD Comments at 27-28; A&E Comments at 15; CBS Comments at 28. NBC indicates that it spends \$825 to caption its one hour prime time news programs. NBC Comments at 7.

⁸⁶ NCI Comments at 5. See also CBS Comments at 28; Capital Cities/ABC Comments at 7.

⁸⁷ VITAC Comments at 10.

⁸⁸ Caption Colorado Comments at 1, 3.

⁸⁹ ALDA Comments at 5.

editing can ruin the timing of the captions and therefore reformatting is required.⁹⁰ In cases where parts of the program are removed or rearranged, the captions must be removed or rearranged accordingly.⁹¹ The cost of reformatting is approximately one fourth that of the original captioning, or approximately \$400 to \$800 for a full length movie.⁹² Estimates of reformatting costs generally range between \$350 and \$450 per hour, depending on the amount of editing,⁹³ although it is reported that the cost of reformatting can be as high as \$750.⁹⁴

50. A program producer or provider also can do its own captioning in-house. An entity that does its own captioning must acquire equipment to add captions. For a station that does a significant amount of its own programming, it may be more effective over time to do the captioning in-house using stenocaptioners.⁹⁵ A one time equipment expenditure would be between \$50,000 and \$75,000, although it would also require significant staff time to operate this equipment over the course of a year.⁹⁶ For a local public broadcasting station, specialized captioning equipment to provide a work station and encoding equipment for one staff person costs between \$12,000 and \$22,000, in addition to a cost of approximately \$2500 to train a person to caption.⁹⁷ A station that distributes three and one half hours per week of locally produced taped programming, and captions 95% of that programming, may have to spend \$40,000 on equipment, \$5000 on training and \$31,000 per year plus benefits for each of two stenocaptioners.⁹⁸ After initial equipment and training costs, on-going captioning can represent between 5% and 8% of

⁹⁰ Caption Database Comments at 3.

⁹¹ PBS Comments at 3.

⁹² ALDA Comments at 3; Caption Database Comments at 3-4.

⁹³ A&E Television Networks ("A&E") Comments at 15.

⁹⁴ National Cable Television Association ("NCTA") Comments at 15.

⁹⁵ Stenocaptioners are trained as court reporters. For an experienced court reporter it takes approximately four to six months of additional training to obtain the skills needed to report the verbatim speech, using correct spelling, syntax and grammar, and understand what is said. Telephone Interviews with Jeffrey M. Hutchins, Vice President and General Manager, VITAC, and Gerald Freda, Vice President, Production and Engineering, NCI (May 31, 1996). The National Court Reporters Association recently created a new Certificate of Realtime Reporting which tests court reporters' skills in this area. WGBH Comments at 19.

⁹⁶ Schwartz, Woods & Miller Comments at 10. For a list of the items specific to the captioning industry and costs, and other generally available equipment needed to set up a captioning studio, see CTA Comments at 6-7.

⁹⁷ Association of America's Public Television Stations ("APTS") Comments at 4.

⁹⁸ *Id.* at 5, n.9.

the local production budget, compared with outside contracting which can reach as high as 16% of a station's local production budget.⁹⁹

51. Depending on capabilities, the cost of the equipment and software needed for a local station to provide electronic newsroom captioning generally ranges between \$2500 and \$5000,¹⁰⁰ but some estimates are as high as \$10,000.¹⁰¹ The National Association of Broadcasters ("NAB") reports that the average cost of captioning for local stations responding to its survey is \$514 per week, primarily for local newscasts. Since this figure includes stations that report no costs (which NAB assumes use only electronic newsroom capability), NAB asserts that the average cost is more likely to be \$1007, exclusive of no-cost stations. NAB concludes that this represents stations that use stenographic captioning or a combination of stenographic and electronic newsroom captioning.¹⁰²

52. A primary concern for those not currently captioning their programming, especially local broadcast stations, cable networks and local cable systems, is the relatively high cost of captioning when compared to their total budgets.¹⁰³ Commenters state that the cost of captioning local programming is likely to be a significant cost for local stations, even for major station groups and larger market stations.¹⁰⁴ The Association of Local Television Stations ("ALTV") claims that it would cost an individual television station approximately \$100,000 a year to caption one hour per day of its local programming.¹⁰⁵ For many affiliated and independent stations, the costs of even limited amounts of captioning would exceed their annual pre-tax profits.¹⁰⁶ Television station WSST-TV estimates that to close caption its daily six hours of local programming would cost approximately \$7500 a day, added to the present daily operating cost of approximately \$1650.¹⁰⁷

⁹⁹ *Id.* at 5.

¹⁰⁰ NAB Comments at 4-5, n.7. Capital Cities/ABC states that live display captioning, of which the electronic newsroom is a variation, costs between \$500 and \$550 an hour. Capital Cities/ABC Comments at 7.

¹⁰¹ CTA Comments at 5.

¹⁰² NAB Comments at 5, Attachment. The highest reported weekly captioning cost was \$4500.

¹⁰³ For network programming, this cost might be considered relatively small compared to the total production budget of many programs. NAD claims that a typical episode of *Seinfeld* costs \$750,000. NAD Comments at 28, n. 30. See also Massachusetts Commission for the Deaf and Hard of Hearing Comments at 3.

¹⁰⁴ CBS Comments at 29-30.

¹⁰⁵ ALTV Reply Comments at 3.

¹⁰⁶ ALTV Comments at 9-11.

¹⁰⁷ WSST-TV Reply Comments at 5-6. This estimate is based on a per hour captioning cost of \$1250, and should be compared to its daily income of approximately \$2000. *Id.*

53. The National Cable Television Association ("NCTA") estimates that it would cost the cable industry between \$500 and \$900 million per year to caption all basic cable network programming that is not currently captioned. This cost would represent nearly one third of the basic cable programmers' current total annual programming expenditures. NCTA further claims that the cost of captioning just prime time basic cable programming would range from \$58 to \$116 million a year.¹⁰⁸ Liberty Sports ("Liberty") states that closed captioning would add approximately 10% to the full production budgets of national sports events, which are generally in the \$15,000 to \$25,000 range.¹⁰⁹ The F&V Channel ("F&V") estimates that it would cost approximately \$4.5 million to caption programming for a year, an amount that exceeds its entire programming budget.¹¹⁰ The Weather Channel estimates that in order to caption its own live, often ad libbed, programming, it would need to have 12 real-time stenocaptioners on staff¹¹¹ and acquire the equipment needed for two captioning work stations at an estimated total cost of \$33,000.¹¹²

54. Local cable programming is often transmitted on public, educational or government ("PEG") access channels. The Alliance of Community Media estimates that the average annual budget of a full service access center is \$227,147. However, a typical access center, such as the one in Riverside, California, operates with a budget of \$50,000 and serves a population of more than 350,000. At an estimated cost of \$2500 per program hour, this center could caption only 20 hours of programming per year and have no funds left over for salaries, equipment and expenses.¹¹³ The Fairfax Cable Access Corporation states that it produces between 80 and 100 hours of programming a month. It estimates that it would cost \$160,000 per month to add captions to all of its programming, assuming a closed captioning cost of \$2000 per hour.¹¹⁴

55. The City of St. Louis estimates that the cost of closed captioning its Board of Aldermen's meetings, which are carried by the local cable system, for one year, would exceed

¹⁰⁸ NCTA Comments at 15.

¹⁰⁹ Liberty Sports ("Liberty") Reply Comments at 3-4.

¹¹⁰ F&V Comments at 4-5. These estimates are based on an estimated cost of \$1200 per program hour, \$750 per half hour program and \$250 for a commercial minute. *Id.*

¹¹¹ The Weather Channel estimates that it would have to pay an average salary of \$50,000 plus benefits per stenocaptioner. The Weather Channel Comments at 4.

¹¹² The Weather Channel Comments at 4. The equipment costs include setting up the two work stations, two personal computers, captioning software, keyboards, EEG Smart encoders and monitors/headphones.

¹¹³ Alliance for Community Media ("Alliance") Comments at 5-6.

¹¹⁴ Fairfax Cable Access Corporation at 1.

\$20,000 if an outside vendor were used.¹¹⁵ Alternatively, the City states that if it were to develop its own captioning the equipment needed would cost more than \$9000, with software alone costing \$3995. In addition, encoding equipment would cost about \$6300 and captionwriters would need to be hired at salaries of \$30,000 a year plus benefits of an additional 26%.¹¹⁶

E. Current Availability of Programming with Closed Captioning

56. As indicated earlier, Section 713 of the Act directs the Commission to ascertain the level at which video programming is currently closed captioned. Specifically, we are required to examine the extent to which existing or previously published programming is closed captioned, the size of the video programming provider or programming owner providing closed captioning, the size of the market served and the relative audience shares achieved. The information provided in this section concerning the current availability of programming with closed captioning is responsive to these issues.

57. Programming is most likely to be closed captioned when it is distributed nationally and available to a significant portion of all U.S. television households. In addition to reaching a substantial number of homes, such programming is available during the times of day with the highest viewing levels. The most popular programs as determined by audience ratings also are the ones most likely to contain captions. Accordingly, we find that the market served by programming with closed captioning is potentially large in size. However, there is no information available from audience ratings services or elsewhere regarding how many individuals currently use closed captioning when watching television programming.¹¹⁷ Thus, we are unable to assess the relative audience shares achieved by programs that are closed captioned as a result of such programming being accessible to individuals who are hearing disabled.

58. We find that in recent years programming distributed by the national broadcast networks, both commercial and noncommercial, has generally been captioned. For example, virtually all prime time programs, children's programming, news, daytime programming and some sports distributed by the networks contain closed captions. Programming widely distributed by broadcast syndication is captioned. Local television stations in larger television markets are more likely to caption programming than other stations, especially local news broadcasts. Many of the national satellite cable programming networks include closed captions as do some local and regional cable programming services. In recent years, feature films produced in the U.S. that will be distributed by broadcast networks, cable networks, syndicators and local stations following their theatrical release are closed captioned at the production stage. In many cases, the cost of

¹¹⁵ City of St. Louis ("St. Louis") Comments at 2-3. This estimate is based on a cost of \$425 for each of the 40 three to four hour meetings a year and would not include an additional \$50 per hour to have an engineer available to ensure all goes smoothly.

¹¹⁶ St. Louis Comments at 3.

¹¹⁷ NAB Comments at 7.

captioning these types of programming represents only a small portion of the total production budget.

1. National Broadcast Television Networks

59. Broadcast television networks produce or acquire programming for distribution by their local affiliates. Until now, all closed captioning has been done on a voluntary basis, with the exception of emergency broadcast information¹¹⁸ and government funded public service announcements.¹¹⁹

60. PBS has been at the forefront in the development of captioning technology and services. PBS is a non-profit membership organization whose members are the licensees of public television stations. PBS has approximately 340 affiliates that reach almost all television households.¹²⁰ PBS began distributing closed captioned programs to its member stations in 1980. PBS has voluntarily adopted the practice of requiring producers to provide closed captioning in all programming funded by PBS's National Program Service. All children's programs and prime time programming on PBS are closed captioned. In addition, the *Newshour with Jim Lehrer* is closed captioned each evening. The few PBS programs that are not closed captioned are visually oriented (e.g., ballet or other dance performances), or are non-verbal in nature (e.g., a symphony concert). Non-English language operas are not closed captioned since they already contain open English subtitles.¹²¹

61. PBS Learning Media distributes videocassettes and video laser discs of PBS programs to educational users and the general public through PBS Home Video and PBS Video. Whenever a program is licensed to PBS for home and audio-visual distribution and is available with captioning, PBS Learning Media tries to include the captioning in the version it distributes. The PBS video educational collection has over 1200 titles in distribution, over 80% of which are closed captioned.¹²²

62. Each of the three oldest commercial broadcast networks -- ABC, CBS and NBC -- reach virtually all households through their approximately 210 affiliated local stations. The majority of programming on these three networks, including virtually all of prime time

¹¹⁸ See 47 C.F.R. § 73.1250(h). Under Section 73.1250(h) of our rules, emergency information must be transmitted "aurally and visually or only visually," although the method of visual presentation is left to the television station and could be accomplished by means other than closed captioning.

¹¹⁹ Section 711 of the Act, which was added by Title IV of ADA, 47 U.S.C. § 611.

¹²⁰ R. R. Bowker, A Reed Ref. Pub. Co., *Broadcasting & Cable Yearbook 1996* at G-73.

¹²¹ PBS Comments at 2.

¹²² *Id.* at 4.