

The Need for Federal Legislation and Regulation Prohibiting Telecommunications and Information Services Discrimination



National Council on Disability

1331 F Street, NW, Suite 850
Washington, DC 20004
202-272-2004 Voice
202-272-2074 TTY
202-272-2022 Fax

John R. Vaughn, Chairperson

December 19, 2006

Table of Contents

EXECUTIVE SUMMARY.....	1
I. Introduction.....	8
II. Federal Disability Safeguards.....	8
III. State Laws.....	11
IV. Competitive Marketplace Failures.....	12
V. Principles of Universal Service and Universal Design.....	13
A. Universal Service Obligation.....	13
B. Universal Design.....	16
VI. Emerging Communications Technologies.....	18
A. Benefits of High-Speed Broadband Internet Technologies.....	18
B. The Need for Legislative Safeguards in Light of New Regulatory Classifications.....	21
C. Barriers to Communications Access.....	26
1. Lack of Interoperable and Reliable Text Communications for E-9-1-1 Access.....	26
2. Barriers to TTY Compatibility and Accessibility.....	28
3. Inaccessible User Interfaces.....	29
4. Lack of Numbering Parity.....	30
5. Other Potential Access Barriers.....	31
VII. Video Programming.....	32
A. Existing Federal Safeguards.....	32
B. Potential Accessibility Barriers to Video Programming.....	33
1. Inaccessible Consumer Equipment.....	33
2. Barriers to Web Programming.....	35

3. Inaccessible User Interfaces.....	35
4. Lack of Equal Access to Existing Video Technologies.....	36
a. Lack of Video Description.....	36
b. Poor Captioning Quality.....	36
c. Failure to Effectively Enforce Mandates for Emergency Access.....	36
d. Ineffective Complaint Procedures.....	37
VIII. Recommendations.....	38
A. Communications Technologies.....	38
1. Extend general accessibility requirements contained in Section 255 of the Communications Act to Internet-based services: legislative and regulatory changes.....	38
2. Change the standard of compliance for Section 255 from readily achievable to undue burden: legislative change.....	40
3. Improve implementation and enforcement of accessibility safeguards: legislative and regulatory changes.....	42
a. Create a private right of action: legislative change.....	43
b. Improve FCC complaint processes: regulatory change.....	43
c. Require manufacturers and service providers to prepare “Accessibility Impact Statements:” regulatory change.....	44
d. Require periodic FCC reporting to Congress on status of accessible equipment and services: legislative change.....	45
e. Create a national clearinghouse on accessible products and services: regulatory change.....	45
B. Video Programming.....	46
1. Expand accessibility requirements to new apparatuses designed to receive or display video programming: legislative change.....	46
2. Clarify that existing captioning obligations apply to IPTV and other Internet video distributors: legislative or regulatory change.....	47

3.	Ensure the provision of video description by restoring the FCC’s rules and safeguarding the technology to receive and display descriptions: legislative change.....	48
4.	Require all equipment associated with the conversion from analog to digital programming to have accessibility features: regulatory change.....	48
5.	Require accessible interfaces to video and audio equipment used with all types of television devices, including those used with IPTV: legislative change.....	49
6.	Mandate standards of captioning quality: regulatory change.....	50
7.	Improve implementation and enforcement of the captioning mandates: regulatory changes.....	51
8.	Strengthen enforcement of FCC mandates requiring visual and audio visual and audio access to televised emergency information.....	
C.	Universal Service: legislative and regulatory changes.....	52
1.	Allow USF support for the provision of specialized customer premises equipment: legislative change.....	54
2.	Allow USF support for the provision of equipment used by people who are deaf-blind: legislative change.....	54
3.	Allow USF support for broadband subsidies to individuals (including Individuals with disabilities) with low incomes: legislative or regulatory change.....	55
D.	Americans with Disabilities Act.....	56
1.	Expand relay and USF funding base to IP-based providers: regulatory change.....	56
2.	Authorize Internet-based captioned telephone relay services and Mandate PSTN-based captioned telephone relay services: regulatory change.....	57
3.	Improve FCC oversight of Internet-based relay providers: regulatory change.....	59
4.	Require universal numbering for IP-based relay services: regulatory change.....	59

5. Clarify the ADA’s coverage of websites: legislative or regulatory change..... 60

E. Section 508 of the Rehabilitation Act – Expand requirements to federal contractors covered under Section 503 and federally financed programs and activities covered under Section 504..... 62

IX. Conclusion..... 63

The Need for Federal Legislation and Regulation Prohibiting Telecommunications and Information Services Discrimination

EXECUTIVE SUMMARY

This paper explores the need to adopt legislative and regulatory safeguards to guarantee equal access by people with disabilities to evolving high speed broadband, wireless and Internet-based technologies. Experience shows that as these technological innovations stake their claim in American society, market forces will not be sufficient to ensure such access. Rather, Congress, the Federal Communications Commission (FCC) and other federal agencies will need to step up to ensure that these communications technologies remain accessible to and usable by all Americans with disabilities. The National Council on Disability, an independent federal agency, prepared this paper pursuant to its statutory charge of providing recommendations to the President and Congress to enhance the quality of life for people with disabilities.

Existing Laws

In the past, Congress has responded to the failure of the marketplace to address disability needs with a string of laws designed to ensure telecommunications access, including laws requiring hearing aid compatibility, telecommunications relay services, closed captioning, and access to telecommunications products and services. States, too, have sometimes responded with regulatory measures to guarantee the free or discounted distribution of specialized customers premises equipment (such as TTYs), state relay programs, and discounted TTY rates. Unfortunately, gaps in existing laws, as well as their failure to keep pace with newer Internet-based and digital technologies have left people with disabilities vulnerable to being

excluded as these newer technologies dramatically change the way Americans communicate and receive information.

Existing laws governing telecommunications access generally have been founded on two principles: (1) *universal service*, a doctrine contained in the Communications Act that directs the FCC to ensure that all Americans have equal and affordable access to our nation's public wire and radio communication services, and (2) *universal design*, a tenet that encourages the design and development of products that are accessible to the greatest range of individuals, regardless of their ability or disability, without the need for any adaptation. The newer innovations addressed in this paper are particularly adaptable to principles of universal design because they largely rely on software that is easier and less expensive to modify for accessibility.

Benefits of Innovative Technologies and the Need for Disability Safeguards

Few would argue that emerging electronic and information service communications technologies can significantly enhance the integration and independence of people with disabilities. For example, high-speed broadband Internet technologies can provide users with multiple options for conversing, the ability to perform numerous functions through a single device, "always on" service, clear video communications, and software solutions for redundant interfaces and operational controls. However, these benefits will only accrue to people with disabilities if laws requiring the incorporation of accessible design are adopted now, when the costs and efforts associated with providing this access are still a mere fraction of the costs of producing mainstream products and services. The consequences of waiting too long will be severe: not only will retrofitting new products and services become far more expensive and burdensome; in the interim, there will be lost opportunities to and in

employment, education, governmental services, e-commerce and telemedicine. Moreover, the need for accessibility safeguards will only intensify in the coming years, as the nation's growing senior citizen population contributes to the expanding number of people with vision, hearing, cognitive and mobility disabilities who need such access.

Unfortunately, recent regulatory decisions by the FCC classify IP-based technologies as information services rather than telecommunications services, potentially removing these services from the scope of many federal laws that have been created to ensure disability access to our nation's communications systems. Although the FCC has explicitly extended certain other social obligations (including requirements to handle emergency calls and contribute to the Universal Service Fund) to providers of these information services, it has not done the same for its disability mandates.

Barriers and Recommendations

The real and potential consequences of not having disability safeguards for new Internet-based, digital, and video technologies are beginning to take their toll. Already we are witness to inaccessible user interfaces on consumer equipment, a lack of interoperable and reliable text transmissions, the lack of uniform dialing for IP-based relay users, and barriers to web programming. If left unattended, these and other obstacles could have the unintended consequence of rolling back years of legislative efforts to achieve equal communications access. To prevent this from occurring, disability access to modern communications and information technologies and services should be guaranteed, regardless of the form (text, video, or voice) or the transmission media (e.g., PSTN, IP, wireless, cable, or satellite; copper wire or fiber optic network; dial-up or high speed) over which such information or communication travels. To ensure that people with disabilities are not afforded second class

status as our nation leaps headlong into the next generation of electronic communications, this paper offers the following recommendations for legislative and regulatory reform:

Communications Access

Legislative or Regulatory Change

- FCC or Congress: Extend the telecommunications accessibility requirements of Section 255 of the Communications Act to Internet-based services and equipment. Disability safeguards under the new legal protections should include, among other things, accessible and compatible user interfaces on end user equipment; a common standard for reliable and interoperable text and video IP and wireless communications; redundant ways of controlling devices and services; and access to user guides and technical support associated with these offerings.

Legislative changes

- Improve the enforcement of all current and future communications accessibility safeguards by taking the following steps:
 - Create a private right of action for Section 255 and new mandates requiring access to IP services and equipment, so that consumers can seek redress in court;
 - Change the standard of compliance for Section 255 from readily achievable to undue burden , and apply the undue burden standard to new mandates requiring access to IP services and equipment to ensure higher levels of compliance efforts; and
 - Direct the FCC to periodically report to Congress on the status of accessible equipment and services, so that Congress and the FCC can adjust their mandates for communications access as necessary.

Regulatory Changes

- FCC: Improve implementation and enforcement of current and future accessibility safeguards by taking the following steps:
 - Require manufacturers and service providers to prepare “Accessibility Impact Statements” to document their efforts to incorporate universal design in their products and services; and
 - Revise complaint procedures to make these easier and more effective for consumers to use.
- FCC or NTIA: Create a national clearinghouse on accessible products and services to better inform consumers about their accessibility options.

Video Programming Access

Legislative or Regulatory Change

- FCC or Congress: Clarify that existing captioning obligations apply to IPTV and other types of multi-channel video programming services that are Internet-based.

Legislative Changes

- Expand closed caption decoder circuitry requirements to new digital and wireless apparatuses, including MP3 players, cell phones, and video recording and playback devices designed to receive or display digital and/or Internet-based video programming.
- Restore the FCC's video description rules and ensure that these apply to analog, digital, IPTV and other types of multi-channel video programming that are Internet-based.
- Create new mandates to ensure that digital, IP-based, and other modern video equipment have sufficient audio bandwidth to enable the transmission and delivery of video descriptions.
- All audio-video equipment: Require accessible interfaces on all types of analog, digital and IP-based devices used to transmit and deliver video and audio programming.

Regulatory Changes

- NTIA: Require access to all digital equipment used to convert digital transmissions to analog transmissions for Americans with analog TVs. This should include requirements for converter boxes to pass through captions and video descriptions intact, accessible menus and controls on these boxes and their remote controls, and the provision of an accessible means of ordering and acquiring these boxes.
- FCC: Mandate non-technical standards of captioning quality, including new requirements for accuracy, proper synchronization and caption placement, and expanded real-time captioning for local news programs.
- FCC: Improve implementation and enforcement of the captioning obligations by taking the following steps:
 - Require video programming providers to file periodic reports with the FCC detailing the level of their compliance with the captioning mandates;
 - Conduct periodic FCC audits to assess provider compliance;
 - Facilitate the filing of viewer complaints;
 - Accelerate the time for provider responses to those complaints; and

- Establish a schedule of penalties for non-compliance with the captioning mandates.
- FCC: Strengthen enforcement of mandates requiring visual and audio access to televised emergency information.

Universal Service

Legislative or Regulatory Changes

- FCC or Congress: Allow USF support for broadband services to low income individuals with disabilities, so that these individuals can choose between PSTN or broadband services when they are entitled to Lifeline and Link Up-type funding.
- FCC or Congress: Require all IP-based providers (not only interconnected VoIP providers, as is currently required) to contribute to the USF treasury.

Legislative Changes

- Allow USF support for the provision of specialized customer premises equipment.
- Set aside specific USF support for the provision of communications equipment used by people who are deaf-blind.

Americans with Disabilities Act

Legislative or Regulatory Changes

- FCC or Congress: Require IP-based providers to contribute to interstate relay funds.
- DOJ or Congress: Clarify that websites are covered under Title III of the ADA.

Regulatory Changes

- FCC: Authorize Internet-based captioned telephone relay services and mandate PSTN-based captioned telephone relay services.
- FCC: Improve oversight of Internet-based relay providers that are not covered by state administrative bodies.
- FCC: Require universal numbering for IP text relay and video-based relay services.

Section 508 of the Rehabilitation Act: Legislative Change

- Expand Section 508's coverage to entities that are otherwise covered under Sections 503 and 504 of the Rehabilitation Act.

I. Introduction

The astounding growth of new high speed broadband, wireless, and Internet-based technologies in recent years has begun to dramatically change communications in America. Previously reliant on traditional analog-based telephone services for all their telecommunication needs, Americans now have at their disposal a plethora of versatile Internet-based and digital communication technologies that offer innovative and creative ways to communicate and receive information in virtually every walk of life.¹ Improvements to our nation's communications technologies can have a liberating effect on the lives of people with disabilities by offering new opportunities for enhanced independence, increased mobility, and greater choices in products and services.² But such extraordinary benefits will only inure to these populations if the emerging technologies are designed to be accessible. As novel ways to exchange communication and information continue to radically change the way that Americans work, learn, shop, and participate in civic affairs, it is critical that Americans with disabilities, including individuals with functional limitations in their ability to see, hear, move around, or process information, have equal access to these technologies. The failure to implement this civil right could result in the creation of new barriers to millions of individuals in their efforts to obtain and retain employment, acquire education, conduct commerce, access electronic government services, and receive the most advanced health care. This could have the unintended consequence of rolling back years of legislative efforts to achieve equal telecommunications access, efforts that have been designed to foster the integration, independence, and productivity of people with disabilities.

In the years to come, the need for disability safeguards to preserve communications access will continue to intensify, as new medical advances enable people to live longer and remain

active in the workforce for greater lengths of time. By one estimate, the number of people over 65 living in America is approximately 35 million, or 12 percent of our population, and is expected to increase to 21 percent or 71 million people by 2030.³ This growth will be accompanied by a jump in the number of people with vision, hearing, cognitive and mobility disabilities who will need accessible communications products and services.⁴ For example, while an estimated 10 percent of people 64 and under have some level of hearing loss, this number jumps to 30 percent in people aged 65-74, and to 46 percent in people 75 and older.⁵ Similarly, 15 percent of the population between 65 and 74 report having difficulty with their sight, and for people 75 and older, this number increases to 21 percent.⁶

II. Federal Disability Safeguards

Our nation stands witness to nearly forty years of hard-fought advocacy by people with disabilities to win equal telecommunications access. The product of these efforts is a string of federal and state legislative and regulatory safeguards that were designed to ensure that people with disabilities would have equal opportunities to enjoy a host of communications products and services. Federal laws that have been enacted can be summarized as follows:⁷

- Telecommunications for the Disabled Act of 1982⁸ – permits states to authorize local telephone companies to subsidize the cost of specialized customer premises equipment (SCPE) used to facilitate telecommunications by people with disabilities with revenues received from telephone services; establishes requirements for “essential telephones” to be hearing aid compatible. The Act defines “essential telephones” as telephones provided for emergency use, coin-operated telephones, and telephones frequently needed for use by people with hearing aids. This latter category has been interpreted by the Federal Communications Commission (FCC) to include all telephones in the workplace, hotels, motels and nursing homes.
- Hearing Aid Compatibility Act of 1988⁹ – requires all telephones manufactured or imported for use in the United States after August 1989 to be hearing aid compatible. FCC rules implementing this section require all wireline and cordless telephones to emit sufficient electromagnetic energy to inductively couple with hearing aids, and to be equipped with volume control. In addition, certain wireless

telephones must be capable of coupling with hearing aids both inductively and acoustically.

- Telecommunications Accessibility Enhancement Act of 1988¹⁰ – requires the federal government to maintain an accessible telecommunications system, including the operation of a federal relay service for calls to, from, and within the federal government.
- Titles I, II, and III of the Americans with Disabilities Act of 1990¹¹ – impose obligations on private employers (with fifteen or more employees), state and local governments, and places of public accommodation, respectively, not to discriminate on the basis of disability, including the obligation to provide effective communication to employees, participants, and beneficiaries of these covered entities.
- Title IV of the Americans with Disabilities Act of 1990¹² – requires common carriers (telephone companies) to provide nationwide telecommunications relay services twenty four hours a day, with no limits on the length, number or content of calls. Relay services use third party operators to facilitate telephone calls by people who are deaf, hard of hearing, and speech disabled. Although now there are many variations of these services, generally a relay operator reads or interprets into sign language what the person with a disability types or signs to a hearing person, and types or signs responses back from the hearing party. Complete confidentiality of all relay calls is required, and users may not be charged extra for the cost of making relay calls above what voice users would pay to make a call of the same distance and duration.
- Section 255 of the Telecommunications Act of 1996¹³ – requires telecommunications manufacturers and service providers to make their equipment and services accessible to people with disabilities if readily achievable. If not readily achievable, these companies must make their products and services compatible with adaptive equipment used by people with disabilities when it is readily achievable to do so. Products covered under this section include, but are not limited to, wireline and wireless telephones, pagers and fax machines, as well as software integral to this equipment. Services that are covered include, but are not limited to, basic telephone service, call waiting, call forwarding, Caller ID, return call, speed dialing, repeat dialing, call tracing, interactive voice response systems, and voice mail.
- Section 251(a) of the Telecommunications Act of 1996¹⁴ – prohibits telephone companies from installing network features that are inconsistent with Section 255.
- Section 501 of the Rehabilitation Act of 1973¹⁵ – requires federal agencies to provide reasonable accommodations needed for individual qualified employees with disabilities to perform the essential functions of their jobs, unless doing so

would impose an undue hardship on the agency. Employees can use this section to request access to telecommunications and information services.

- Section 504 of the Rehabilitation Act of 1973¹⁶ – prohibits discrimination on the basis of disability in federal programs and activities that receive federal financial assistance, unless doing so would impose an undue burden on the program or activity. Under this section, program applicants, participants and beneficiaries may request and receive auxiliary aids and services needed to achieve effective communication and telephone access to those programs.
- Section 508 of the Rehabilitation Act of 1973¹⁷ – requires federal agencies to develop, procure, maintain, and use electronic and information technology that is accessible to federal employees and members of the general public with disabilities, so that the access provided to such individuals is comparable to the access available to people who do not have disabilities, unless an undue burden would be imposed on the agency. When compliance would impose an undue burden, agencies must provide alternative forms of access.

III. State Laws

Many states have also taken actions to ensure disability access to telecommunications products and services. Generally these efforts have fallen into the following categories:

- Relay services – Although the ADA places the obligation to provide telecommunications relay services on telephone companies, prior to the ADA many states had taken it upon themselves to voluntarily develop their own relay programs. After passage of the ADA, virtually all of these states – as well as those that still did not have relay programs – decided to operate and maintain their own relay systems on behalf of the telephone companies in their states. These programs generally are authorized by state statutes or regulations adopted by state public utility commissions. Each state operating its own relay system must certify to the FCC that it meets or exceeds the FCC’s minimum technical and quality relay standards, and that it has appropriate procedures and remedies for enforcing these requirements.¹⁸
- Discounted TTY rates – Generally it takes three to four times longer to complete a TTY call than it does to complete a call made over a conventional voice telephone. For this reason, in the late 1970s and early 1980s, nearly all states approved toll discounts for long distance calls made by their residents who used TTYs. In addition, various long distance telephone companies also reduce fees associated with calls made with TTYs or over telecommunications relay services.
- Equipment distribution programs – A little over half the states have programs that provide for the free or discounted distribution of SCPE, such as TTYs, light signalers, and artificial larynxes, to qualifying residents of their states. However,

most of these programs impose income and other eligibility requirements, and have only limited program funds at their disposal. The vast majority also continue to supply only devices that can be used with wireline services or that are capable of accessing emergency 9-1-1 services. Missouri is one of the few, if not the only, state that distributes specialized equipment to facilitate Internet access and electronic mail by people with disabilities, including screen readers, screen magnification devices, speech recognition technology, and adaptive keyboards.¹⁹

IV. Competitive Marketplace Failures

One of the reasons that lawmakers have seen the need to adopt legal safeguards for telecommunications access in the past is that competitive market forces never have proven sufficient to guarantee the provision of this access. Although it would seem that collectively, the estimated 54 million Americans who have disabilities would be sufficient to exert the necessary market pressures to sway the telecommunications industry's practices, when divided by their distinct disabilities, this population is broken up into much smaller segments, each with their own functional differences and accessibility needs. In the past, these individual groups have been too small to have much influence over the types of products and services that companies seek to mass market. In addition, because people with disabilities, on average, earn lower incomes than the general public, they have had fewer dollars to significantly impact competitive trends. Moreover, in the past, some people with disabilities have been reluctant to acquire mainstream communications products at all because the adaptive equipment needed to make these devices work for them has been too expensive.²⁰

The failure of the market to ensure equal and timely disability access to communication technologies has had severe consequences in our nation's telecommunications history. In the 1920s, the introduction of talking motion pictures without captions took away one of America's favorite pastimes from people with hearing loss, who had long enjoyed silent movies with their hearing peers. In the 1960s and 1970s, the introduction of new, sleeker and less expensive telephone handsets (including *Trimline* phones) nearly eliminated the ability of

people who used telecoil-equipped hearing aids to communicate by telephone because these newer devices failed to emit the electromagnetic energy needed for telecoils to block out background noise and disconcerting feedback otherwise caused by the hearing aid's microphone.²¹ In the 1980s, the replacement of computerized text with graphics, then inaccessible to all screen readers (devices that can read text and deliver its content to a Braille display or speech synthesizer), threatened to remove access to computerized information by people who were blind. And in the 1990s, the sudden growth of digital wireless telephone technologies all but put a halt to mobile telephone access by TTY and hearing aid users, both of whom had previously been able to use analog wireless equipment for their mobile communications.

V. Principles of Universal Service and Universal Design

The legislative and regulatory response to these and other market failures has been strong and consistent. The disability statutes described above have consistently received widespread Congressional and bipartisan support, even where Congress has otherwise opted to impose few regulatory mandates in order to foster competition and innovation. Many of these laws were founded upon one or both of two principles: the universal service obligation and the principle of universal design.

A. Universal Service Obligation

Section 1 of the Communications Act of 1934 directs the FCC to “make available, so far as possible to all the people of the United States . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable

charges”²² For nearly twenty-five years, this “universal service obligation” has served as the cornerstone for our nation’s efforts to ensure that people with disabilities are able to enjoy the benefits of modern telecommunications introduced to American society.

The very first time that Congress relied on the universal service doctrine to require telecommunications access was in the Telecommunications for the Disabled Act of 1982 (TDA), landmark legislation that responded both to the telephone industry’s decision to stop producing telephones that were capable of coupling with hearing aids, and to the impact that telephone deregulation resulting from the divestiture of AT&T and related FCC orders would have on people with disabilities. Specifically, passage of the TDA was largely a response to the FCC’s Computer II rulings, which prohibited the Bell Operating Companies from subsidizing the cost of any new end user telephone equipment with revenues from local telephone services. The intended purpose of this regulatory action was to foster competition and eliminate the unfair advantage that local telephone companies would have by subsidizing – and thereby reducing the costs of – manufacturing and selling new telephone products. However, because the rulings meant that telephone companies would have to discontinue their practice of cross-subsidizing specialized equipment as well, it was feared that people with disabilities would be forced to pay the full and sometimes very high costs of this equipment. In the TDA, Congress recognized that the disability market would not be strong enough to constrain these prices on its own, and therefore, authorized local companies to continue using telephone service revenues to offset the high costs of SCPE:

For most ratepayers, deregulation may indeed ensure a competitive market in telephone sets and eliminate subsidies for such sets from local rates. For the disabled, however, the ban on cross-subsidization could mean unregulated price increases on the costly devices that are necessary for them to have access to the telephone network.²³

Congress explained that allowing people with disabilities to lose access to the telephone would “disserve the statutory goal of universal service,” and that “[t]he costs of such lost access, including impairment of the quality of life for disabled Americans, [would] far exceed the costs of maintaining service that the current system allow[ed] telephone companies to include in their general revenue requirements.”²⁴

Congress’s reliance on the universal service obligation in this law set the stage for several subsequent pieces of disability access legislation, including those requiring additional telephone access by people with hearing aids, telecommunications relay services, televised closed captioning, and accessible telecommunications products and services. For example, six years after enactment of the TDA, Congress again invoked the universal service obligation in the Hearing Aid Compatibility Act of 1988 when it established the right to equal telephone access by further expanding the hearing aid compatibility obligations. The House Committee’s Report on this statute explained: “Our nation’s public policy goal is equal, universal telephone service for all Americans. This legislation endeavors to ensure that all hearing impaired persons will have complete access to the telephone network.”²⁵ The Committee later added that “[u]niversal compatibility and equal access by the hearing impaired to the telephone network follow from the [universal service provision of the] Communications Act of 1934. . . Advances in technology have made communication possible and it is time that hearing impaired persons are included in ‘all the people.’”²⁶

Congress’s mandates for both federal relay services, as contained in the Telecommunications Accessibility Enhancement Act (TAEA), and nationwide relay services, as embodied in Title IV of the Americans with Disabilities Act (ADA), similarly relied on its commitment to fulfill the FCC’s universal service obligation. For example, Senator McCain, lead sponsor of the

TAEA, borrowed language directly from this mandate when, in introducing this bill, he emphasized its intent to make a rapid, efficient nationwide telecommunications system available to “*all* the people of the United States.”²⁷ Senator McCain commented on the many technological advances that remained inaccessible, and insisted that it was “the responsibility of the Federal Government to lead the way in seeing that the technology is utilized to the fullest extent possible” by people with disabilities. Along the same lines, the language of Title IV of the ADA itself incorporates the universal service mandate:

*In order to carry out the purposes established under section 1, to make available to all individuals in the United States a rapid, efficient nationwide communication service, and to increase the utility of the telephone systems of the Nation, the Commission shall ensure that interstate, and intrastate telecommunications relay services are available, to the extent possible . . .”*²⁸

B. Universal Design

The federal telecommunications access laws that have been enacted to date reflect Congress’s overwhelming desire to ensure that people with disabilities are not left behind as our nation’s communications technologies continue to evolve. But they also reveal the general reluctance within the telecommunications industry to incorporate access features unless explicitly directed to do so. What is unfortunate is that more often than not, when market pressures do fail to produce accessible products and services, people with disabilities typically discover the lack of accessible design only *after* the new technologies have been introduced to the general public. It then becomes expensive and burdensome to retrofit these products or services, if retrofitting is at all still feasible. Where retrofitting is no longer practicable (such as is the case with conventional voice telephones, which remain inaccessible to people who are deaf), adaptive or assistive technologies (in the case of the telephone, TTYs and telephone light signalers) become necessary as “add-ons” to make these devices usable by people with

disabilities. But these specialized and often external products are frequently expensive, difficult to find in retail stores, more stigmatizing, and not as effective as mainstream products. Moreover, the rapid pace of technological change often outpaces the utility and compatibility of these adjunct appliances. This occurred, for example, when digital wireless telecommunications companies discovered only after they spent considerable time and money retrofitting their cell phones for TTY access – having failed to initially incorporate this access – that most deaf individuals no longer used this form of mobile communications. By the time these companies finally developed an effective digital wireless TTY solution, this constituency had migrated to pagers and other wireless data technologies, leaving only small numbers of individuals to take advantage of the costly retrofits that had taken years to achieve.

The National Council on Disability's (NCD's) report, *Design for Inclusion: Creating A New Marketplace*, explains that principles of universal design eliminate these hazards, by producing products, services, and facilities that are designed from their inception to be accessible to and usable by the greatest range of individuals, regardless of their ability, without the need for specialized adaptation.²⁹ Indeed, when greater efforts are made to incorporate access features into IP technologies at the outset, both consumers and industry benefit in the end: the costs of incorporating access are cheaper and the products more usable and efficient. Universal design has the added benefits of producing attractive products that are easier to use and offer greater flexibility for the general population. For example, cell phones with vibrating alerts to assist people who are hard of hearing also enable people who can hear to be alerted to incoming calls in a quiet environment. Closed captions, also primarily intended for people with hearing loss, allow everyone in noisy locations, including

restaurants, airports and health spas, to follow a program's content.³⁰ Talking Caller ID features, created for people who cannot see, allow a person who is making dinner in one room to know who is calling when the phone rings in the next. And audio tones on television programming, used to signal emergencies for people with vision loss, alert individuals in other parts of the house that there may be an urgent situation that requires their attention. The flexibility and versatility of new digital and Internet-based technologies makes them particularly adaptable to principles of universal design. Because these technologies largely rely on software, incorporating access features is easier and less expensive than had been possible with many previous telecommunications technologies.³¹ This is especially the case when accessible design is considered during the early stages of these products' and services' design and development. As noted by NCD, other aspects of technological advancements, including increased processing power, memory capacity, disk storage and longer battery lives, can also help to facilitate accessibility in new generations of products where this once was not feasible.³²

VI. Emerging Communications Technologies

A. Benefits of High-Speed Broadband Internet Technologies

If designed to be accessible, many of the information technologies that are now emerging can level the playing field for people with disabilities at home, at school, in the office, and on travel, allowing greater integration, privacy, and self-sufficiency. Several specific benefits associated with new IP-enabled services have been identified as follows:³³

Choice of Conversational Modes – IP services allow individuals who can perform some functions but not others, to choose their preferred communication method. In addition to being able to select from among voice, text, and video formats at the start of a conversation, these digital technologies allow consumers to move between and among various

communication methods during a single conversation, as best suits their needs at any given time. An individual may, for example, begin a conversation using her residual hearing, and then change to text when the called party's responses become too difficult or complex to hear.

Always on – High speed broadband technologies have the advantage of being “always on.”³⁴ This can help to alleviate the isolation experienced by many people with disabilities, and enable people who are blind or otherwise limited in their access to print materials, to have a readily available supply of information in an accessible format.

Multiple Features in a Single Device – Technological advances are enabling companies to produce enhanced products that provide multiple functions, including high speed Internet access, television programming and voice and data services, all through a single piece of equipment. For example, cellular phones are already adding web access and entertainment features that include MP3 players and video recording capabilities to their routine telephone functions. Some companies talk of using interactive programming guides that are activated remotely through single devices to transmit data at dramatically high speeds, offer high quality interactive audio and video communications, and distribute a plethora of high definition programming through fiber optic cables and optical electronics that are linked directly to the home.³⁵ Others tout plans to offer hundreds of television channels and video-on-demand movies through devices that will provide “whole house DVR,” a feature that lets consumers watch a show that is recorded on a digital video recorder in one part of the house on any of the televisions in that house. Single video products will also be programmable with cell phones, allow consumers to order products from the Internet while watching TV, and permit consumers to choose their camera angles when viewing live programs.³⁶

Video Communications – High speed broadband Internet services permit clear video communications to take place, enabling peer-to-peer signing, video relay services (for communications between people who sign and those who do not), and remote interpreting (for sign language interpretation from a distant location, when it is not practical or possible to have in-person interpreting). For deaf individuals whose first or primary language is American Sign Language (ASL), the opportunity to communicate over distances, in the language in which they are most conversant, is unprecedented. For the first time, these individuals can enjoy real-time, naturally flowing conversations that can be enriched with emotional content. Video communications are also useful to individuals with speech disabilities who have insufficient motor skills to type, but whose speech can be supplemented by visual cues such as gestures and facial expressions.

Two-Way Text Channels – Voice over Internet protocol (VoIP) telephone services are beginning to replace analog-based public switched voice telephone services for hearing people. Functionally, the new services are quite similar – VoIP calls are made from one person to another in real-time, using a telephone-type device. While not yet developed, VoIP technologies would permit direct, real-time conversations in *text* between two people, each of whom could have a screen and a keyboard on their IP end-user equipment. Once available, this technology could significantly reduce the need for text-based relay services.

On Demand Call Assistance – At present, most individuals who need assistance for their telephone calls – be it relay assistance, sign language interpretation, or captions – acquire that assistance at the start of a call, and throughout the call.³⁷ IP-enabled services can allow individuals with disabilities to invoke the assistance of these and other services at

various points during a telephone call, only as needed. This can significantly cut expenses associated with providing assistance for an entire conversation.

Virtual Assistive Technology – IP technologies have the potential to enable phones to meet the individual needs of people with disabilities – for example through software that is available on a server – without actually changing the hardware or software on the phones themselves. In this manner, the telephone can perform in its regular mode for those in the general population who wish to use it, and provide specific accessibility features only when needed.

B. The Need for Legislative Safeguards in Light of New Regulatory Classifications

As reliance on Internet-based and other digital technologies in American society grows, so too will the adverse consequences of denying access to these technologies by Americans with disabilities. A recent report prepared by the Leadership Conference on Civil Rights notes that “[t]he Internet is rapidly becoming a primary medium for communications, commerce, education, entertainment and finding jobs. Future economic, education, community participation and political advancement may depend on access to computers, the Internet and broadband technology.”³⁸ Indeed, the new and diverse IP innovations that can offer so much promise can just as easily result in isolation, disenfranchisement, and greater dependence, if they are not designed to be accessible. As ever expanding segments of our society go on-line to deliver essential products and services, barriers erected to these offerings will widen economic gaps and hinder the full participation of people with disabilities in societal affairs.

Unfortunately, the very laws designed to ensure that people with disabilities are *not* left behind in the information age have been unable to keep up with the remarkable speed at

which new communication technologies are being introduced and deployed in America. New FCC regulatory classifications of IP-based technologies mean that many of the existing statutes that cover only telecommunications equipment and services may never reach the innovative Internet-enabled technologies that have begun to revolutionize our everyday lives.

By way of example, Section 255 of the Communications Act directs telecommunications manufacturers and service providers to design and develop equipment and services that are accessible to and usable by people with disabilities. Elsewhere, the Act defines “telecommunications” as “the transmission, between or among points specified by the user, of information of the user’s choosing, without change in the form or content of the information as sent and received.”³⁹ By contrast, “information services,” which generally have *not* been covered by Section 255’s protections, are defined as “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications.”⁴⁰ These two classifications correspond to prior distinctions between “basic” and “enhanced” telecommunications services, originally laid out by the FCC’s Computer II rulings released in the late 1970s.⁴¹ Back then, basic services were defined as those which enabled users to transmit pure ordinary language messages from one point to another, without computer processing or any storage of the information sent, for example via a telephone or fax. By contrast, the Computer II rulings considered enhanced services to involve computer-processing applications, such as protocol conversion or data storage services, that somehow manipulated or changed the form of the information sent.⁴²

In recent years, the FCC has struggled with whether Internet-based services provided over cable modem and telephone wireline facilities should be considered

“telecommunications services,” which are subject to legacy regulations contained in Title II of the Communications Act (regulations that apply to telephone companies), or whether these should more appropriately be classified as “information services” that are exempt from such rules. Disability advocates, concerned that the latter classification would relieve these technologies from the accessibility mandates prescribed by Section 255, have urged that the Commission’s decision in this regard should focus on the function of these services, rather than their form.⁴³ Groups like the Rehabilitation Engineering Research Center on Telecommunications Access, jointly operated by Gallaudet University and the University of Wisconsin’s Trace Research and Development Center, have argued that where IP-enabled services achieve communications that are functionally similar to communications provided over traditional telephony services, the services need to be subject to the same accessibility obligations as telecommunications carriers, regardless of the form (text, video, or voice) or the transmission media (PSTN, IP, wireless, cable, or satellite; copper wire or fiber optic network; dial-up or high speed) over which the communications travels. They have pointed out that Section 255 could not have been intended to only require access to conversations using speech; rather it was the intent of Congress to ensure access to all types of conversations, no matter what form these took. Internet services, they have insisted, blur distinctions among different types of voice, video and data capabilities, and artificial classifications based solely on the underlying technology can cause confusion for people with disabilities, who must know when access is or is not required.

Although sensitive to the need to ensure disability access to new communication innovations, in 2002 the FCC’s overriding interest in minimizing regulation to promote innovation and competition among Internet providers resulted in a ruling that classified all

cable modem broadband Internet services as information services.⁴⁴ At around the same time, a separate FCC ruling classified the transmission component of broadband services offered over telephone lines via DSL as telecommunications services. The uneven treatment applied to these two types of broadband services was challenged in federal court, and in 2003, the Ninth Circuit Court of Appeals overturned the FCC's classification of cable broadband service as an information service.⁴⁵ On further appeal, however, in what has come to be known as the *Brand X* case, the United States Supreme Court reversed the Ninth Circuit, and upheld the FCC's original decision to treat phone and cable Internet networks differently, as well as its decision to classify broadband cable modem service as an information service.⁴⁶ Only a few months after the Supreme Court released its decision, the FCC, in an effort to achieve a "consistent regulatory framework" and apply a "lighter regulatory touch," issued yet another order that changed its original classification of broadband Internet access service provided over wireline facilities from a telecommunications service to an information service.⁴⁷ The outcome of all of these decisions and orders is that *all* Internet-based services are now classified as information services, and potentially removed from the scope of all regulations promulgated pursuant to Title II of the Communications Act, including Section 255's mandates for disability access.

However, the matter does not end here. In recent years, the FCC also has begun drawing distinctions between those of its Title II rules that impose social obligations and those that set forth economic guidelines. Using its "ancillary jurisdiction," a doctrine that allows the Commission to exercise its authority over matters that are not expressly within a particular statutory mandate but which are sufficiently related to the underlying purposes of that mandate, the FCC has decided to apply some of Title II's social obligations to specific IP-

based technologies – even where the covered entities are otherwise exempt from Title II’s economic regulations. For example, the FCC has used this legal analysis to adopt orders requiring interconnected VoIP service providers to handle enhanced 9-1-1 emergency calls,⁴⁸ to make their systems available to electronic surveillance by law enforcement authorities under the Communications Assistance for Law Enforcement Act,⁴⁹ and to contribute to the universal service fund.⁵⁰

Although the FCC has not yet decided whether Title II’s obligations to provide disability access should similarly extend to VoIP providers, on at least one prior occasion, the Commission did use its ancillary jurisdiction to apply the mandates of Section 255 to two types of information services. Specifically, in 1999, when the Commission first promulgated protections under this section, it extended Section 255’s safeguards to interactive voice response systems and voice mail services, even though neither of these services were considered telecommunications services.⁵¹ The FCC explained that the failure to ensure the accessibility of these services, as well as the equipment that performed its functions, would “seriously undermine the accessibility and usability of telecommunications services required by sections 255 and 251(a)(2).”⁵² This was because the barriers created when these systems were not accessible made it “extremely difficult for people with hearing, vision, or physical disabilities to either reach the party to whom they have placed the call or to obtain the information they seek in their phone call.”⁵³ Although, in its orders on IP-enabled services, the Commission has acknowledged this prior use of its ancillary jurisdiction over these “critically important information services,” to date, it has stopped short of again using this jurisdiction to apply Section 255’s mandates to other IP-related services or equipment. Rather, the FCC has said that it is continuing to review this issue, and that it promises to

“remain vigilant in monitoring the development of wireline broadband Internet access service and its effects on the important policy goals of Section 255.”⁵⁴

C. Barriers to Communications Access

Just as voice telephone users have begun replacing basic telephone services over the PSTN with VoIP services, since the turn of the century deaf and hard of hearing Americans have been trading in their reliance on landline TTY transmissions for text and video services carried over high speed Internet services and wireless data services that offer paging, text messaging, and electronic mail options. While in many ways these new technologies have opened up a world of communication opportunities for people with hearing loss, several obstacles are making this access less than complete. The need to adopt safeguards that will ensure access by people with disabilities to IP-enabled services and new digital technologies is evidenced by the following actual and potential accessibility barriers.

1. Lack of Interoperable and Reliable Text Communications for E-9-1-1 Access

Since the introduction of the telephone, hearing people have been accustomed to communicating in real-time: as one party to a call speaks, the receiving party hears that person, and can respond or interrupt as needed. The migration of voice telephone conversations to voice over IP technologies has not changed this for voice telephone users. Indeed, except for a change in the transmission path, the shift to VoIP and other IP-based communications has been both seamless and transparent for these users; regardless of the equipment used, they have been able to have the same type of real-time conversations that they previously enjoyed over the PSTN.

Like conventional voice conversations over the PSTN, TTYs permit real-time transmissions. Although TTYs using Baudot technology employ a half-duplex mode, only allowing

communication to flow in a single direction at a time (requiring each party to a call to take turns when communicating), because TTY transmissions travel over the same voice channel as is used by hearing people, PSTN-based TTY communications allow each person's message to appear on the TTY receiving that message character by character, as it is typed. However, unlike newer VoIP technologies, the IP industry has not yet developed a consistent and reliable protocol for carrying real-time interactive text over IP data networks. For example, wireless data (paging) and instant messaging networks upon which people who are deaf now rely, require one party to complete a message before that message – in its entirety – can be sent to its recipient. In other words, in the IP and data environment, these individuals no longer have the same ability to communicate by text in real-time as hearing people have to communicate by voice.

The need for this type of communications equality becomes especially acute in emergency situations when a real-time connection can provide the type of instantaneous exchange that can mean the difference between life and death. Without real-time communications, the exchange of messages between a PSAP and a frantic caller can become very confusing: messages can be dropped, or overlap one another and appear out of order. Moreover, 9-1-1 emergency centers – also called public safety answering points (PSAPs) – do not have the equipment needed to receive calls from people who use wireless data, IP-text, or video-based technologies. Nor can information about the location of a person using one of these technologies be passed through to PSAPs.

Although various standards bodies, including the International Engineering Task Force, the International Telecommunications Union, and the Telecommunications Industry Association, have explored devising standards for text-based real-time communications, the

solutions that each has developed have not been consistent nor compatible with one another. If left unregulated, and inconsistent text solutions are allowed to proliferate among different segments of the industry, emergency authorities will be left having to handle communications in competing text formats. The lack of a mandated or uniform standard could also produce a lower quality of service than that which is provided for the conveyance of voice over IP technologies, resulting in the loss of text calls in times of heavy Internet usage. A seamless and interoperable communications system is critical in an emergency, when all Americans need to be able to reach one another, regardless of the providers or equipment that they use.

A number of federal laws already require access to emergency services by people with disabilities. Department of Justice regulations promulgated under Title II of the ADA require all 9-1-1 local emergency services to be directly accessible to TTY users.⁵⁵ FCC rules implementing Title IV of the ADA also require all relay services carried over the PSTN to be capable of handling emergency calls.⁵⁶ Similarly, the FCC's enhanced 9-1-1 wireless rules mandate that TTY users be able to make direct TTY calls to 9-1-1 centers over wireless services.⁵⁷ However, all of these legal requirements grew up in a telecommunications environment that was dependent on the PSTN. None explicitly cover emergency communications that take place over wireless data communications, instant messaging, e-mail or Internet-based text and video communications. As a consequence, deaf and hard of hearing individuals who have abandoned their landline TTY phones in favor of these more modern data and Internet based technologies remain without any laws to guarantee them an appropriate means of directly accessing emergency authorities. This lack of regulatory guidance contrasts with the FCC's directive for interconnected VoIP providers to make

E-9-1-1 services available to *voice telephone* users.⁵⁸ The Commission justified this VoIP directive on the need to fulfill the nation's longstanding commitment to "a nationwide communications system that promotes the safety and welfare of all Americans."⁵⁹ But our nation has a similarly longstanding obligation to ensure emergency access by individuals with disabilities.

To remedy this situation, in the spring of 2006 a new coalition of consumers, public safety authorities, and telecommunications providers – called the E-9-1-1 National Council of Stakeholders – launched efforts to secure a coordinated federal response to providing people who are deaf, hard of hearing or have speech disabilities emergency access through emerging IP and wireless data technologies. On September 5, 2006, the group formally called upon the FCC to require both direct access to emergency services by people with hearing or speech disabilities using video and text communications, and indirect access through IP and video relay.⁶⁰ In that request, the group explained that "where E-9-1-1 voice capabilities exist, data/text and video capabilities must exist as well, and these capabilities must include the same features that are available to voice users, including location identification and call-back information." Because achieving this goal will necessarily involve a plethora of policy and technical issues, the Council urged the active involvement of E-9-1-1 authorities, federal agencies, service providers, equipment manufacturers, and consumers with disabilities in resolving this issue. The FCC responded by pulling together these various stakeholders at an FCC summit on these issues on November 15, 2006.⁶¹

2. Barriers to TTY Compatibility and Accessibility

Although TTY use is steadily declining among deaf and hard of hearing Americans, individuals with hearing loss who live in rural or other areas who do not have wireless data or

broadband service in their communities, or who have incomes that are too low to afford these alternative services, still rely on TTYs as their primary mode of communication. For these persons, achieving compatibility between TTY and IP technologies remains important; yet a number of potential barriers to achieving this access have already been identified. To begin with, VoIP equipment may not always have the right sized jack for achieving a direct connection with a TTY. Even if a connection is achieved, concerns exist about the extent to which TTY signals are accurately transmitted over the packet-switching technology used by Internet technologies. Although some packet loss that naturally occurs in Internet transmissions will not affect voice conversations, even low levels of packet loss can produce TTY garbling and other transmission errors. In addition, compression technologies often used over the Internet can distort TTY signals. So long as certain individuals remain dependent on this technology and TTYs continue to provide the only effective text method of communicating with emergency authorities, it will be necessary for IP text communications to support compatibility with analog TTY products, to the same extent that IP voice telephony products are compatible with analog PSTN voice telephony products.

3. Inaccessible User Interfaces

As noted above, one of the many advantages of IP-enabled products is that they can offer access to multiple applications through a single piece of equipment. But as the functions of these and other electronic devices grow in complexity, the ability of people with disabilities to control or “interface” with their operations increasingly becomes an issue. Already, many new digital and IP-based products have touch screen, “soft-button,” or graphical interfaces that are difficult or impossible to identify by people who have vision loss. In addition to not being able to feel the location of each button, if the button is dynamic – that is, if its function

changes each time it is pressed – a person who cannot see it will be unable to ascertain what it controls at any given time. Similarly, miniaturized keypads on portable electronic products are often difficult to navigate by individuals with limited manual dexterity or vision loss.⁶² And complex or non-standard keypads may pose problems for individuals with cognitive disabilities, including many older Americans.

4. Lack of Numbering Parity

Internet-based text relay services (IP relay) and video relay services (VRS) offer significant advantages over TTY-based relay services. IP relay allows users to access relay services over the Internet with the use of computers, PDAs, or any other IP-enabled device, thereby providing increased mobility and flexibility. In addition, callers who previously had to wait for one side of a conversation to be completed before responding on a half-duplex TTY can now send text simultaneously, resulting in an experience far closer to conventional voice telephone calls. For people who use sign language, VRS offers naturally-flowing conversations that emulate the speed and style of conventional voice conversations. Because VRS calls take place in real-time, they also allow callers to participate in conference calls and use interactive telephone menus.

Despite the benefits of these innovative relay technologies, they lack a consistent or uniform numbering scheme for the receipt of incoming calls. Unlike conventional voice telephone users, who can dial simple seven and ten digit numbers linked to the North American Numbering Plan to reach their parties, persons wishing to contact Internet relay users generally have to first figure out their destinations' "dynamic" IP addresses, i.e., temporary addresses assigned by Internet service providers that change on a regular basis. Although some VRS providers have created identification systems that cross reference these dynamic

addresses to pseudo telephone numbers or extensions, even these are not uniform across VRS providers, and therefore require VRS users to list multiple ways of being contacted if they wish to receive a return call from a hearing person. The resulting complex and confusing arrangement discourages calls from hearing individuals, who must have “dialing” information specific to the provider used by each party they are calling, in order to complete their calls. The consequences of not having a uniform numbering scheme is demonstrated in relay call volumes. With the exception of a particular brand of IP relay that is achieved through instant messaging (wherein the caller again dials a pseudo number that is linked to the recipient’s IP address), incoming voice calls to IP relay users are virtually nonexistent. Similarly, although VRS calls initiated by deaf and hard of hearing individuals have soared over the past two years, calls from hearing people to deaf VRS users have hardly risen, and presently account for scarcely 1-2 percent of all VRS minutes. The lack of a nationwide VRS numbering system also creates considerable problems for peer-to-peer video users, who have no consistent or uniform means of calling one another.

5. Other Potential Access Barriers – In addition to the above accessibility issues that may arise with the introduction of emerging IP technologies, the following should be monitored to ensure equal access by people with disabilities:

- Hearing Aid Compatibility – Federal law requires all wireline and certain wireless telephones to be compatible with hearing aids. The extent to which these requirements apply to IP phones remains unclear.
- Call Signaling – Some IP telephone products do not have the software needed to activate a visual or vibrating signal when a call comes in. In addition, it is not clear whether distinctive audio signaling, used to allow recipients to differentiate among

different types of calls or messages, are accessible to people who are deaf and hard of hearing.

- Speech Quality – People with hearing loss may have a hard time understanding speech that is compressed or subject to significant packet loss in an IP environment. This type of barrier can also pose a problem for people with speech disabilities who may have trouble making themselves understood by others.
- 7-1-1 Access to Relay Services – FCC regulations require all common carriers providing telephone voice transmission services to enable their customers to use 7-1-1 dialing to access relay services.⁶³ Although the use of this simple relay gateway has been shown to augment calls by both hearing people and people with hearing or speech disabilities, the extent to which the FCC’s 7-1-1 mandate covers relay calls initiated by IP-enabled services is unknown.

VII. Video Programming

A. Existing Federal Safeguards

In addition to those laws that cover communications access, several federal laws specifically require access to video programming. These include:

Television Decoder Circuitry Act of 1990⁶⁴ – requires all televisions manufactured or imported into America with screens thirteen inches or larger to be capable of displaying closed captions. The FCC has also applied this mandate to computers equipped with television circuitry that are sold together with monitors that have viewable pictures at least thirteen inches in diameter,⁶⁵ and digital televisions (DTVs) that have screens measuring 7.8 inches vertically (approximately the equivalent of a 13-inch diagonal analog screen).⁶⁶ Also covered by this obligation are all stand-alone DTV tuners and set top boxes, regardless of the screen size with which these are marketed or sold.

Section 713 of the Communications Act⁶⁷ – requires television video programming distributors to provide closed captioning on their analog and digital television shows according to a schedule of deadlines established by the FCC. Most categories of programming are covered, though exemptions are available where the provision of captioning is economically or unduly burdensome for the video programming provider or program

owner. Also exempted are advertisements under five minutes, public service announcements under ten minutes (unless federally funded or produced), programs shown between 2 a.m. and 6 a.m., locally produced instructional programming that is distributed to individual educational institutions, locally produced and distributed programs with limited repeat value (for example, parades and local school sports), non-vocal music, and programs in languages other than English or Spanish. The FCC has also relied on this section of the Communications Act to promulgate requirements for visual and audio access to emergency televised programming, discussed in more detail below.

Individuals with Disabilities Education Act⁶⁸ – provides limited funding for closed captioning and video description for television programs that are “of educational value in the classroom setting to children with disabilities.” Video description is a technology that inserts narrative verbal descriptions into the natural pauses of television programs to improve access to that programming by individuals who are blind and visually impaired. Funding is only provided when closed captioning and video description services are not otherwise provided by the program’s producer or distributor, or funded through other sources. This law also makes available financial support for access to “new and emerging technologies” including “CDs, DVDs, video streaming and other forms of multimedia,” and establishes a system for the production of student textbooks in a standardized electronic file format, which can be used to convert books into accessible formats, including Braille, large print or electronic text.

Title IV of the Americans with Disabilities Act⁶⁹ – requires all federally funded or produced public service announcements to contain closed captioning.

B. Potential Accessibility Barriers to Video Programming

The video programming access that has come about as a result of the above statutes has dramatically enhanced the lives of people who are deaf and hard of hearing, by providing cultural and educational experiences that have helped to end isolation and facilitate integration into society. For this reason, it is critical that the access protections that have already been put into place are safeguarded as video programming undergoes major overhauls – from analog to digital service, from being carried by broadcast, cable or satellite signals to also being widely available over the Internet, from programming that is viewable on conventional television sets to that which is available on IP-enabled and wireless devices of every shape and size. Unfortunately, the following barriers to full television access provided by new, next generation technologies are already beginning to surface.

1. Inaccessible Consumer Equipment

Consumers can now receive and watch video programming over a large array of devices, including cell phones, PDAs, computers, portable MP3 players, and various types of analog and digital televisions and digital recording and playback appliances. Many of the newer devices in this group were not, and could not have been, envisioned when Congress contemplated the Decoder Circuitry Act's requirements to incorporate captioning capability only in analog televisions with screens thirteen inches or larger. Even digital televisions – the closest counterpart to their analog predecessors – do not fit our concept of a traditional “television set.” Although these sets are in fact available in integrated units, quite often their DTV tuners and screens are sold as separate components. Set-top boxes to receive cable or satellite signals, and/or recording and playback appliances to capture programs for future viewing are then often added to these appliances. For individuals reliant on antennas to receive analog television signals (as opposed to receiving these transmissions via a cable or satellite service), digital to analog converter boxes will be needed after February 2009, when television stations must cease broadcasting analog transmissions. At any step along this video journey, disability access (whether provided through captioning, video descriptions or accessible interfaces) could be compromised if accessibility protections are not in place. Concerns have already been raised with respect to the set-top boxes that will be used to convert digital signals to analog television transmissions. In order to make the transition to digital television affordable for all Americans, the Digital Television Transition and Public Safety Act of 2005 has authorized the National Telecommunications and Information Administration (NTIA) to establish a program by which eligible consumers could receive coupons to partially defray the cost of acquiring converter boxes.⁷⁰ Although rules proposed

by NTIA to govern the certification of these boxes already include a proposal for the boxes to be capable of complying with the FCC's closed captioning mandates, concerns remain as to whether these boxes will also provide accessible interfaces, the ability to pass through video descriptions, and have other accessibility features needed for full access to video programming.⁷¹

2. Barriers to Web Programming

While some of the devices that now carry video programming receive programs via broadcast, cable, or satellite TV, many newer devices, including hand-held computers and cell phones, are capable of receiving and displaying programming carried over high speed Internet services. Web-based television services are changing our definition of video programming by providing flexible, "any time" access to older television shows, flash animations, streaming video for live events, and a multitude of web clips.⁷² According to one expert, this has put us into "a vast uncharted territory where there are no laws mandating access to video or audio content on the web or on portable video players."⁷³ Indeed, already most video web clips, live video streaming, and television programs re-distributed by on-line merchants generally lack both captioning and video description features – even though at one time much of this programming may have been equipped with closed captions.⁷⁴ Once again, technology has progressed faster than the laws designed to ensure its accessibility.

3. Inaccessible User Interfaces

Although operating a television used to be a relatively simple task, the many options now available to viewers require complex navigational tools and operations that are creating new barriers to people with disabilities. Consumers are now faced with complicated electronic program guides, intricate remote control devices, and digital set-top boxes that display various

levels of on-screen menus and control access to a plethora of video programming options for immediate and future viewing and entertainment features.⁷⁵ The visual nature of most of these interfaces presents challenges for individuals who are blind or visually impaired; their complexity also creates potential barriers for individuals with cognitive disabilities. These barriers are compounded by the inability to determine the accessibility of products and their interfaces in retail stores. Typically, customers with disabilities do not have an opportunity to try out captioning or video descriptions on television devices that are on display in retail establishments. Rather, they must first purchase these devices and go through the complicated process of hooking them up at their premises before being able to determine whether the units have accessible controls for accessing programming, captioning and video descriptions. This deprives individuals with disabilities from being able to make informed purchases that can most effectively meet their needs.

4. Lack of Equal Access to Existing Video Technologies

In addition to the potential accessibility barriers created by the newest generation of IP and digitally-based video programming, the following barriers still exist to achieving full disability access to video programming over broadcast, cable and satellite channels.

a. Lack of Video Description – The 1996 Amendments to the Communications Act directed the FCC to commence an inquiry on the provision of video descriptions on television programming.⁷⁶ After conducting this inquiry, in January 2001, the FCC adopted rules requiring major networks and other top nonbroadcast channels in the top twenty-five television markets to provide video description on 50 hours of prime time or children’s programming per calendar quarter.⁷⁷ The Commission also mandated that other stations and channels that were affiliated with these entities pass through descriptions to the extent they

had the technical capability to do so. However, in November 2002, these rules were overturned, when the FCC's authority to issue the rules was successfully challenged by the television and motion picture industry in the U.S. Court of Appeals for the D.C. Circuit. All that now remains of televised video descriptions are those that appear on the few programs first made accessible during the brief period when the FCC's rules were in effect (between April 2002 and November 2002) and a minimal number of television programs funded by the U.S. Department of Education.

b. Poor Captioning Quality – In recent years, consumers have noticed a significant decline in the quality of captions, including garbled or misspelled captions, captions that overlap program graphics, and captions that fall off entirely before the conclusion of a show. In July 2004, concerns about this downward trend and the need for greater FCC enforcement of the existing captioning obligations prompted consumer advocates to petition the FCC to adopt minimum non-technical standards of captioning quality and to improve the agency's oversight and enforcement of the existing requirements.⁷⁸ Consumers also requested the Commission to increase the number of television stations that must use real-time captioning for their local newscasts. At present, most television stations use "electronic newsroom technique," a method that converts text from the stations' teleprompters into captions on news programming. But this method typically excludes captioning on live programming material, such as weather and sports updates, as well as late-breaking news that is not pre-scripted. Under current FCC rules, real-time captioning is only required for larger networks and affiliates in larger cities.⁷⁹

c. Failure to Effectively Enforce Mandates for Emergency Access – In 2000, the FCC issued rules requiring broadcasters, cable operators, and satellite television providers,

without exception, to provide visual and audio access to their emergency programming.⁸⁰ The rules extend to all televised information provided for the protection of life, health, safety, or property, including but not limited to, civil disorders such as power failures, toxic gas leaks, school closings and criminal activities, and weather disasters, such as flooding, earthquakes, and heavy snows. The accessible information provided must cover both the emergencies and ways to respond, such as methods of evacuating and ways to find shelter, food, medical care and other forms of relief.

The FCC's regulations explain that programmers can make emergency information available in a visual format by providing open or closed captions or other visual methods, including crawls or scrolls that run across the bottom or top of the screen, so long as these do not interfere with existing closed captions provided for the program. When emergency information is provided in the video portion of a regularly scheduled newscast or an unscheduled programming break, it must also be video described in the program's main audio track. If, however, emergency information is provided through a crawled or scrolled visual announcement during regular programming, only an aural tone must be provided to alert people with vision loss that an emergency exists. These persons are then expected to turn to another source, such as a radio, to obtain more information.

It has been difficult to secure compliance with the FCC's emergency access rules, and until recently, the agency did little to enforce these regulations – for either visual or audio access. Within the past few years this has begun to change, and the Commission has in fact begun to assess monetary forfeitures against television stations that have failed to provide visual access.⁸¹ To date, however, no compliance actions have been brought against programming providers for their failure to make emergency programming audible.

d. Ineffective Complaint Procedures – The FCC’s captioning regulations presently require consumers to first bring captioning complaints to video programming distributors before they are permitted to file these with the FCC. The distributor then has up to 45 days after the end of the quarter in which the violation allegedly took place or 45 days after receiving the complaint – whichever is later – to respond to such complaints. Many consumers believe that this length of time is far too long as it gives programmers up to 145 days to respond. Consumers have also reported finding it very difficult to figure out who they should contact when trying to report captioning problems to a television station. Finally, consumers who do file captioning complaints with the FCC have no way to provide input into their resolution.

VIII. Recommendations

The lightning speed at which communication and information technologies are being developed and deployed has already begun to widen the gap between products and services that are usable by the general public and those that are accessible by people with disabilities. Shorter product life cycles that are bringing ever-expanding numbers of advanced products and services to the general public at an accelerated pace are causing existing federal and state laws that have safeguarded disability access to communications services in the past to rapidly become outdated. Many of these laws were written for a different age and time – before the introduction of instant messaging, electronic mail, text messaging, broadband services, wireless data services and other electronic and digital technologies that have become commonplace. The following recommendations for legislative and regulatory action are needed to close the widening communications gap and to preserve the disability access embodied in the laws that we have to date.

A. Communications Technologies

1. Extend general accessibility requirements contained in Section 255 of the Communications Act to Internet-based services: legislative and regulatory changes.

Experience shows that people with disabilities will only benefit from the marvels that IP-based technologies can offer if legal mandates are put into place to ensure their accessibility. At a minimum, then, legislation or regulation is needed to guarantee that people with disabilities have the ability to access IP-based communications services and products to the same extent that they have the right to access telecommunications services and products under Section 255 of the Communications Act. These protections should apply whether the transmission method used to send such communications is wireline, wireless, cable, satellite, electric power lines, or some other means. For example, accessibility safeguards are needed

to ensure that emerging IP services and products are interoperable and reliable so that text and video messages reach their destinations to the same extent as voice messages, firewalls do not block out video communications, and people with disabilities have access to user guides and technical support associated with the new services. New electronic devices also need to offer multiple – or “redundant” – ways of controlling their operations so all people with disabilities can navigate and select desired features. For example, when an appliance’s operations require hearing, individuals who are unable to hear should be able to use their sight or touch to navigate that device’s functions and features; when the device’s controls require sight, people who are blind should be able to use their hearing or touch to manipulate the unit’s controls. User interfaces also need to be compatible with assistive technologies, when these are necessary. To the extent that Internet-based products are used to access telephone-like voice communication services, these also need to be fully hearing aid compatible and equipped with adequate volume control. As noted above, the failure to address the need to ensure text communications over digital wireless services before these were first deployed in America resulted in the wireless industry having to expend significant resources for an access solution that, by the time it was implemented, was scarcely used, having been supplanted by other, more versatile forms of wireless text communications. To avoid a reoccurrence of this situation, the time to incorporate these and other access features is now, as these innovative technologies are being designed and developed, and the costs of incorporating access are a mere fraction of producing the product for the general public.

Of particular concern to the deaf and hard of hearing community is the need to incorporate text-based solutions in IP-based technologies while these technologies are still under development. To this end, the FCC should develop rules to assist in the migration from TTY

to text-based communications over high speed Internet and wireless data services, while at the same time ensuring backward compatibility with analog TTY transmissions for those individuals who do not yet utilize these newer technologies (by virtue of their low incomes or the lack of technology deployment in their towns). This will require the FCC to direct the creation of a common protocol for real-time text communications in the IP environment that is as reliable and interoperable as the standard protocol used for real-time interactive voice communications. The FCC should also direct IP telephone manufacturers to equip their telephones with keypads and displays that are capable of receiving and displaying incoming IP text, so that individuals who cannot hear or speak can communicate directly with any hearing person who is able to send a text communication over an IP device. Finally, the FCC should coordinate with the Department of Justice to ensure that the text-based solutions that are developed enable people with hearing and speech disabilities to use enhanced 9-1-1 features to connect with PSAPs over new IP-based and wireless data communications. A proposal to extend Section 255's mandates to IP-enabled voice service providers and manufacturers is now pending before Congress in H.R. 5252, the Advanced Telecommunications and Opportunity Reform Act of 2006. However, in the event that this legislation is not enacted, it is clear from prior FCC rulings extending the emergency call handling, electronic surveillance, and universal service obligations to interconnected VoIP providers, that the FCC has sufficient authority under its ancillary jurisdiction to apply Section 255's mandates in this manner.

2. Change the standard of compliance for Section 255 from readily achievable to undue burden, and apply the undue burden standard to new mandates requiring access to IP services and equipment to ensure higher levels of compliance efforts. legislative change.

Section 255 of the Communications Act requires telecommunications companies to make their products and services accessible when it is readily achievable to do so. However, many disability advocates believe this is not the correct standard to apply to accessibility obligations, whether applied under current law to telecommunications products and services, or imposed on new Internet-enabled services. This is because the readily achievable standard, pulled from Section 301(9) of the ADA and defined as “easily accomplishable and able to be carried out without much difficulty or expense,”⁸² was originally devised as a means of relieving places of public accommodation that had already been built from having to go through the significant difficulty and expense of retrofitting their structures. Congress’s goal was to avoid imposing on small “mom and pop” establishments the burden of having to install elevators, build wider aisles, or make other expensive structural changes.

By contrast, drafters of the ADA understood that a far stricter accessibility standard was needed for structures that had *not yet been built*. Specifically, the ADA requires entities to design and construct new or renovated places of public accommodations and commercial facilities to be “*readily accessible to and usable by individuals with disabilities.*”⁸³ This standard is absolute: without regard to cost, new or renovated facilities must be accessible. The only time that entities can be relieved of this obligation is when they are able to demonstrate that it is “structurally impracticable” to meet the ADA’s structural accessibility guidelines.⁸⁴

The undue burden standard – a standard that falls somewhere between the readily accessible and readily achievable standards – is used in the implementation of Titles I through III of the ADA⁸⁵ and various sections of the Rehabilitation Act of 1973, to require entities to provide reasonable accommodations and auxiliary aids unless doing so will cause them “significant

difficulty or expense.” A comparison between the “undue burden” and the “readily achievable” standards reveals that although the “readily achievable” standard is considered a lesser standard with respect to the level of effort required, the actual criteria for each of these defenses is nearly identical: both require a balancing of the nature and cost of accessibility solutions with the overall financial resources, size, and type of a business’s operation. Under either standard, the greater a company’s resources, the harder it will be for that company to become exempt from providing access features, even if these require substantial expenditures.⁸⁶ It is for this reason that the undue burden standard should be applied to these technologies.

Because the mandates for telecommunications access under Section 255 are forward-looking, the level of effort that should be required to ensure accessibility should be somewhat greater than that required under the readily achievable standard. This holds even more true for mandates applicable to emerging IP-enabled and wireless data service technologies that have not yet been designed. As drafters of the ADA understood, it is far less expensive to build in access from the outset than to retrofit a facility later on; indeed, this is why these legislators required relatively few alterations for structural access to existing buildings, but made it very difficult for new facilities to avoid their obligations to achieve accessible design. The same principle holds true for communications technologies, which can easily employ software-based access solutions during the early stages of their design and development.⁸⁷

3. Improve implementation and enforcement of accessibility safeguards: legislative and regulatory changes.

In *Design for Inclusion*, NCD released a study concluding that the accessibility mandates of Section 508 have failed to meet their potential.⁸⁸ NCD attributed this to a number of factors, including the failure of companies to consistently document their accessibility processes, the

inability of company accessibility program offices to exercise authority over accessible design decisions, a failure to adequately train company employees about universal design, the absence of effective coordination with people with disabilities in crafting accessible design solutions, and a general lack of information among the public about accessibility features.⁸⁹ Many of these same criticisms plague the implementation of Section 255. Some of these can be addressed by taking the following actions:

a. Create a private right of action: legislative change.

Under Section 255, consumers are not permitted to bring to court lawsuits challenging a company's failure to provide an accessible product or service. Many believe that the lack of this private right of action has hurt the enforcement of Section 255, creating few consequences for noncompliant companies. Consumers *are* permitted to bring their grievances to the FCC, where they may file either an informal or formal complaint. But while the agency's responses to informal complaints often provide quick fixes to resolve specific problems brought to its attention, these typically fail to rectify industry-wide deficiencies that are thwarting accessibility. For example, a consumer who files an informal complaint under Section 255 might receive a refund for an inaccessible cordless handset or be permitted to prematurely cancel an inaccessible wireless service without any penalties. However, it is unlikely that such complaint would be sufficient to elicit an agency directive for the company – let alone an entire industry – to incorporate new access features in the design of its products or services.

Formal complaints, which *can* achieve industry-wide improvements for communications access, are akin to lawsuits, requiring attorney representation for discovery and complex legal pleadings. In the ten years since Section 255 has been in effect, only two

formal complaints have been brought to the FCC. In part, this is because these complaints do not permit the recovery of attorneys fees or legal costs, otherwise available in courts of law.

b. Improve FCC complaint processes: regulatory change.

In the event that a private right of action is again denied in new mandates governing disability access to IP-enabled services, at a minimum, the FCC should take the following steps to facilitate the filing and resolution of complaints related to communications access:

- Waive the formal procedural and pleading requirements associated with the filing of formal FCC complaints. Although the FCC already has the authority to waive these heavy legal requirements for good cause shown, it has never done so.⁹⁰
- Provide a separate and identifiable electronic, telephonic, and physical receptacle for the receipt of accessibility complaints to eliminate confusion by people with disabilities and to ensure the effective receipt of complaints in accessible formats.
- Create a time limit to investigate and deliver a resolution on the merits of accessibility complaints, preferably no longer than ninety days after their receipt. Such investigation should include a review of company processes for achieving accessibility, compatibility and usability, including the extent to which a company consulted and tested the product with people with disabilities.

c. Require manufacturers and service providers to prepare “Accessibility Impact Statements:” regulatory change.

One way to ensure the accountability of both existing and new generation communications providers and manufacturers who have accessibility obligations – and to potentially avoid complaints and lawsuits altogether – is to require these entities to document the steps they take to incorporate access features, and to regularly submit such documentation to the FCC. This can be achieved through preparation and delivery of an “Accessibility Impact Statement” (AIS), a document that could detail the steps taken to achieve access, a company’s efforts to consult and coordinate with people with disabilities, descriptions of each product’s or service’s accessible features, and the ways that each product is compatible with assistive devices.⁹¹ In the case of inaccessible products, the AIS could also explain why incorporating

access has not been feasible, along with the company's plans to provide access and/or compatibility in the future. Having documentation of this nature would also be very helpful to the effective resolution of disability complaints that are filed, in addition to providing a standard by which manufacturers could gauge the effectiveness of their accessibility efforts.

d. Require periodic FCC reporting to Congress on status of accessible equipment and services: legislative change.

Although Section 255 has been in effect for ten years, it remains difficult to ascertain the extent to which this law has achieved its objectives. The Telecommunications Access Advisory Committee recommended the Architectural and Transportation Barriers Compliance Board (Access Board) develop periodic "Market Monitoring Reports" to identify accessibility barriers and telecommunications products in the marketplace that can respond to those barriers, but only one of these reports was ever released, in January 2000. H.R. 5252 would require the FCC to submit biennial reports to Congress that assess the extent to which IP-enabled voice service providers and manufacturers are in compliance with accessibility mandates covering their services and equipment, as well as the extent to which accessibility and hearing aid compatibility barriers still exist. A report such as this, which could also include information on accessibility complaints filed with the FCC, would provide vital information about access solutions successes and failures, and make it easier for those in the communications industry to work with consumers and the federal government in identifying the need for product research and testing, along with technical and design solutions still needed to achieve accessibility. A similar requirement should be put into place for telecommunications products and services.

e. Create a national clearinghouse on accessible products and services: regulatory change.

In addition to problems with enforcement, ineffective implementation of Section 255 has been caused by the failure of most Americans with disabilities to have sufficient information about accessible products or services.⁹² Many companies seem reluctant to share information about their accessible products, either out of fear that they will be held liable if the products do not work as intended, or out of an unwillingness to invest the resources needed to provide the disability community with information about those products. As a consequence, even when a company has undertaken the time and effort to produce an accessible product or service, often consumers have no way of knowing about its existence. One way of resolving this is to have the FCC or NTIA establish a clearinghouse of information on accessible products and accessibility solutions, and to require companies to inform consumers both about their accessibility obligations and the products and services that they have made available to meet these obligations. Providing such information on the FCC's or NTIA's website and updating it annually would be consistent with the following FCC promise (not yet fulfilled), issued by the Commission when it released its Section 255 rules:

[W]e believe that the dissemination of technical assistance, including information on product capabilities and availability, as well as information about manufacturer and service provider compliance with section 255, is vitally important. It will both help ensure that people have access to needed products and serve as an enforcement tool. After we determine the best way to present the relevant data, we intend to publish information regarding entities' compliance with these rules. We also intend to provide technical assistance and conduct outreach efforts to inform customers and companies of their rights and responsibilities under these rules.⁹³

B. Video Programming

1. Expand captioning decoder requirements to new apparatuses designed to receive or display video programming: legislative change.

Congress intended for the Decoder Circuitry Act to ensure the availability of closed captioning services as new video technologies are developed. Now that the FCC's captioning

mandates require 100 percent closed captioning on all new, non-exempt television shows, legislation is needed to ensure that deaf and hard of hearing viewers have full access to these shows via all consumer products, including computers, PDAs, portable MP3 players, cell phones, and recording devices that are capable of receiving and/or displaying television and web-based video programming. When the FCC announced its decision to extend the decoder circuitry obligations to all stand-alone DTV tuners and set top boxes, regardless of the size of the monitors with which these are shown, it did so because consumers will be able to manipulate the size, font, and color of captions on these devices and thereby be able to view captions on very small screens.⁹⁴ This ruling provided a first step toward eliminating the thirteen inch decoder circuitry restriction; now it is incumbent upon Congress to take the next step by requiring *all* apparatuses capable of receiving and viewing video programming to receive and pass through closed captions intact.

2. Clarify that existing captioning obligations apply to IPTV and other Internet video distributors: legislative or regulatory change.

The FCC's captioning rules apply to "multichannel video programming distributors," defined as entities "engaged in the business of making available for purchase, by subscribers or customers, multiple channels of video programming."⁹⁵ While it appears that this definition should already cover all video programming that is acquired by information service providers and re-distributed to purchasers via the Internet or fiber to the home, confirmation of this coverage is needed by federal lawmakers. Processes already exist that enable new types of Internet-enabled video programming distributors to retain captions that already exist on television shows and movies, and, if necessary, to add new captions to programs streamed over the web. As this new generation of Internet-based video programming stakes a claim in

the American entertainment market, it is critical to ensure that its providers are covered by the same captioning laws that apply to more traditional television mediums.

3. Ensure the provision of video description by restoring the FCC's rules and safeguarding the technology to receive and display descriptions: legislative change.

In order to ensure that all Americans, including those who are blind and visually disabled, have access to video programming, Congress should grant the FCC authority to restore its rules on video description. H.R. 5252, now pending in Congress, would achieve this.⁹⁶ In addition, either Congress or the FCC should also ensure that new apparatuses designed to receive and transmit video programming over digital transmission methods, the Internet, or other technologies, have sufficient capacity to allow the transmission and delivery of video description services. Unlike analog television, where the only channel available for descriptions is a second audio program channel that must compete with Spanish language and other audio programming, digital and broadband technologies offer multiple audio channels with significantly greater bandwidth that can more easily and inexpensively accommodate video descriptions. A clear requirement to ensure that all apparatuses capable of receiving and displaying video programming have sufficient audio bandwidth for the transmission and display of video descriptions would be easy and in keeping with recommendations issued by the Advisory Committee on the Public Interest Obligations of Digital Broadcasters, a body convened in 1997 to assess these obligations and ensure access by all Americans to digital television.⁹⁷

4. Require all equipment associated with the conversion from analog to digital programming to have accessibility features: regulatory change.

As our nation nears the deadline for the conversion of television programming from analog to digital transmissions, the FCC and NTIA should take steps to ensure that all

apparatuses associated with facilitating this conversion provide access to people with disabilities. Both agencies have ample authority to take such steps, the FCC under the authority granted it under the Decoder Circuitry Act,⁹⁸ and NTIA pursuant to its legislatively delegated responsibility to govern the certification of set top boxes used to convert *digital signals back to analog transmissions* for Americans who have older television sets.⁹⁹ The following are various measures needed to ensure the accessibility of these set-top converter boxes used during this transition:

- Converter boxes must be capable of passing through and displaying all closed captions intact, and should continue to have this capability even when subject to software upgrades. This should include the capability to receive and convert all six digital television captioning channels (per program) to the four analog TV caption channels that the FCC's rules require. At present, viewers may select from among verbatim captioning, edited captioning, Spanish translation of programming in a text form, and other ancillary data services.
- Converter boxes must be capable of passing through video descriptions through ancillary audio channels.
- Individuals who are blind and other viewers with disabilities must be able to navigate menus and other controls (for example through an audio output that can read out functions) on converter boxes and their remote controls. The remote controls should also provide viewers with the ability to directly access closed captioning and video description features through a single button, rather than burying these features in several layers of menus. In addition, a tactile nib added to the button used to access video descriptions would be especially helpful for people who cannot see.
- Consumers with disabilities need an accessible means of ordering and acquiring both the NTIA coupons and the converter boxes, whether this is conducted by mail, phone or Internet-based distribution.

5. Require accessible interfaces to video and audio equipment used with all types of television devices, including those used with IPTV: legislative change.

All appliances used to receive and display video and audio programming, including those used to receive, display, or record digital or IP-based programming, should provide accessible user interfaces. As noted above, television equipment and the set-top boxes and recording equipment that go with these devices have grown increasingly complex, often requiring users

to make their way through complicated on-screen electronic program guides to access any program or service. This can create considerable accessibility barriers, especially for people who are blind or cognitively disabled. Congress should establish a clear obligation on the part of all manufacturers of video programming devices to make their equipment fully accessible to and usable by people with disabilities. Efforts to achieve such accessibility have already proven technically feasible.¹⁰⁰

6. Mandate standards of captioning quality: regulatory change.

When the FCC promulgated rules implementing the captioning provisions of the Communications Act in 1998, it declined to adopt non-technical standards of caption quality, promising to reconsider this decision if such standards became necessary in the future.¹⁰¹ The declining service quality that television viewers have experienced over the past several years can be reversed if the FCC now adopts minimum standards of captioning quality. In a notice of proposed rulemaking released in 2005, in response to the consumer petition for captioning improvements, the FCC suggested that such quality standards might include standards for accuracy, grammar, spelling and punctuation, captioning placement and type font, the identification of nonverbal sounds, and the use of pop-on, roll-up, verbatim or edited captions.¹⁰² For example, new rules can require that the entirety of a program be captioned accurately and in sync with the audio portion of the program, that all live news shows contain real-time captioning, and that programming distributors conduct comprehensive monitoring to ensure the technical precision of their captions. Although current FCC rules already require program distributors to monitor captions from their point of origination to end users – to ensure they arrive intact¹⁰³ – the FCC should specify detailed mechanisms to ensure that such monitoring takes place, that programmers routinely check their engineering and captioning

equipment, and that programmers swiftly and effectively remedy any technical problems that are discovered during the course of such monitoring.

7. Improve implementation and enforcement of the captioning mandates: regulatory changes

There are a number of measures that the FCC can take to improve the implementation and enforcement of the closed captioning mandates:

Reporting requirements – The FCC can improve the accountability of video programming distributors and providers by requiring these entities to file periodic reports on the level of their captioning compliance with the FCC. Such record-keeping requirements are not uncommon for video programming providers. For example, commercial broadcasters are already required to submit quarterly reports – available to the public in local public inspection files – on their efforts to serve the educational and informational needs of children.¹⁰⁴ Requiring affirmative captioning reporting will enable video programming providers to audit their own levels of compliance with the FCC’s remaining benchmarks.¹⁰⁵ Although all new, non-exempt English language programming must now be captioned, new, non-exempt Spanish language programming still has until 2010 to fulfill this obligation. Moreover, captioning deadlines for older “pre-rule” English and Spanish language programming – i.e., programming first aired prior to January 1998 – do not occur until 2008 and 2012, respectively. Because by then, the FCC’s rules will only require 75 percent of all pre-rule programming to be captioned (as compared to the 100 percent mandate for new programming), consumers will need a way to determine the extent to which a provider is meeting its captioning obligations. The submission of compliance reports, posted on the Commission’s website, will help in this regard.

FCC compliance audits – In the FCC’s 1998 Order on Reconsideration amending its captioning rules, the Commission rejected the use of reporting requirements such as those described above, promising instead “to conduct random audits of video programming as needed to ensure compliance with the captioning requirements.”¹⁰⁶ In their 2004 petition, consumers requested the Commission to begin conducting such audits as a means of assessing compliance and determining the need for enforcement action by noncompliant entities. As the petition recommended, the results of such monitoring efforts should also be published on the FCC’s website.

Improved complaint procedures – As noted above, consumers must first bring their complaints to video programming distributors before filing these with the FCC. This is often onerous for consumers who do not know the proper entity to receive their complaints (the local affiliate? the national network? the cable or satellite distributor?), nor the physical address to which their complaints should be sent. Moreover, even when complaints are sent to the correct office, frequently they are neglected or ignored, prolonging the lack of captioning access. A way to rectify this situation is to permit consumers to file captioning complaints with the Commission in the first instance, rather than having to first notify the program provider. In order to expedite the resolution of such complaints, the time period for providers to respond should also be shortened, from its present period of up to 145 days, to 30 days. For those consumers still wishing to establish direct contact with video programmers, the FCC should gather and update on its website each programmer’s contact information.

Penalties for non-compliance – The above changes will provide the FCC with tools needed to accurately track compliance with its captioning mandates. Once the Commission begins to use these tools, it will need to establish a schedule of fines and forfeitures for

violations that are discovered, so that full observance of its mandates is achieved.

8. Strengthen enforcement of FCC mandates requiring visual and audio access to televised emergency information: regulatory change.

As noted above, at the time that the FCC issued its rules on closed captioning, the agency promised to conduct random audits of video programming to ensure compliance with those mandates. In addition to fulfilling this promise with respect to its captioning mandates, the Commission should undertake periodic reviews of television stations to ascertain their compliance with obligations to provide emergency programming in visual and audio formats. Video programming distributors have a less than stellar history when it comes to ensuring the accessibility of their emergency information.¹⁰⁷ Where violations are revealed, either through such random audits or the receipt of consumer complaints, the Commission should vigorously enforce its rules through monetary forfeitures, fines, and other measures.

C. Universal Service: legislative and regulatory changes

The federal universal service program provides subsidies for rural or low-income Americans, schools, libraries and rural health care providers to ensure access to telecommunications services at reasonable and affordable rates.¹⁰⁸ Originally conceived by the FCC as a program for low-income individuals back in 1985, and significantly expanded by Congress in Section 254 through the 1996 amendments to the Communications Act, the Universal Service Fund (USF) program is financed by telecommunications providers, each of whom make contributions into the Fund based on a percentage of their annual interstate and international revenues. Money in the Fund is available to support access to the telephone network, 9-1-1 and E-9-1-1 emergency systems, operator and directory assistance, and minimal long distance for certain low-income subscribers.¹⁰⁹ However, to date, federal USF funds have never specifically been designated to support disability programs.

Because the low income program of the USF was originally established by the FCC under general grants of rulemaking authority found in Titles I and II of the Communications Act,¹¹⁰ it would appear at first glance that the Commission already has sufficient jurisdiction to expand these programs to provide subsidies for broadband services and equipment to low-income subscribers with disabilities. However, resolution of this issue has been complicated somewhat by the Commission's decision to classify all broadband services as information services. Specifically, because broadband services are no longer covered by Title II of the Communications Act, the Commission would have to use its ancillary jurisdiction were it to direct broadband providers to make contributions for this purpose. Should the Commission be reluctant to draw upon that jurisdiction, another way of achieving this objective is for Congress to amend Section 254 of the Communications Act by specifically authorizing the use of universal service funding for subsidies to people with disabilities. The recommendations below suggest ways that USF monies can be used to enhance disability access to our nation's communications systems. Each of these is possible through regulatory changes, but may necessitate legislative action if the FCC is reluctant to exercise its authority in this area.

1. Allow USF support for the provision of specialized customer premises equipment: legislative change

For the past twenty years, state equipment distribution programs have been successful in helping to facilitate access by people with disabilities to the conventional telephone network through the free or discounted distribution of specialized end- user equipment. However, many believe that it is time to broaden the scope of these programs, both to ensure that SCPE is available in all of the states, and to allow use of such program funds for broadband and other equipment needed to facilitate access to IP-based services. One means of achieving this

is for Congress to direct the establishment of a nationwide program for the distribution of such SCPE. Another way would be for Congress to direct the availability of USF funding to bona fide state programs that are willing to subsidize the cost of adaptive equipment needed to facilitate disability access to telecommunications and advanced information services. Among other things, such funding would go a long way to help defray the costs of screen readers for people who are blind, video equipment for deaf individuals who use sign language, and speech-to-text software for people with speech disabilities.

2. Allow USF support for the provision of equipment used by people who are deaf-blind: legislative change

Congress should direct that a portion of the USF subsidies available for SCPE be set aside to specifically ensure that Americans who are deaf-blind are able to acquire end-user equipment needed to facilitate their access to both basic telephone and broadband technologies. The approximately 40,000 to 70,000 Americans who are deaf-blind represent a small and insular minority that are amongst the least served and most dependent of all Americans with regard to communications services.¹¹¹ Because very few companies even offer communication devices that can meet the needs of this population, the devices that do exist are often hard to find and inflated in price. For example, one device that uses both a TTY and a refreshable Braille display to communicate over the PSTN costs more than \$5,000. Another, which is digitally-based and portable, sells for nearly \$7,000. Financial support through the USF is critically needed to ensure that this very small but underserved population has the necessary equipment to achieve full and effective communications access.

3. Allow USF support for broadband subsidies to individuals (including individuals with disabilities) with low incomes: legislative or regulatory change.

At present, three of the existing USF programs are designed to help make telephone service affordable for people with low-incomes. Under the “Link Up” program, new subscribers can receive a waived or discounted telephone connection charge. After being connected, “Lifeline” offers discounted monthly phone rates. A third program, “Toll Limitation Service,” allows subscribers to have their toll calls blocked or otherwise controlled at no cost. Unfortunately, all three programs are only available for subsidizing traditional PSTN or “plain old telephone” service. As Americans replace their basic telephone service with more advanced communication technologies that are linked to the Internet, it makes sense to expand these programs to broadband technologies as well, so that low-income consumers, including Americans with disabilities, can purchase DSL or cable modem service. According to one recent study, the percentage of people with disabilities who have access to the Internet is only half that of the general population.¹¹² The low incidence of broadband ownership is particularly true in rural communities, where people with disabilities are the least employed and have minimal discretionary income at their disposal. One way of ensuring that these individuals are able to have equal access to Internet services would be for the FCC or Congress to define broadband services for low income persons (including persons with disabilities) as eligible for universal service support. For example, individuals could choose whether to use Lifeline or Link-Up subsidies for broadband or PSTN-based services. Having this option would be particularly helpful to people who are deaf and hard of hearing who now rely exclusively on high speed Internet technologies for IP text, video relay services and peer-to-peer video to meet their communication needs.

D. Americans with Disabilities Act

1. Expand relay and USF funding base to IP-based providers: regulatory change

When Congress enacted the ADA, it imposed the obligation to provide relay services on all common carriers. These carriers support interstate relay calls by annually contributing a percentage of their interstate and international revenues to an interstate relay fund.¹¹³ For the most part, states that operate their own relay programs also pass along this financial obligation to local telephone companies, typically through a surcharge collected on telephone subscriber bills. However, the recent decline in consumer reliance on traditional PSTN-based telephone services, coupled with the expanded use of broadband-based communication services and a spiraling increase in the demand for innovative IP text and video-based relay services, are beginning to put funding support for relay services in jeopardy. Another way of putting this is that industry contributions are declining as relay costs are rising. A similar trend is occurring with respect to universal service funding.

In June 2006, the FCC took action to begin remedying this discrepancy by expanding the obligation to make contributions to USF to interconnected VoIP providers.¹¹⁴ Some states are also seeing the need to respond to this situation. For example, Virginia's new "Communications Sales Tax Bill" will change the state's relay funding mechanism from a surcharge that is presently imposed on landline telephone services only, to a charge imposed on any "communications services provider," including those that provide telephone, cable, and VoIP services as of January 2007.¹¹⁵

In order to ensure the future viability of relay funds, the FCC similarly should require that providers of all IP-based services that offer telephone-like functions (not just those that are interconnected to the PSTN) contribute to the support of these services. As we migrate away from traditional telephone services, contributions from these entities will be sorely needed, both to sustain the viability of relay programs and to distribute their costs fairly among

subscribers of all communications services. Similarly, all IP providers that provide telephone-like services should have to contribute their support to universal service programs, including the Lifeline and Link-Up programs. The high incidence of unemployment within the disability community means that this community would be hit particularly hard were any cutbacks in these programs to occur as a result of declining revenue sources.

2. Authorize Internet-based captioned telephone relay services and mandate PSTN-based captioned telephone relay services: regulatory change.

Title IV of the ADA directs the FCC to ensure the availability of relay services that are functionally equivalent to conventional voice telephone access and, in doing so, to take advantage of advancements in technological innovation.¹¹⁶ In order to fulfill these mandates, since passage of the ADA in 1990, the FCC has authorized various types of relay services that offer a wide array of text, voice, and video relay options. The Commission's approval of captioned telephone relay service offers the most recent example of its attempts to ensure that new and advanced technologies are used to meet the communication needs and preferences of this diverse group of individuals. Captioned telephone relay allows deaf and hard of hearing individuals to speak directly to another party with their own voices while reading back responses in captions; when users have residual hearing, they can also hear responses directly from the party called. The captions are produced in near real-time by a relay operator, who reads everything that the responding party says, and uses a speech recognition program to automatically convert those words into text that appear on the user's captioned telephone device. Call set-up for this service is transparent to captioned telephone users because they do not have any interaction with relay operators when making calls.¹¹⁷ In this manner, this form of relay service allows for the spontaneity, natural flow, and speed of a typical voice phone conversation.

Captioned telephone relay service appeals to a segment of the population that was previously uninterested or unwilling to use relay services. This includes many senior citizens and late-deafened adults who grew up using conventional voice telephones and who prefer to use their own voices and residual hearing, along with captions to complete parts of the conversation they have difficulty understanding. However, because the FCC has only authorized, but not mandated captioned telephone relay, individual states have been free to provide or decline these services. Though most states now include this relay service as one of their relay offerings, many states utilize restrictive funding mechanisms that have severely limited the number of individuals who are permitted to sign up for these services. The consequence is that captioned telephone relay remains the only type of relay service that is not ubiquitously available to all Americans with hearing loss.¹¹⁸

On October 31, 2005, more than 30 consumer groups representing people with hearing loss filed a petition with the FCC to mandate nationwide captioned telephone relay service and approve an Internet version of this service.¹¹⁹ The latter is particularly important as the migration of telephone communications from the PSTN to IP and VoIP transmissions takes place, and a growing number of employers and government agencies convert their telephone systems from analog to digital systems. An Internet-based version of captioned telephone relay offers individuals the ability to access this service through a computer, PDA, or wireless Internet-enabled device anywhere, and at any time – all through inexpensive software, rather than through a separate captioned telephone device. In addition, captions provided on a computer can better accommodate individuals with multiple disabilities, including people with vision disabilities that need larger text, variable fonts and alternate colors.

3. Improve FCC oversight of Internet-based relay providers: regulatory change.

Since passage of the ADA, all fifty states have taken it upon themselves to operate and monitor relay services provided by the telephone companies within their states. However, newer relay services transmitted over the Internet are not subject to this type of state supervision. Recent rules issued by the FCC permit common carriers that are not part of a certified state program to receive federal certification to provide VRS or IP relay services directly to consumers.¹²⁰ Because these new IP-based relay entrants will not be subject to any particular state's jurisdiction, federal oversight is critically needed to make sure that they remain in compliance with the mandatory minimum standards that the FCC imposes on all relay providers. As the FCC has noted, states have little incentive to take on this oversight responsibility because at present, they are not paying for these IP services.

4. Require universal numbering for IP-based relay services: regulatory change.

The ADA's mandate for nationwide relay services was intended to foster the independence and integration of deaf and hard of hearing individuals. While the provision of relay services has, in fact, greatly contributed to this goal, the Act's objective to fully mainstream all individuals with disabilities throughout American society cannot be realized until IP relay and VRS users are confident that their calls will be returned just as easily as they can be made. The FCC should direct the development of a seamless numbering scheme that enables all IP relay and VRS users – deaf and hearing – to receive calls to the same extent as voice telephone users, so that these services can truly be functionally equivalent to conventional voice telephone services, as required by the ADA. Having a telephone number is especially critical for emergency situations, because E-9-1-1 personnel need an effective means of calling back individuals in the event that incoming calls are disconnected. As noted, the FCC

already requires interconnected VoIP providers to provide their customers with call back numbers for this very purpose.¹²¹

The FCC currently has an open proceeding by which it is seeking comment on the need to create a universal database of proxy numbers, to enable hearing people to call VRS users through any VRS provider, without first knowing the VRS user's dynamic IP address.¹²² In addition, an industry standards group, the Industry Numbering Committee of the Alliance for Telecommunications Industry Solutions, is now actively exploring technical solutions for achieving such universal numbering access. A common numbering database would not only facilitate calls to VRS users; it would assist as well individuals wishing to use Internet-based video communications to communicate directly, as well as conventional phone users wishing to call IP text relay users. This is critically important to the provision of equal telecommunications access and should be adopted as soon as technically feasible.

5. Clarify the ADA's coverage of websites: legislative or regulatory change.

Reliance on Internet-based services is expanding at a phenomenal rate. People now shop, learn, work, play and conduct just about every type of business in cyberspace. Everyday, new governmental services are going on line; now people can register to vote, sign up for selective service, obtain a passport, and even pay a traffic fine without leaving the screens of their computers. While many businesses and institutions use websites to supplement the goods and services provided at their physical locations, it is also becoming commonplace for many companies to exclusively offer their products or services on-line.

The Department of Justice (DOJ) has made clear that state and local governmental services must make their websites accessible by people with disabilities.¹²³ It also has consistently taken the position, for example through amicus briefs, that entities providing information over

the Internet are covered by Title III, and that such coverage should depend on the type of services provided by a place of public accommodation, not whether those services are provided at a physical location.¹²⁴ Nevertheless, the extent to which Title III of the ADA covers the on-line services of private businesses remains the subject of conflicting federal court rulings. Although some courts have suggested that the Act does not cover services provided through a virtual medium,¹²⁵ others have held that public accommodations cannot exclude people with disabilities from entering their facilities, regardless of whether those facilities are in a physical or electronic space.¹²⁶

A comprehensive overview and analysis of the extent to which websites operated by the private sector are covered by the ADA can be found in NCD's position paper, "When the Americans with Disabilities Act Goes Online."¹²⁷ In that paper, NCD observed that websites often provide the only way to provide instant, round-the-clock interactive access to information at a reasonable cost. Consequently, it explained, cyberspace is "the place where some of the most dynamic and far-reaching initiatives in our society are taking place. It is a place from which the law should countenance the exclusion of no one."

Indeed, as more and more essential services become available exclusively in virtual locations, their failure to be accessible to and usable by people with disabilities will force these individuals to take a back seat to the general public. DOJ already evaluates the websites of local governments to ensure they are accessible under its Project Civic Access program.¹²⁸ It should similarly establish the obligation of public accommodations to make their websites accessible, and where otherwise reviewing the accessibility of a company's services, broaden the scope of that review to include the company's Internet access. As NCD concluded, the most effective way to achieve this would be for DOJ and the Access Board to coordinate

efforts to develop web access guidelines, which would then be incorporated into the ADA's Accessibility Guidelines (ADAAG).¹²⁹ While NCD believes that DOJ is well within its authority to take on this task, should DOJ believe otherwise, NCD suggests that it should seek this authority from Congress, to ensure that Americans with disabilities have the same right to access services and information through the virtual world of electronic and computerized media as they have in the physical world.

E. Section 508 of the Rehabilitation Act – Expand requirements to federal contractors covered under Section 503 and federally financed programs and activities covered under Section 504.

In *Design for Inclusion*, the National Council on Disability provided extensive recommendations on the ways in which implementation and enforcement of the mandates adopted in Section 508 of the Rehabilitation Act can be improved.¹³⁰ Some of these recommendations may come to fruition through the Access Board's newly created Telecommunications and Electronic and Information Technology Advisory Committee (TEITAC), a federal advisory body charged with refreshing the Access Board's guidelines on Sections 255 and 508. In addition to the suggestions carefully laid out by NCD, disability access to telecommunications, information services and electronic technologies could be significantly expanded by extending Section 508's requirements to entities that contract with the Federal Government under Section 503 of the Rehabilitation Act and all programs and activities in receipt of federal financial assistance covered by Section 504 of this Act.

IX. Conclusion

As our nation migrates from legacy technologies to versatile and innovative Internet-enabled products and services, legal safeguards need to be put into place in order to avoid turning back the clock on the significant gains in telecommunications access achieved over the past several

decades. Those who have the ability to communicate and acquire information have the power to enhance their independence and self-sufficiency, achieve unlimited mobility, and actively contribute to society as productive participants. As Congress, the FCC and other agencies grapple with establishing a new regulatory infrastructure to govern the deployment of next generation communication technologies, they should be mindful of the need to safeguard this critical civil right with comprehensive laws that require all such technologies and services to be made accessible to and usable by people with disabilities, and by establishing access requirements that are not technology-specific, but rather are intended to apply to all technologies and services as they evolve over time.

Acknowledgment

The National Council on Disability wishes to express its appreciation to Karen Peltz Strauss for drafting this document.

¹ See generally, Comments of the Rehabilitation Engineering Research Center on Telecommunications Access (RERC-TA) in FCC's proceeding on IP-Enabled Services, WC Dkt. No. 04-36 (May 28, 2004); National Council on Disability, *Design for Inclusion: Creating a New Marketplace* (Washington D.C.: 2004) at 21; Gregg Vanderheiden, "Expanded Opening Remarks," Presentation, FCC Voice-Over Internet Protocol Services Forum (December 1, 2003).

² National Research Council, "Broadband: Bringing Home the Bits," (National Academy Press: February 2000), retrieved from <http://books.nap.edu/html/broadband/ch3.html> (noting the many ways that the Internet is making significant changes in our lifestyles, both at home and at work).

³ Robert E. Litan, "Great Expectations: Potential Economic Benefits to the Nation from Accelerated Broadband Deployment to Older Americans and Americans with Disabilities," (December 2005), available at http://www.newmillenniumresearch.org/archive/Litan_FINAL_120805.pdf#search=%22robert%20litan%20great%20expectations%22 (retrieved June 15, 2006), at 3, citing the U.S. Census. See also <http://www.census.gov/prod/cen2000/phc-2-1-pt1.pdf>. The Administration on Aging released similar statistics in 2002. NCD, *supra* note 1 at 47.

⁴ NCD, *supra* note 1, at 222.

⁵ Dr. Frank Bowe, "Disability Meets the Boom," *Ragged Edge On Line*, (posted September 27, 2005), available at <http://www.raggededgemagazine.com/departments/closerlook/000106.html>, citing "Summary Health Statistics for U.S. Adults, National Health Interview Survey, 2002" and "Projections (2010-2020)," both of which are available at www.census.gov.

⁶ *Id.*

⁷ For a comprehensive summary of telecommunications access laws, see Karen Peltz Strauss, *A New Civil Right: Telecommunications Equality for Deaf and Hard of Hearing Americans* (Washington, D.C.: Gallaudet Press),

2006. For a brief overview of the statutes discussed above, as well as others affecting communications access, see also NCD, *supra* note 1, at 49-62.

⁸ P.L. 97-410, codified at 47 U.S.C. §610.

⁹ P.L. 100-394, codified at 47 U.S.C. §610.

¹⁰ P.L. 100-542, codified at 40 U.S.C. §762a-d.

¹¹ P.L. 101-336, codified at 42 U.S.C. §12101 *et. seq.*

¹² P.L. 101-336, codified at 47 U.S.C. §225.

¹³ P.L. 104-104, codified at 47 U.S.C §255.

¹⁴ P.L. 104-104, codified at 47 U.S.C §251(a).

¹⁵ 29 U.S.C. §791.

¹⁶ 29 U.S.C. §794.

¹⁷ P.L. 105-220, Title IV, §408(b), codified at 29 U.S.C. §794d.

¹⁸ 47 U.S.C. §225(f)(2).

¹⁹ Information about the Missouri Telecommunications Access Program for Internet can be found at http://www.at.mo.gov/TAP_internet.shtml. See also Dr. Frank G. Bowe, “Two-Way Technologies: A History of the Struggle to Communicate”(June 2005) at 24, available at http://people.hofstra.edu/faculty/frank_g_bowe/Two-Way_Technologies.html (retrieved July 6, 2006).

²⁰ Strauss, *supra* note 7 at 34; NCD, *supra* note 1, at 186. In addition to the many federal statutes adopted to remedy these market failures, the FCC has, on its own, taken measures to safeguard disability access where competition has failed to achieve this end. For example, when the Commission all but eliminated its oversight of telephone equipment in November of 2000, the provisions imposing mandates for hearing aid compatibility and volume control were among the few it retained. The FCC explained that these were still needed to “ensure that individuals with hearing and speech disabilities have access to telecommunications services in a manner functionally equivalent to someone without such disabilities.” *In the Matter of 2000 Biennial Review of Part 68 of the Commission’s Rules and Regulations*, Report and Order, CC Dkt. No. 99-216, FCC 00-400 (November 9, 2000) at ¶66.

²¹ At the time that AT&T first made the decision to produce telephones that were not able to inductively couple with telecoil-equipped hearing aids, it was unaware of the effect that its action would have on hearing aid wearers because t-coil coupling had been an unplanned byproduct of the electromagnetic emissions from AT&T’s phones. Nevertheless, the impact that this decision had on many people who used hearing aids was devastating. Strauss, *supra* note 7 at 275.

²² 47 U.S.C. §151.

²³ H. Rep. No. 888, 97th Cong. 2d Sess. at 3.

²⁴ *Id.* at 3-4.

²⁵ H. Rep. No. 674, 100th Cong., 2d Sess (1988) at 3. In addition, a finding in the statute itself states: “To the fullest extent made possible by technology and medical science, hearing impaired persons should have equal access to the national telecommunications network.” P. L. 100-394 Sec 2(1).

²⁶ *Id.* at 6.

27. Statement by Senator John McCain, “Telecommunications Services for the Hearing Impaired,” (introducing S. 2221), 134 Cong. Rec. S3279 (daily ed., March 29, 1988). The bill was designed to ensure that the telecommunications system used by the federal government was accessible by people with hearing disabilities.

²⁸ 47 U.S.C. § 225(b)(1) (emphasis added).

²⁹ NCD, *supra* note 1, at 20-24; see also Deborah Kaplan, John DeWitt, and Maud Steyaert, “Telecommunications and Persons with Disabilities, Laying the Foundation,” A Report of the First Year of the Blue Ribbon Panel on National Telecommunications Policy (November 1992), available at <http://park.org/Guests/Trace/pavilion/foundatn.htm>; “Telecommunications and Persons with Disabilities: Building the Framework,” The Second Report of The Blue Ribbon Panel on National Telecommunications Policy (1994), available at <http://trace.wisc.edu/docs/framework/framework.htm>.

³⁰ The insertion of captions on programs also facilitates the indexing and retrieval of specific shows and programming segments.

³¹ RERC-TA, *supra* note 1, at 3, 24.

³² NCD, *supra* note 1, at 43.

³³ Many of these were delineated in comments submitted by the RERC-TA (prepared by Gregg Vanderheiden, Judy Harkins and Karen Peltz Strauss) to the FCC in its rulemaking proceeding on IP-enabled services. RERC-TA, *supra* note 1, at 3-8.

³⁴ Frank Bowe, “Broadband and Americans with Disabilities” (May 2005), available at http://people.hofstra.edu/faculty/frank_g_bowe/BB/index.html (retrieved July 20, 2006).

³⁵ Verizon’s FIOS, which provides fiber to the home, is one such technology. The number of homes in North America that are now directly connected to fiber recently passed 1 million, a 213 percent increase over the number of homes that had this service last year. Ed Gubbins, FTTP Con: Fiber-connected homes top 1 million (October 5, 2006), http://telephonyonline.com/marketing/news/fiber_connected_homes_100506/ (retrieved October 16, 2006).

³⁶ Statement of Lea Ann Champion, SBC Communications Inc., Hearings before the Subcommittee on Telecommunications and the Internet of the House Committee on Energy and Commerce on “How Internet Protocol-Enabled Services are Changing the Face of Communications: A Look at Video and Data Services,” 109th Cong., 1st Sess. (April 20, 2005).

³⁷ The one exception to this is two-line captioned telephone relay service, which allows consumers to switch on and off the captioning, using only what that individual needs. This is because voice flows over one line while captions are transmitted on the other. Captioned telephone relay services are discussed more fully below.(?)

³⁸ Robert W. Fairlie, “Are We Really a Nation Online? Ethnic and Racial Disparities in Access to Technology and Their Consequences,” Report for the Leadership Conference on Civil Rights Education Fund (September 20, 2005) at 9; “Broadband America: An Unrealized Vision,” an EDUCAUSE Policy Paper (May 2005) at 9: “[L]ack of access to the Internet contributes to a widening economic gap between the most skilled and the least skilled workers in the global economy. . .” An earlier version of this paper is available at www.educause.edu.

³⁹ 47 U.S.C. §153(43). “Telecommunications service” is defined as “the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used.” 47 USC §153(46).

⁴⁰ 47 USC § 153(20).

⁴¹ See *In the Matter of Federal-State Joint Board on Universal Service, Report to Congress*, CC Docket No. 96-45, FCC 98-67 (April 10, 1998), ¶13, available at http://ftp.fcc.gov/Bureaus/Common_Carrier/Reports/fcc98067.pdf.

⁴² K. Joon Oh, “Completing The Connection: Achieving Universal Service Through Municipal WI-FI,” 2006 Duke Law & Tech. Rev. 0001.

⁴³ Trace-Gallaudet RERC Comments in FCC Dkt. No. 96-198 at 6 (undated); RERC-TA, *supra* note 1, at 24-28.

⁴⁴ *In the Matter of Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, GN Dkt. No. 00-185, CS Dkt No. 02-52, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd 4798 (2002).

⁴⁵ *Brand X Internet Services v. FCC*, 345 F. 3d 1120 (9th Cir. 2003).

⁴⁶ National Cable & Telecommunications Association v. Brand X Internet Services Brand X, 545 US ___, 125 S.Ct. 2688 (2005); See also Tillman L. Lay and Sean M. Flynn, “Brand X and the New Agency Kings,” *Municipal Lawyer*, Vol. 46, No. 6 (November/December 2005) at 7.

⁴⁷ *In the Matter of Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, CC Dkt. No. 02-33, FCC 05-150 (September 23, 2005) (Wireline Facilities Order) at ¶¶ 1,3,5. In this order, the Commission defined “Internet access service” as “a service that always and necessarily combines computer processing, information provision, and computer interactivity with data transport, enabling end users to run a variety of applications such as e-mail, and access webpages and newsgroups.” *Id.* at ¶9.

⁴⁸ *In the Matter of IP-Enabled Services and E911 requirements for IP Enabled Service Providers*, WC Dkt. Nos. 04-36; 05-196, FCC 05-116 (June 3, 2005) (E911 Order).

⁴⁹ *In the Matter of Communications Assistance for Law Enforcement Act and Broadband Access and Services*, First Report and Order and Further Notice of Proposed Rulemaking, ET Dkt. No. 04-295, FCC 05-153 (September 23, 2005). This ruling, which also applies to facilities-based broadband Internet access providers, was upheld by the U.S. Court of Appeals for the D.C. Circuit in June of 2006, as a “reasonable policy choice” under the Commission’s Congressionally delegated authority. American Council on Education v. FCC, No. 05-1404, 2006 U.S. App. LEXIS 14174 (D.C. Cir. June 9, 2006), available at <http://www.brownraysman.com/tlu/ACEvFCC.pdf>.

⁵⁰ *In the Matter of Universal Service Contribution Methodology*, Report and Order and Notice of Proposed Rulemaking, CC Dkt. No. 90-571, FCC 06-94 (June 27, 2006).

⁵¹ *Implementation of Section 255 and 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996, Access to Telecommunications Services, Telecommunications Equipment, and Customer Premises Equipment by Persons with Disabilities*, Report and Order and Further Notice of Inquiry, WT Dkt. No. 96-198, FCC 99-181, 16 FCC Rcd 6417 (September 29, 1999) (Section 255 R&O), ¶¶93-106, codified at 47 C.F.R. §6.1 et. seq., and §7.1 et. seq.

⁵² Section 255 R&O, *supra* note 51, at ¶103.

⁵³ *Id.* at ¶101.

⁵⁴ Wireline Facilities Order, *supra* note 47, at ¶121.

⁵⁵ 28 C.F.R. §35.162.

⁵⁶ 47 C.F.R. §64.604(a)(4).

⁵⁷ 47 C.F.R. §20.18(c).

⁵⁸ *In the Matters of IP-Enabled Services, E911 Requirements for IP-Enabled Service Providers*, WC Dkt. Nos. 04-36; 05-196, FCC 05-116 (June 3, 2005).

⁵⁹ *Id.* at ¶5.

⁶⁰ E-9-1-1 National Council of Stakeholders, Letter to FCC Chairman Kevin Martin and other FCC Commissioners (September 5, 2006).

⁶¹ “FCC Announces E9-1-1 Disability Access Summit,” FCC Public Notice, DA 06-1908 (September 21, 2006).

⁶² NCD, *supra* note 1, at 69.

⁶³ *In the Matter of The Use of N11 Codes and Other Abbreviated Dialing Arrangements, Second Report and Order*, CC Dkt. No. 92-105, FCC 00-257 (August 9, 2000).

⁶⁴ P. L. 101-431, codified at 47 U.S.C. §§303(u); 330(b).

⁶⁵ *Closed Captioning Requirements for Computer Systems Used as Television Receivers*, FCC Public Notice, DA 95-581 (March 22, 1995), 60 Fed. Reg. 16055 (March 29, 1995).

⁶⁶ *Closed Captioning Requirements for Digital Television Receivers*, Report and Order, ET Dkt. No. 99-254, MM Dkt. 95-176, FCC 00-259, 15 FCC Rcd 16788 (July 31, 2000), codified at 47 C.F.R. §15.122 (DTV Order).

⁶⁷ 47 U.S.C. §713, implemented at 47 C.F.R. §79.1.

⁶⁸ The Individuals with Disabilities Education Improvement Act, P.L. 108-446, Section 674 (c)(1)(A), codified at 47 USC §1474(c)(1).

⁶⁹ 47 U.S.C. §711.

⁷⁰ Section 3005, establishing this program, was enacted in Title III of the Deficit Reduction Act of 2005, P.L. 109-171 (February 8, 2006), codified at 47 U.S.C. §309(j).

⁷¹ *Request for Comment and Notice of Proposed Rules to Implement and Administer a Coupon Program for Digital-to-Analog Converter Boxes*, Dkt. No. 060512129-6129-01, 71 Fed. Reg. 42067 (July 25, 2006).

⁷² See generally, Lee Gomes, “Web TV Is Changing the Way Programming Is Watched and Sold,” *Wall Street Journal* (May 10, 2004), B1.

⁷³ Mary Watkins, “Watching TV in Your Hand, But What Happens to the Captions,” Vol. 36, Issue No. 2 *GA-SK* at 17 (April-June 2005).

⁷⁴ See generally Steve Friess, “Subtitles: Deaf to the Problem,” *Newsweek* (February 27, 2006), available at <http://www.stevetriess.com/archive/newsweek/itunes.htm>.

⁷⁵ NCD, *supra* note 1, at 156.

⁷⁶ 47 U.S.C. §713(f).

⁷⁷ *Video Description of Video Programming*, Report and Order, MM Dkt. No. 99-339, FCC 00-258, 15 FCC Rcd 15230 (2000), amended in part at Memorandum Opinion and Order on Reconsideration, FCC 01-7, 16 FCC Rcd 1251 (2001).

⁷⁸ Petition for Rulemaking by Telecommunications for the Deaf, Inc. Consumer Advocacy Network, National Association of the Deaf, Self Help for Hard of Hearing People, Inc, and the Association of Late-Deafened Adults, RM-11065 (July 23, 2004). The FCC released the consumer petition for public comment on July 21, 2005, but it has not yet ruled on its substance.

⁷⁹ 47 C.F.R. § 79.1(e)(3) requires real-time captioning by “the major national broadcast networks (i.e., ABC, CBS, Fox and NBC), affiliates of these networks in the top 25 television markets as defined by Nielsen’s Designated Market Areas (DMAs) and national nonbroadcast networks serving at least 50% of all homes subscribing to multi-channel video programming services.”

⁸⁰ *Closed Captioning and Video Description of Video Programming, Implementation of Section 305 of the Telecommunications Act of 1996, Accessibility of Emergency Programming*, Second Report and Order, MM Dkt. No. 95-176, FCC 00-136, 15 FCC Rcd. 6615 (April 14, 2000), codified at 47 C.F.R. §79.2.

⁸¹ For example, Notices of Apparent Liability were brought in the late winter and spring of 2005 against channel 51 of San Diego, Inc., KGTV of McGraw-Hill Broadcasting Company, KFMB-TV of Midwest Television, Fox Television Stations, Licensee of WTTG-TV; ACC Licensee Inc., Licensee of WJLA-TV; and NBC Telemundo. The action against Telemundo resulted in a consent decree that detailed very specific policies that the station must adopt in order to achieve compliance with the FCC’s rules. In the Matter of NBC Telemundo License Co., Licensee of WRC-TV, Washington, D.C., File No. EB 04-TC 101, DA 06-358 (February 22, 2006).

⁸² 47 U.S.C. §12181(9), as applied in 42 USC §12182(b)(2)(A)(iv); 28 CFR §36.304.

⁸³ 42 USC §12183(a)(1).

⁸⁴ There are also limited exceptions for properties of historical significance.

⁸⁵ 42 U.S.C. §§12112(b)(5) (Title I); 28 C.F.R. §35.150 (Title II); 42 U.S.C. §12182 (b)(2)(A)(iii) (Title III); Note that Title I’s definition for “undue hardship,” found at 42 USC §12111(10), has a nearly identical definition as “undue burden.”

⁸⁶ For example, a settlement in one of the two formal complaints filed under Section 255 produced a cell phone that is nearly fully accessible to blind and visually impaired people, even though this demanded considerable time and resources. Similarly, San Francisco's Candlestick Park was required to undergo millions of dollars worth of accessibility renovations under the ADA's readily achievable standard. Settlement agreement among the United States of America, the Disability Rights Education and Defense Fund, the City and County of San Francisco, the San Francisco Forty-Niners Limited, and the San Francisco Baseball Associates L.P.

⁸⁷ It should also be noted that use of the readily achievable standard in Section 255 is an anomaly; no other federal accessibility law has ever used the "readily achievable" standard for facilities, products or services that have yet to be built. Accordingly, rather than perpetuate the improper use of this standard and reaffirm a bad precedent that can adversely affect other disability legislation, the undue burden standard should be applied to obligations to make IP technologies accessible by people with disabilities.

⁸⁸ NCD, *supra* note 1.

⁸⁹ *Id.* at 193.

⁹⁰ See 47 C.F.R. §6.21.

⁹¹ A document of this nature was recommended by various members of the Telecommunications Access Advisory Committee, a federal advisory committee chartered by the Access Board in 1996 to design guidelines for Section 255. See Strauss, *supra* note 6, at 367-8.

⁹² NCD, *supra* note 1, at 251.

⁹³ Section 255 R&O, *supra* note 51 at ¶171.

⁹⁴ DTV Order, *supra* note 66 at ¶47.

⁹⁵ 47 C.F.R. §76.1000(e).

⁹⁶ Prior bills introduced on this issue included H. R. 951, The Video Description Restoration Act and S. 900, The Video Information-Enhancement for the Visually Impaired Act. Both bills were introduced in 2005.

⁹⁷ Advisory Committee on Public Interest Obligations of Digital Television Broadcasters, "Charting the Digital Broadcasting Future," Final Report (Washington, D.C.: December 18, 1998) at 62 stated: "We recommend that broadcasters allocate sufficient audio bandwidth for the transmission and delivery of video description in the digital age to make expanded use of this access technology technically feasible."

⁹⁸ P. L. 101-431, *supra* note 64.

⁹⁹ NTIA Request for Comment, *supra* note 71.

¹⁰⁰ WGBH's National Center for Accessible Media offers a guide to creating talking menus for DVDs and set top boxes to facilitate such navigation by people who cannot see. See <http://ncam.wgbh.org/resources/talkingmenus/>.

¹⁰¹ *Closed Captioning and Video Description of Video Programming, Implementation of Section 305 of the Telecommunications Act of 1996*, Report and Order, MM Dkt. No. 95-176, FCC 97-279, 13 FCC Rcd 3272 (August 22, 1997) (Captioning R&O) at ¶222.

¹⁰² *Closed Captioning of Video Programming, Telecommunications for the Deaf, Inc – Petition for Rulemaking*, Notice of Proposed Rulemaking, CG Dkt. No. 05-231, FCC 05-142, 20 FCC Rcd 13211 at ¶10 (July 21, 2005).

¹⁰³ *Captioning R&O*, *supra* note 98, at ¶212.

¹⁰⁴ 47 U.S.C. §73.3526(a)(11)(iii).

¹⁰⁵ Petition, *supra* note 103.

¹⁰⁶ *Closed Captioning and Video Description of Video Programming, Implementation of Section 305 of the Telecommunications Act of 1996*, Order on Reconsideration, MM Dkt. 95-176, FCC 98-236, 13 FCC Rcd 19973 at ¶126 (October 2, 1998).

¹⁰⁷ Strauss, *supra* note 7, at 182-97.

¹⁰⁸ 47 U.S.C. §254.

¹⁰⁹ K. Joon Oh, *supra* note 42.

¹¹⁰ In 1985, the FCC relied upon the jurisdiction granted in the following sections of the Communications Act to establish these programs: 47 U.S.C. §151 (imposing the universal service obligation on the Commission); 47 U.S.C. §154(i) (authorizing the FCC to “perform any and all acts, make such rules and regulations, and issue such orders. . . as may be necessary in the execution of its functions); 47 U.S.C. §201 (general authority over the rates and services of common carriers); and 47 U.S.C. §201(authority to prescribe just and reasonable telephone charges).

¹¹¹ See American Association of the Deaf-Blind homepage, http://www.aadb.org/deafblind/DB_definition.htm (retrieved September 8, 2006).

¹¹² The Research and Training Center on Disability in Rural Communities, “Disability and the Digital Divide: Comparing Surveys with Disability Data,” *RTC Ruralfacts* (June 2006), available at <http://rtc.ruralinstitute.umd.edu/TelCom/Divide.htm>.

¹¹³ 47 C.F.R. §64.604(c)(5)(iii)(A). These include companies that provide “cellular telephone and paging, mobile radio, operator services, personal communications service (PCS), access (including subscriber line charges), alternative access and special access, packet-switched, WATS, 800, 900, message telephone service (MTS), private line, telex, telegraph, video, satellite, intraLATA, international and resale services.”

¹¹⁴ *Universal Service Contribution Methodology*, *supra* note 50. Unfortunately, the FCC has not yet required VoIP providers to contribute to the interstate relay fund.

¹¹⁵ House Bill 568 can be found at <http://leg1.state.va.us/cgi-bin/legp504.exe?061+ful+HB568S1>. The new legislation defines “communications services” as “the electronic transmission, conveyance, or routing of voice, data, audio, video, or any other information or signals, including cable services, to a point or between or among points, by or through any electronic, radio, satellite, cable, optical, microwave, or other medium or method now in existence or hereafter devised, regardless of the protocol used for the transmission or conveyance.” Among the many categories of services it explicitly includes within this term are “the connection, movement, change, or termination of communications services,” as well as “voice mail and other messaging services.” Virginia Communications Sales and Use Tax, Ch 6.2 §58.1-647

¹¹⁶ 47 U.S.C. §§225(a)(3); (d)(2).

¹¹⁷ Calls made from a hearing person to a *two-line* captioned telephone user can similarly be made without operator assistance. The individual simply dials the telephone number of the captioned telephone user, and the relay service for the captioned telephone is connected automatically through the second telephone line.

¹¹⁸ Although VRS and IP Relay are also merely authorized and not mandated by the FCC, these services have steady funding support through the federally administered Interstate TRS Fund. This is because both of these services are Internet-based and therefore considered interstate relay services.

¹¹⁹ The petition was filed by Self Help for Hard of Hearing People, the Alexander Graham Bell Association for the Deaf and Hard of Hearing, the American Academy of Audiology, the American Association of People with Disabilities, the American Speech-Language-Hearing Association, the Association of Late-Deafened Adults, the Deaf and Hard of Hearing Consumer Advocacy Network, the League for the Hard of Hearing, the National Association of the Deaf, the National Cued Speech Association, Telecommunications for the Deaf and Hard of Hearing, Inc., the California Association of the Deaf, and the California Coalition of Agencies Serving the Deaf and Hard of Hearing.

¹²⁰ *In the Matter of Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Dkt. No. 03-123, FCC 05-203 (December 12, 2005).

¹²¹ E911 Order, *supra* note 48 at ¶36.

¹²² *In the Matter of Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, Declaratory Ruling and Further Notice of Proposed Rulemaking, CG Dkt. No. 03-123, FCC 06-57 (May 9, 2006) at ¶18.

¹²³ See <http://www.ada.gov/websites2.htm>.

¹²⁴ See, e.g., DOJ's amicus brief in *Hooks v. OKBridge, Inc.*, 232 F.3d 208 (5th Cir. 2000). DOJ maintained that one cannot exclude Internet services from the ADA's coverage simply because these services were not available at the time of the Act's passage. Similarly, in *Rendon et. al. v. Valley Crest Productions Ltd.*, 294 F. 3d 1279 (11th Cir. 2002), reh'g denied en banc, 2002 U.S. App. LEXIS 27593 (October 25, 2002), the eleventh circuit concluded that the mere fact that a process for selecting contestants for the *Who Wants to be a Millionaire* television show took place via a telephone contest and not at a physical location was insufficient reason to exclude this selection process from the scope of the ADA.

¹²⁵ See e.g., *Chabner v. United of Omaha Life Insurance Company*, 225 F.3d 1042 (9th Cir. 2000); *Access Now, Inc. v. Southwest Airlines*, 385 F.3d 1324 (11th Cir. 2004).

¹²⁶ *Doe v. Mutual of Omaha Insurance Comp.*, 179 F. 3d 557, 559 (7th Cir. 1999), cert. den'd, 120 S. Ct. 845 (2000); *Carparts Distribution Center, Inc. V. Automotive Wholesaler's Association of New England, Inc.*, 37 F. 3d 12, 19.

¹²⁷ NCD, "When the Americans with Disabilities Act Goes Online: Application of the ADA to the Internet and the Worldwide Web" (July 10, 2003), available at: <http://www.ncd.gov/newsroom/publications/2003/adainternet.htm>

¹²⁸ See <http://www.usdoj.gov/crt/ada/civicac.htm>.

¹²⁹ As the NCD paper suggests, these guidelines can be molded from web accessibility guidelines developed by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (WC3), <http://www.w3c.org/wai/>, and web accessibility standards created under Section 508 of the Rehabilitation Act, <http://www.section508.gov>.

¹³⁰ NCD, *supra* note 1.