REPORT OF THE
VIRGINIA DEPARTMENT FOR THE
DEAF AND HARD OF HEARING
and
VIRGINIA STATE CORPORATION COMMISSION ON

The Future of Dual Party Relay Services in Virginia

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 36

COMMONWEALTH OF VIRGINIA
RICHMOND
1990

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December 29, 1989

TO: The Honorable Gerald L. Baliles
Governor of Virginia

and

The General Assembly of Virginia

The report contained herein is pursuant to House Joint Resolution No. 272 of the 1989 General Assembly of Virginia.

This report constitutes the response by the Virginia Department for the Deaf and Hard of Hearing (VDDHH) and the Virginia State Corporation Commission (SCC) to the directive to jointly study the future of dual party relay services in Virginia.

Respectfully submitted,

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1989 SESSION

HOUSE JOINT RESOLUTION NO. 272

Offered January 17, 1989

Requesting the Department for the Deaf and Hard of Hearing and the State Corporation Commission to study the future of dual party relay services.

Patrons - Van Landingham, Crenshaw, Crouch, Plum, Marshall and Keating

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Referred to the Committee on Corporations, Insurance and Banking

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WHEREAS, it is estimated that there are 372,000 hearing-impaired Virginians, 180,000 of whom are significantly hearing-impaired and 50,000 of whom are profoundly deaf; and

WHEREAS, these persons depend upon telecommunications devices for the deaf (TDDs) to access telephone communication; and

WHEREAS, many public agencies and most private service providers and businesses are not equipped with TDDs; and

WHEREAS, as a result, these persons must rely upon a dual party relay service (DPRS) equipped with a TDD to serve as a conductor of telephone communications with parties not equipped with a TDD; and

WHEREAS, there are currently four such relay services in operation in Virginia; and

WHEREAS, these services serve limited geographic areas (Greater Richmond, Tidewater and Northern Virginia); and

WHEREAS, one DPRS provides a single toll-free access line to provide service to the entire Commonwealth; and

WHEREAS, many deaf and hearing-impaired Virginians are still denied telephone access as the result of limited availability of dual party relay services; and

WHEREAS, the 1988 Report of the Department for the Deaf and Hard of Hearing on Equal Telecommunications Access for Deaf and Hard of Hearing Virginians (TDD/Message Relay Programs) provided information on statewide dual party relay systems; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department for the Deaf and Hard of Hearing and the State Corporation Commission are requested to jointly conduct a study on the future of dual party relay services in Virginia. The study shall examine the current and projected demand for services as well as proposals to meet the demand. The Department and Commission shall, in their deliberations, seek the participation of the Virginia Association of the Deaf and other hearing-impaired consumer groups. The department and the Commission shall recommend ways to provide increased accessibility on a short-term basis. In addition, the Department and the Commission shall recommend long-range plans to provide total access. The report shall include recommendations for funding of both short-term and long-term proposals.

The Department and the Commission shall complete their work in time to submit their findings to the Governor and to the 1990 Session of the General Assembly as provided in procedures of the Division of Legislative Automated Systems for processing legislative documents.

I. EXECUTIVE SUMMARY

With the passage of House Bill No. 34, which revised the Code of Virginia thereby empowering the Virginia Department for the Deaf and Hard of Hearing (VDDHH) to implement a distribution of telephone equipment to hearing-impaired and speech-impaired residents of the Commonwealth, the State of Virginia made the commitment to equitable access to all users of telephone service. The Telecommunications Assistance Program (TAP) implemented subsequent to that Act provides specialized customer premise equipment which allows basic access to the telephone network.

House Joint Resolution No. 272, passed by the 1989 General Assembly, requires VDDHH and the Virginia State Corporation Commission (SCC) to jointly make recommendations concerning implementation of a statewide Dual Party Relay Service (DPRS) in Virginia.

Subsequent to studies of the extent of DPRS services and systems in Virginia and in other states, the VDDHH and SCC make the following recommendations:

1) The Commonwealth of Virginia establish a centralized DPRS whereby a hearing-impaired or speech-impaired person using a Telecommunications Device for the Deaf (TDD) and a non-TDD user can communicate with each other via telephone. The system shall be of the same level of accessibility and quality as the service provided to other users of the telephone network at a cost to its users not to exceed that charged to non-

hearing-impaired and non-speech-impaired persons. The centralized DPRS shall include, but not be limited to, the following considerations: (1) 24-hour-a-day, 7-day-a-week statewide DPRS access with no limitations or restrictions that are not applicable to voice users of the telephone network, (2) the access rate of the DPRS shall exceed or equal 85% of incoming calls answered within 20 seconds and 100% of incoming calls answered within 90 seconds, and (3) the DPRS shall incorporate technological advances, including the capability of voice carry over (VCO).

2) That the SCC, with the expertise of its Communications Division, be responsible for the establishment of the DPRS to include the selection of a competent business entity to operate the relay service. The VDDHH, with its expertise in the needs of DPRS clients, should have the authority to concur in all decisions regarding the establishment.

3) That, after the DPRS is established, the VDDHH be responsible for overseeing its operations. The SCC should give technical support for this function.

4) That, in order to assist the VDDHH in fulfilling its responsibilities with regard to DPRS, an advisory board should be established. The board should be made up of three deaf persons, a hard-of-hearing person, a speech-

impaired person, an SCC employee, a VDDHH employee, a representative of the Virginia Telephone Association, and a representative of the relay service provider.

5) That all costs associated with the DPRS, including the expenses of the advisory board, should be funded by assessments on all local exchange telephone companies operating within Virginia. Each company's assessment should be based on its share of all subscriber lines in Virginia. These assessments, when paid, should be allowed as tax credits.

II. DEFINITIONS

A. ASCII/BAUDOT - These are two communication codes utilized by computers. ASCII is the most common code utilized by personal computers; Baudot is the most common code for a Telecommunications Device for the Deaf (TDD).

B. American Sign Language (ASL) - The native language of some 2 million hearing-impaired residents of North America. ASL is a language unto its own, with a different syntax than English and unique idiomatic expressions.

C. Dual Party Relay Service (DPRS) - A system where hearing-impaired TDD users can interact with other hearing persons via the telephone. A DPRS operator acts as a confidential "middle man" voicing the typed message from a TDD user to the hearing person and typing the hearing person's response back to the deaf consumer. Hearing persons can also initiate DPRS calls.

D. Equal Access - All individuals, regardless of handicap, are afforded the same opportunity to access and participate in public accommodations, including the telephone network.

E. Deaf Community - Members of a subculture whose common link is the acceptance of the values of the community, which include the use of American Sign Language (ASL).

F. Interstate - Telephone calls made from one state to another state.

G. Intrastate - Telephone calls made within the same state.

H. Local Exchange Carrier (LEC) - Telephone company that provides local telephone service.

I. Relay Center - An agency providing DPRS services.

J. Subscribers - Individuals or businesses who have telephone service.

K. Telecommunications Device for the Deaf (TDD or TTY). A machine which, when connected to the telephone, allows the deaf person to carry on a conversation either with another person using a TDD or, when utilizing a DPRS system, to have a conversation with a person who does not have a TDD.

L. Voice Carry Over (VCO) - Technology where a hearing-impaired person with good speech uses his voice, instead of the TDD, to communicate back to the hearing person.

III. BACKGROUND

A. Deaf Community - Culture and Services[1]

1) Culture

For hearing-impaired persons, the greatest single problem in dealing with the world of hearing persons is communication. Deaf persons may socialize together more than groups of individuals with other disabilities in common. Their cohesiveness can be viewed in terms of four factors which describe group interactions:

Audiological Components:

The ability to hear affects socialization of individuals and groups. Self identification with hearing-impaired persons is culturally important.

Political Component:

Individuals' personalities may incline them to seek power and influence within a community group, to hold formal office in organizations or in government.

Linguistic Component:

Similarities and differences in language are critical to cultural identity. Use of sign language by many deaf persons establishes a common language among them and a profound difference between groups appears frequently in written communication as well.

Social Component:

Individuals who identify with the deaf community are able to participate effectively in social functions within that community. In turn, this assumes proficiency in sign language, self identification with other deaf persons, and perhaps political involvement in organizations.

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[1]American Sign Language, Charlotte Baker and Dennis Cokely, T.J. Publishers, Silver Spring, MD, 1980, pp. 54-58.

Individually and in groups, hearing-impaired persons, and particularly deaf persons, experience isolation from the hearing world. To date, relatively few organizations and individuals have the capacity to communicate effectively with deaf people. Therefore, improvements to the quality of life of deaf and hard-of-hearing Virginians must begin with communications. Many persons with speech impairments experience similar needs.

Due to isolation, persons who are deaf or hard of hearing may not know of services which are readily available to them. Only when hearing-impaired persons know of the options available to them will services be effectively utilized and client data properly gathered and used.

As individuals and through self-help organizations, hearing-impaired and speech-impaired Virginians have long shared the objective to make the public telephone system more accessible and responsive to their needs. No longer viewed solely as vehicles for voice transmission, telephone systems now allow exchanges of quantitative, verbal and graphic information in various forms.

Technical barriers to free and open communication with and among persons with disabilities have therefore been greatly reduced. A range of adaptive devices and services now exist to aid persons who are hearing impaired or speech impaired. If properly explored, these developments can lead to increased employment,

economic independence, mobility, and improved English language skills for those with hearing impairments. Additional revenues will accrue to telephone companies as the subscriber base expands.

In a study conducted by the Florida Association of the Deaf, it was estimated that 94% of the residences in the United States have telephone service. Of the remaining group of 6%, 98.6% have significant or profound hearing or speech impairments[2]. The circumstances of the second group deserve attention.

Hearing-impaired and speech-impaired citizens pay taxes and monthly charges for telephone service just as other people, and thus support staff and telephone service in governmental offices as well as health and human services agencies. Yet, with unequal access, these individuals often cannot contact the services their contributions help to support.

The principle of equal access was clarified with enactment of the Federal Rehabilitation Act of 1973 and subsequent amendments. The Act requires that programs shall be as accessible to disabled persons as they are to others. Section 504 of The rehabilitation Act of 1973 states that:

> No otherwise qualified individual in the United States...shall, solely be reason of his handicap, be excluded from the participation in, be denied the

[2]Ms. Deanie Lowe, Florida Association of the Deaf.

benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

The Virginians with Disabilities Act of 1985 makes a similar statement (Code of Virginia, §51.01-40):

> No otherwise qualified person with a disability shall, on the basis of disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving state financial assistance or under any program or activity conducted by or on behalf of any state agency.

Though these laws apply primarily to programs receiving public support, the concept of equal access clearly has been established as a right for persons with disabilities in both private and public sectors.

2) Demographics

Schein and Delk[3] reported in 1974 on national data about persons with hearing loss. These data remain most commonly accepted for demographic analysis of persons with hearing impairments. Consistent with practices of many other states and agencies which service persons with hearing impairments, Schein & Delk factors have been applied to local census figures to estimate numbers of hearing-impaired persons.

[3]The Deaf Population of the United State, Jerome D. Schein and Marcus T. Delk, Jr., conducted by the National Association of the Deaf in Cooperation with the Deafness Research and Training Center, New York University, 1974.

Census projections from the Tayloe-Murphy Institute place Virginia's population at 5,754,000 as of July 1986[4]. Use of national prevalence rates for hearing impairments reported by Schein & Delk yields an estimate of 379,800 Virginians with hearing impairments. Significantly, 50,200 of these individuals are expected to have severe to profound losses.

Other indicators suggests that literacy, income and employment for hearing-impaired persons as a group are not typical. J. A. Sessions reported that 60% of adults with severe to profound hearing impairments read at a fifth grade level or less[5]. Income figures for Virginia's hearing-impaired rehabilitation clients indicate that in state fiscal year 1986, earnings at an annual rate ranged from $2,548 to $9,880, prior to and after rehabilitation intervention[6]. Further, employment is lower than for the general population, and under-employment is higher[7].

These circumstances describe many of the estimated 50,200 severely to profoundly hearing-impaired Virginians who cannot readily pick up the telephone

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[4]July, 1986 population estimates issued 1982, Tayloe-Murphy Institute, University of Virginia.

[5]J. A. Session, Automation and the Deaf, as quoted by the Arkansas Rehabilitation Research and Training Center (1973).

[6]Special analysis by Virginia Department of Rehabilitative Services, August 14, 1987.

[7]Schein and Delk, op. cit.

to call the police, the local 911 emergency service, arrange a doctor's appointment or order merchandise and services. Persons with other communication disabilities increase the target population further.

3) Current Devices/Services

Technology exists which can make the telephone as accessible to persons who are hearing impaired or speech impaired as to those who are not. A Telecommunications Device for the Deaf (TDD) is an electronic device which, when used with a telephone, can transmit and receive messages from other TDDs. Hearing-impaired persons, their hearing family members and friends are the most frequent users of TDDs, although speech-impaired persons can also benefit. The most common features of a TDD are:

a) a keyboard, often similar to a typewriter in layout,

b) a lighted display of the words sent or received, similar to the window display on a desk calculator,

c) a modem or acoustic coupler which receives and transmits the TDD messages in the form of coded "beeps". The connection between TDD and telephone may be by wire, or the telephone handset may be inserted into a "cradle" equipped with rubber cups, and

d) as an option, a printout or "hard copy" of the TDD conversation on a wide or narrow roll of paper.

To place a call with a TDD, the individual connects the telephone handset to the TDD, turns the TDD on, and dials a telephone number. For persons with hearing impairments, the response or signal at the other end is monitored by a

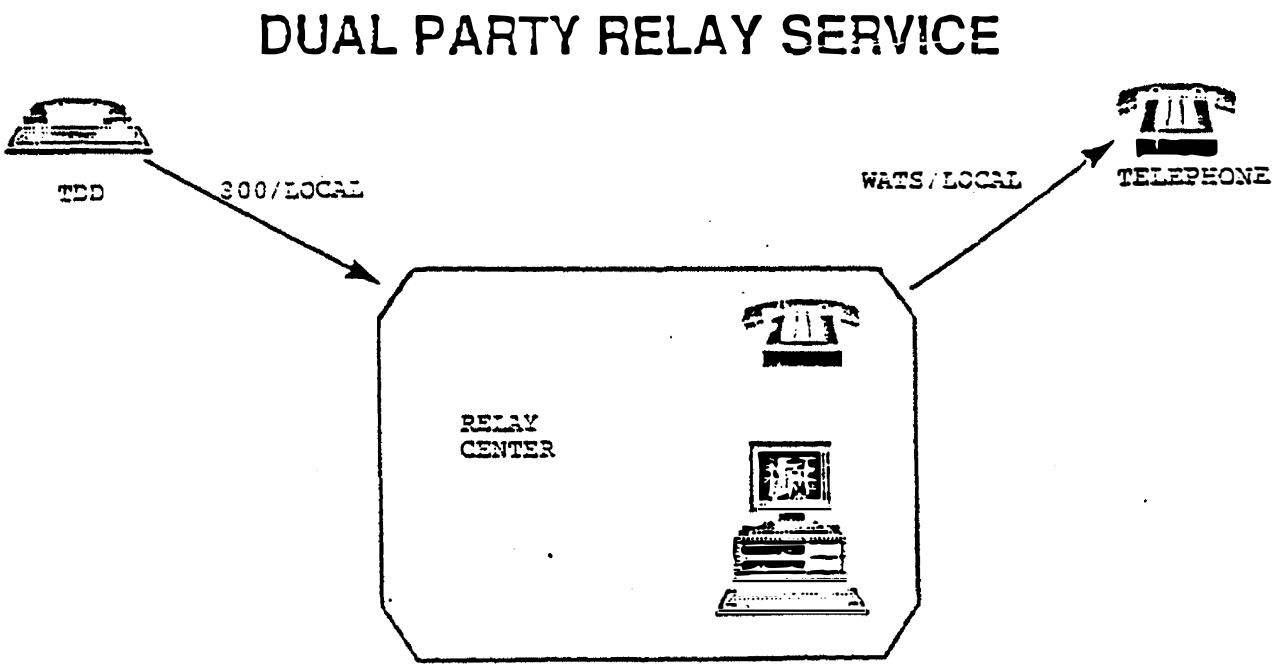
flashing indicator light. Standardized abbreviations allow the communicating individuals to coordinate the conversation and respond at the appropriate time. These include: "GA" (for "go ahead," i.e., "I have finished talking and you may reply."), "XX" (wrong or misspelled word), and "SK" (stop keying," i.e., "The conversation is over.").

4) What Is a Dual Party Relay Service?

Other alternatives rely less on wide distribution of special devices than on centrally-operated or coordinated services. A Dual Party Relay Service (DPRS) enables TDD users with impairments of hearing or speech to communicate by telephone with persons who communicate by voice and vice versa. A DPRS and special adaptive devices work best as a system, in which communications will occur between TDD users, as well as between voice and TDD communicators. If a relay service is not available for use, interactive communication between TDD users and persons who communicate by voice is impossible.

A DPRS center is equipped with one or more TDDs or TDD-compatible terminals, and is staffed by operators who receive calls. The operator serves as an intermediary, relaying the message between the TDD caller and the person communicating by voice, as shown in the chart below. The range of sophistication among DPRS services is wide. The simplest service requires an office, a telephone, a TDD and an operator to answer the phone. The most advanced services have

around-the-clock staffing and terminals which allow simultaneous communication by the operator with both parties to the conversation (users are charged applicable rates for long distance calls).



The advantage of telecommunications access strategies for hearing- impaired persons has been acknowledged in at least twenty-one other states where telecommunications access programs have been developed. Programs identified by the Committee set up to study DPRS in Virginia and other states found a range of services including (1) the provision of TDDs and other devices for loan, rent, or purchase, (2) DPRS systems, and (3) information and referral. Funding for the programs is varied, with some programs relying on telephone line surcharges or tariffs, others utilizing state general funds, and still others seeking donations or user fees. The range of examples includes many programmatic and financial alternatives to address the need.

B. Review of Relay Services in Targeted States and Summary of National Activities.

A review of relay services in Alabama, Arizona, California, Minnesota and New York with a summary of nationwide activities provides valuable information on DPRS services.

1) Alabama

On August 4, 1987, the Alabama Public Service Commission (PSC), established a docket for the purpose of taking comments on the establishment of a relay system for the hearing and speech impaired in

Alabama. In its Order the PSC stated "...that the hearing- and speech-impaired community of Alabama is entitled to the same access and use of the telephone network as those without such impairments...".

The PSC also stated that (1) the relay service should be operated by a company with experience in the field, (2) the service should operate 24 hours a day, seven days per week, (3) both intrastate and interstate service should be offered, as long as the called or calling party is located in Alabama, (4) service standards should be prescribed by the PSC, and (5) the relay system would consist of a center or centers accessible on a toll-free basis for the completion of calls.

The PSC asked for comments on the operation, funding, user charges, supervision, and implementation of the proposed relay system. Supportive comments were received from five telephone companies including AT&T Communications of the South Central States, Inc.

By Order dated December 10, 1987, the PSC stated that a DPRS would have a positive effect on the business community, expand the job market, and benefit all citizens of Alabama. Accordingly, the PSC ordered that a relay system be implemented, and that all telephone companies and the PSC's Staff pursue investigations to achieve such implementation.

On April 12, 1988, a law was enacted in Alabama which authorized the PSC to impose a surcharge on each access line of each customer of the local exchange companies to fund a statewide DPRS. The PSC was charged with the responsibility of setting the surcharge amount and implementing a relay system within the state of Alabama. Also, the law provided for collection of the surcharge by the local exchange telephone companies, and the transfer of the monies to a private fund to be used solely for the administration of the relay system.

On June 10, 1988, the PSC entered an Order directing each local exchange company to begin collecting 20 cents per month on each access line of each customer beginning with the August 1988 billing cycle. The amount of the surcharge was based on an estimate of $600,000 for start-up prior to an anticipated January 1, 1989, implementation date, and a first year's operating cost of $3,840,000. The 20-cent amount will bring in approximately $3,840,000 annually from Alabama's 1.6 million telephone access lines. Also, the PSC stated a desire for entering into contractual agreements with a relay service provider by July 1, 1988 (AT&T was selected shortly after this Order was entered).

The Alabama Relay Center (ARC), a centralized DPRS, began operation on February 27, 1989. The ARC handles any type of call

normally handled over the telephone network. This includes direct-dial, third-party, credit card, collect, and emergency (911) calls placed either person-to-person or station-to-station. Interstate calls cannot be handled until appropriate procedures are in place for call billing.

The calling volume increased from 9,000 calls during the first month of operation in March 1989 to over 13,000 calls in May 1989.

2) Arizona

On March 13, 1987, the Arizona Relay Center began operation as a 24-hours-per-day, 7-days-per-week centralized DPRS System. Staffed by thirty-nine (full- and part-time) operators, it has had a high turnover rate. This turnover rate has been attributed to the "below market" salary range offered for these operators.

All types of calls, except collect calls, are handled through the Center. Interstate long distance calls must be billed to the initiating customer's credit card. Relay services are available to English and American Sign Language syntax users. When a Spanish operator is on duty, Spanish is also provided.

The agency is not able to charge users for processing intrastate long distance calls because the relay service is not operated by a telephone

company. TDD users are charged the same as hearing callers for long distance service used.

The Arizona legislature originally passed a 0.2% tax on all subscriber lines, which has since been increased to 0.4%. Now the Arizona Council for the Hearing Impaired (ACHI) is going back to a joint legislative tax committee for an increase to 0.6%. The main reason for the increase is higher personnel costs.

The Arizona Public Utilities Commission is not involved in the operations of this Center, which is operated by a non-profit corporation under contract to ACHI.

3) California

The California Relay Service (CRS) operates three main telecommunications programs for the deaf and hard of hearing: the distribution of TDDs, which was mandated in 1979; the centralized DPRS, which was authorized in 1983; and the dissemination of supplemental equipment for the disabled started in 1985.

The CRS is under the supervision of the CRS Advisory Committee. The Committee is composed of one representative from the provider of the

relay service, four consumer members, three representatives from the local exchange telephone companies, and one representative from the California Public Utilities Commission (PUC).

Monies received for the operation of CRS are placed in The Deaf Fund, with the Bank of America acting as trustee. Audits of the fund are conducted annually.

The CRS began operation on January 1, 1987 and is open 24 hours per day, seven days per week. The service uses "800" lines (incoming service), Wide Area Telephone Service (WATS) lines (outgoing service), and local exchange lines to handle the call volume which has increased greatly each month of operation. Messages are handled by Communications Assistants (CAs) at the CRS center who transcribe the words of the hearing person to the TDD for the hearing impaired. Their annual call volume is 3.2 million messages, which necessitates 120 attendant positions and employs more than 200 CAs.

CRS' budget for 1989 is $17.2 million. The present source of funds is a surcharge of 0.3%, applicable to intrastate billings of utilities which provide intrastate telecommunications services in California. The 0.3% surcharge became effective on October 1, 1988, and will remain in effect

until June 30, 1990, after which it may revert back to a 10 cents per month subscriber line surcharge.

The center is operated by AT&T from its Woodland Hills, California, relay system location.

4) Minnesota

During 1986 a group called the Legislative Coalition for the Hearing Impaired developed a plan which led to passage of legislation providing for a quasi-independent board to establish (1) a distribution system to provide telecommunications access equipment for the hearing impaired, (2) an operator relay service, and (3) a permanent funding mechanism for the service.

A public meeting was held to take comments from interested parties and generate support for the legislative bill being considered.

Legislation was passed by the 1987 Session of the Minnesota Legislature, and signed into law by the Governor on May 19, 1987.

The new law created the Telecommunications Access for Communication - Impaired Persons (TACIP) Board which operates as an

independent state agency. The statute provided for the Board to establish a program "...to help make telephone services for communications-impaired people as accessible as they are for people without communications impairments."

The TACIP Board was established in October 1987 and immediately began work to alleviate the problems for the hearing-impaired community in Minnesota. The Board announced that its two major goals were to establish a TDD distribution program and to develop a statewide DPRS as soon as possible. The focus of this report is on the DPRS system.

The legislation that established TACIP specifically requires that the message relay service be operated by a consumer organization that serves communication-impaired persons. Accordingly, the TACIP Board published a Notice of Requests for Proposal (RFP) in the State Register to operate a relay service. Responses were due by September 6, 1987. The only bid, which was accepted as satisfactory, came from the Deafness Education Advocacy Foundation, Inc. (D.E.A.F., Inc.), a non-profit organization designed by the deaf community. This organization was created in 1980 by the Minnesota Association of Deaf Citizens to perform educational and advocacy functions for the hearing impaired.

One of the major policy issues which the TACIP Board had to address was funding. State statutes direct the Board to annually recommend a surcharge level to the Minnesota Public Utilities Commission (PUC) based on estimated operating expenses for the relay service. The Board's recommendation for the first year's operation was 10 cents per month per subscriber line, which is the maximum allowed under current law. The PUC approved the recommendation and began assessing telephone customers on April 1, 1988. It should be noted that the Minnesota Legislature selected this funding mechanism because it is dependable and adjustable.

The 10-cent surcharge will produce approximately $2,400,000 per year which will adequately fund the TACIP Board's projects through fiscal year 1991. The cost of the centralized DPRS alone is estimated to grow from $1,086,000 in fiscal year 1989 to $1,831,000 in fiscal year 1991.

The Minnesota Relay Service (MRS) began official operation on March 1, 1989. The MRS is capable of handling any type of call except interstate calls. During the first year of operation the center has projected that 430,000 calls will be completed.

5) New York

On December 4, 1984, the New York Public Service Commission (PSC) issued a notice soliciting comments from interested parties regarding the establishment and operation of a statewide DPRS system for the hearing- and hearing-impaired. In its Order the PSC stated that such a system "...is necessary to ensure that the hearing- and speech-impaired community will have the same access to, and use of, the telephone network as persons without such impairments."

The PSC stated that (1) all telephone companies in New York would be responsible for ensuring the provision of a relay system, (2) the system would operate on a 24-hour basis, (3) calls placed through the relay system would not be unduly burdensome, (4) costs associated with implementation and operation would be considered as normal operating expenses and be recovered through rates, and (5) information regarding the relay system would be included in telephone directories.

Comments supporting a relay system were received from four telephone companies and 85 individuals or groups interested in the service. Those making comments stressed the need for confidentiality, reliability, and professionalism in administering the relay service. The telephone companies expressed concern that they did not have the expertise required to deal with hearing- and/or speech-impaired persons.

On November 25, 1985, the PSC's Consumer Services Division sponsored a meeting with interested parties to discuss the many issues regarding a DPRS system. As a result of the meeting, a technical task force was established to design a model system and project estimated costs.

The technical task force designed a model system, estimated that the total annual cost to operate the system would be approximately $ 10 million, and recommended that the PSC undertake a formal rulemaking proceeding. The task force stressed the need for reliable and adequate funding, and the need for implementation within a reasonable time frame.

On October 6, 1986, the PSC issued a notice of proposed rulemaking concerning the requirement for all telephone companies to provide a relay system permitting telephone communications, on a 24-hour basis, between hearing- and/or speech-impaired individuals and those with normal hearing and speech. Comments were to be submitted by November 14, 1986.

Seventy-four responses were received from various interested parties including six telephone companies, two legislators, and 24 organizations which represented the hearing- and/or speech-impaired community. Also, public hearings were held in three locations during December 1986 and January 1987, at which 83 statements were taken.

All those making comments endorsed the idea of a statewide relay system, but they differed on funding and operation issues. AT&T Communications of New York was the only company interested in implementing the DPRS system.

On April 29, 1987, the PSC entered an Order directing the local exchange companies to meet with AT&T and submit for PSC approval an agreed-upon design and plan for implementation of a relay system. The PSC required that the system be operational by January 1, 1989, and incorporate the following standards and requirements:

(a) Operation by an entity with experience in communications,

(b) 24-hour-a-day, seven-day-a-week operation,

(c) Service parameters should track those of the existing network as closely as possible,

(d) The cost of the system, including a return on investment, should be treated as normal operating expenses of the local exchange companies and allocated among them based on the number of access lines,

(e) Charges for calls should be calculated from point-of-origin to point-of-termination,

(f) An advisory board should be established to provide guidance in the operation of the system,

(g) Local exchange carriers should file annual operations and financial reports, and

(h) Information about the relay service should be in telephone directories and in a yearly bill insert.

The New York Relay Center, located near Albany, began handling calls on January 1, 1989, as ordered by the PSC. First year start-up costs plus operating expenses have been estimated to be $10.9 million. All telephone customers in New york are paying approximately 11 cents per month per access line to cover for the center's operation. The PSC has received very few complaints about the 11-cent increase in rates.

The number of calls handled by the centralized DPRS center went from 42,000 in January to 73,000 in May, 1989. It is expected that the level of calls will peak at approximately 100,000 relays per month.

6) Summary of National Activities

The attached matrix is a summary of all DPRS programs which are sponsored by each state.

6. SUMMARY OF NATIONAL ACTIVITIES

IECOP - Local exchange company generating expense
N/A - Not available
NPO - Non-profit organization
Surc. - Surcharge on telephone bill
LEC - Local exchange telephone company
DPRS - Dual Party Relay Service
PSC - Public Service Commission

State	Mandate	Start Date	Funding Source	Amount	Provider	Unlimited Statewide DPRS Being Studied	Limited DPRS Now	Unlimited Statewide DPRS
Alabama	SB38	02/89	Surc.	$ .20	AT&T			Yes
Alaska		None					N/A	
Arizona	SB1010	03/87	Surc.	$ .06	N-PO			Yes
Arkansas	None	07/87	State	$170,000	N-PO		Yes	
California	SB244	01/87	Surc.	$ .10	AT&T			Yes
Colorado	SB121	06/90	Surc.	$ .10	N/A		N/A	Pending
Connecticut		07/89	Surc.	$ .05	N-PO		Yes	
Delaware	SB184	N/A	LECOP	N/A	LEC		N/A	Pending
Dist. of Col.						N/A	N/A	
Florida	Pending	None				Yes	N/A	
Georgia		None				Yes	N/A	
Hawaii	SB2633	07/89	Surc.	$ .18	LEC			Yes
Idaho	Pending	None				Yes	N/A	
Illinois	SB1814	06/90	Surc.	$ .03	AT&T		N/A	Pending
Indiana						N/A	N/A	
Iowa		None				Yes	N/A	
Kansas	Statute	12/84	State	N/A	N-PO	Yes	Yes	

SUMMARY OF NATIONA ACTIVITIES (con't)

IECOP - Local exchange company generating expense
N/A - Not available
NPO - Non-profit organization
Surc. - Surcharge on telephone bill
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DPRS - Dual Party Relay Service
PSC - Public Service Commission

State	Mandate	Start Date	Funding Source	Amount	Provider	Unlimited Statewide DPRS Being Studied	Limited DPRS Now	Unlimited Statewide DPRS
Kentucky		None				Yes	N/A	
Louisiana	HB1860	N/A	Surc.	$ .05	N/A			Yes
Maine		None				Yes	N/A	
Maryland	SB721	08/88		N/A	N-PO		Yes	Pending
Massachusetts		07/86	State	$680,000	N-PO	Yes	Yes	
Michigan	Pending	None				Yes	N/A	
Minnesota	S1029	03/89	Surc.	$ .10	N-PO		N/A	Yes
Mississippi						N/A	N/A	
Missouri						N/A	N/A	
Montana	HB614	1990	Surc.	$ .10	N/A		N/A	Pending
Nebraska		None				Yes	N/A	
Nevada	Pending	None				Yes	N/A	
N. Hampshire		1979		$203,000	N-PO		Yes	
New Jersey						Yes	N/A	
New Mexico		08/89		N/A		Yes	Yes	
New York	PSC	01/89	LECOP		AT&T			Yes
N. Carolina	HB1186	N/A	Surc.	$ .25	N/A			Pending
N. Dakota						N/A	N/A	

SUMMARY OF NATIONAL ACTIVITIES (con't)

:ECOP - Local exchange company generating expense
I/A - Not available
IPO - Non-profit organization
urc. - Surcharge on telephone bill
LEC - Local exchange telephone company
DPRS - Dual Party Relay Service
PSC - Public Service Commission

State	Mandate	Start Date	Funding Source	Amount	Provider	Unlimited Statewide DPRS Being Studied	Limited DPRS Now	Unlimited Statewide DPRS
Ohio						Yes	N/A	
Oklahoma	SB566	04/87	Surc.	$ .05	N-PO			Yes
Oregon	Statute	05/89	Surc.	$ .10	N-PO			Yes
Pennsylvania						Yes	N/A	
Rhode Island						N/A	N/A	
S. Carolina						N/A	N/A	
S. Dakota	Statute	10/89	Surc.	$ .10	N-PO			Yes
Tennessee	Pending					Yes	N/A	
Texas	HB170	09/90	Surc.	N/A	N/A		N/A	Pending
Utah	SB101	01/88	Surc.	$ .07	N-PO			Yes
Vermont	None	05/88	Surc.	$ .10	N-PO		Yes	
Virginia	HB34	10/88	State	$80,000	N-PO	Yes	Yes	
Washington	Statute	N/A	Surc.	$ .10	N-PO		N/A	Pending
W. Virginia						Yes	N/A	
Wisconsin	None	1982	State	N/A	N-PO	Yes	Yes	
Wyoming						N/A	N/A	

B. Summary of Federal Communications Commission Activities.

On July 27, 1989, the Federal Communications Commission (FCC) released its Order Completing Inquiry and Providing Further Notice of Proposed Rulemaking in Docket 87-124, Access to Telecommunications Equipment and Services by the Hearing Impaired and Other Disabled Persons.

In its Order the FCC found that an interstate relay system is necessary to provide reasonable access to telephone services by hearing- and speech-impaired persons. Furthermore, the FCC found no evidence that technological breakthroughs which would ameliorate the need of an interstate relay system are imminent.

The FCC offered the following two proposals for comments in its order:

1) Long distance telephone companies which have more than 0.05 percent of the total number of presubscribed lines (the customer has preselected a long distance company) to separately or jointly provide the relay service. Companies would be allowed to recover their costs through charges for other services.

2) The National Exchange Carrier Association (NECA)[9] would assume the responsibility for implementation and operation of the relay system. Funding would be covered by an assessment on long distance companies meeting the 0.05 percent criteria. The assessment would be based on the number of presubscribed lines.

Under the FCC's plan there would be no additional charge for users of the interstate relay service beyond the normal toll charges of the serving long distance company. At this time, the FCC does not propose discounted interstate toll rates for DPRS users.

The FCC also determined that standardizing the TDD signaling format is unwarranted. An interstate relay system should accept both ASCII and Baudot formats. Also, that the system is expected to incorporate existing technology and be able to accommodate future technologies as they are developed.

The FCC asked that comments on its proposal be filed by September 29, 1989; replies by October 27, 1989.

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[9]NECA is a national organization of local exchange telephone companies which (1) administers revenue pools for access services and billing and collection, (2) files interstate tariffs, and (3) negotiates billing and collection contracts on behalf of its members. NECA was created by order of the FCC and began operation in 1984.

V. DISCUSSION

A. Legislative Mandate

In addition to the anti-discrimination laws stated earlier, the Federal Communications Act of 1934 stated the following:

> "...in communication by wire and radio as to make available, so far as possible, to all people...a rapid, efficient...communication service with adequate facilities at reasonable charges."

Whereas the Communications Act of 1934 concerned universal telephone service, it was not until the Disabled Act of 1982 that the previous act was amended to read:

> "... to ensure the availability of transmission service for persons with hearing impairment." H.R. Rep. No. 888, 97th Cong., 2d. Sess. 8 (1982).

Without a Dual Party Relay Service (DPRS) many individuals do not have adequate access to telephone service. The principle of equal access is basic to all individuals and should not be compromised.

B. Equal Access Considerations

Equal Access occurs where no limitations (regardless of reasons or causes) are imposed upon a certain group of people, with these individuals having access to the same level of service and benefits as others who subscribe to regular telephone service. Current telecommunications services in Virginia are not fully

accessible to individuals with hearing or speech impairments. The following example of the limitations experienced by this group of citizens are:

1) Access to the telephone system - A 1988 estimate is that less than ten percent of the hearing- and speech-impaired population of Virginia had access to the telephone system. With the new Telecommunications Assistance Program (TAP) administered by the Virginia Department for the Deaf and Hard of Hearing (VDDHH), more people are gaining limited access to the telephone system, however, the telephone system will remain limited as long as there is an absence of an effective DPRS system available throughout the state for these individuals.

2) Access to other subscribers - At the present time those who access the telephone system with a Telecommunications Device for the Deaf (TDD) can only communicate directly with others having similar equipment. They are not able to communicate with those who use the regular telephone equipment except in those locations where a limited relay system exists, which is especially true in large metropolitan areas. The present relay services in Virginia are fragmented and are ineffective in reaching the entire hearing- and speech-impaired community.

3) Inequitable cost Sharing - Those who depend on TDDs for access to the telephone network have a directory which lists up to 1,000 numbers in Virginia. Without an effective statewide DPRS system individuals generally can only access these TDD-accessible telephone numbers, since both the called and calling party must have a TDD. Those individuals who use a TDD pay as much for their telephone service as non-TDD telephone service users pay for the same service, but cannot access as many numbers. The only discount which TDD users have is on day and evening direct dialed long distance toll calls made through certain long distance telephone companies.

4) Economic Impact - Without an effective telephone network the productivity and job potential of hearing- and speech-impaired individuals are restricted. This can result in a greater need for dependence on various human service programs.

C. Potential Benefits

When there is equal access with a relay service, every one benefits. Non-TDD users have access to TDD users and vice versa.

When viewed as investments, using the DPRS system for equal telecommunications access yields major benefits. Hearing-impaired and speech-impaired consumers will be able to call government, community, and private services which they support, but cannot access at the present time. Telephone companies and other businesses will experience increased revenues from a larger subscriber base and a higher call traffic volume. Greater numbers of persons with hearing impairments will experience increased independence and increased or stabilized employment, as they are able to rely on themselves to arrange appointments or business transactions. Daily use of a TDD provides increased opportunity for telephone skills and language development, an area in which persons with hearing impairments tend to lag behind their hearing peers. Telephone and language skills are crucial for young persons who must prepare for eventual employment and independence.

D. Virginia DPRS Philosophy

To ensure that equal access to full telephone services becomes a reality for all individuals in Virginia, the Virginia DPRS System shall espouse the following philosophy:

The standard telephone network and service will incorporate a centralized DPRS which simultaneously facilitates communication between a standard telephone user and a TDD user. Furthermore, this service will be available on a 24-hour-a-day, 7-days-a-week basis, and will be provided under a code of ethics stressing professionalism, anonymity and confidentiality. Furthermore, the DPRS will operate under the same standards used to govern telephone services for the general public.

E. Projected Service Demand/Service Costs

In July 1989, the most recent data available for the five target states (Alabama, Arizona, California, Minnesota and New York) was collected, graphed and analyzed to pinpoint the determining factors of DPRS use. After the trends and other influencing factors were determined, the DPRS Study Group sub-committee projected the estimated demand and first-year costs for a DPRS operation in Virginia.

1) Trends and Factors

After plotting the information shown on the graph on the next page, the study group began comparing data to establish trends and factors which influence the usage rate of the DPRS. Though a limited amount of experience and hard data is available (the oldest statewide DPRS began operation in January 1987), the study team felt confident naming the following two items as Key Influencing Factors (KIFs):

KIF A) The existence of a TDD Distribution prior to the establishment of a DPRS.

KIF B) Statewide Information & Referral center or network on deafness (including: state agency for the deaf; non-profit organizations; and strong state association of the deaf).

DPRS COMPARISON CHART
(SUMMER 1989)

State	Population			TDD Dist	Relay Service Provider	Number of Years Operating	Number of calls per year	Source of Revenue	Annual Cost (Estimated)	Unit Cost/ Call	Interstate Metro Area?	Block Rate	Relay Call Average (RCA)
	General	HI	Deaf										
	(In Millions)					(Years/Month)			(In Millions)				
Calif.	28.0	1.8	.244	Yes	AT&T	02/07	3,000,000	0.3% Surcharge	17.2	^6.00	No	NA	0.107
Ariz.	3.4	.224	.030	Yes	Non-Profit	02/04	305,700	0.4% Surcharge	.876	^3.00	No	^10%	0.090
Minn.	4.2	.277	.037	Yes	Non-Profit	00/05	*430,000	$.055 Surcharge	1.2	^3.00	No	^10%	0.102
N. Y.	18.0	1.2	.157	No	AT&T	00/07	*875,000	$.11 + to Rate Base	9.8	^11.00	Yes	> 1%	0.049
Ala.	4.1	.277	.036	No	AT&T	00/04	*300,000	$.20 Surcharge	3.0	^10.00	No	> 1%	0.073

KEY

^ = approximately
* = projected

Other factors:

An Interstate Metro Area, where a significant portion (20% or more) of the states' population is within a local calling area to a significant portion of another states' population, may play a role in DPRS usage as all current statewide DPRS providers do not relay calls across state lines. However, since New York is the only state with an Interstate Metro Area currently operating a statewide DPRS, it is difficult to determine how large a role this factor will play in the retardation of DPRS growth in Virginia.

Length of operation (years) and blockage rate (percentage of calls receiving a busy signal) are also factors in DPRS usage. However, due to the length of operation being inconsistent across the sampled states and the fact that the definition for blockage rates are not consistent for all DPRS systems surveyed, it is difficult to judge what effect, if any, these two factors would have on a DPRS in Virginia.

2) Main Comparison Tool

In order to project the DPRS demand for Virginia, the study group needed a common tool to compare the various target states. The relay calling average (RCA) is computed by taking the number of relay calls per year and dividing that number by the total population of the state. [The RCA ranged from high of 107 (per thousand) in California to a low of 49 (per thousand) in New York.]

3) Projected Demand For DPRS in Virginia

By utilizing the RCA of other states and the two KIFs, the projected RCA for the first year of service in Virginia was assessed to be 100 (per thousand) as Virginia possesses both KIFs known to influence a high usage rate. By multiplying the projected RCA (100) by the estimated 1990 population of Virginia (6.1 million) the projected demand for DPRS in Virginia during the first year of operation is 610,000 relay calls.

4) Projected Cost of DPRS in Virginia

There is a distinct difference in both per unit cost and actual service provision when comparing statewide DPRS systems operated by non-profit corporations as opposed to those operated by a telephone company. While the per unit cost is $3.00 for the non-profit, the telephone company provides a unit of service for an average of $7.20. However, blockage rates experienced by non-profit providers are approximately 10%, where telephone companies claim <1% of their calls are blocked.

The study team concluded an average of all five target states per unit cost would be the most appropriate indicator of projecting costs in Virginia. The average cost per call of the five target states is $5.10. Based on 3 million subscriber lines in Virginia (not including Virginia Universal Service Plan subscribers), the cost per line would be 8.6 cents per month for a total of $3.1 million annually.

5) Conclusion

Based on the actual experience of other states and the known climate for DPRS in Virginia, the study group projects a first-year operational budget of $3.1-3.6 million or a cost per subscriber line of 8.6-10 cents per month in order to provide statewide access to DPRS in Virginia.

F. Investigation of Cost Saving Alternatives

1) Investigation of Cost Saving Alternatives

In an effort to provide the Commonwealth with the most cost-responsive DPRS system, several service alternatives were discussed during study group and subcommittee meetings. These alternatives included the following:

a) Limitation in number of calls per contact. This approach was discussed, but in an effort to be consistent with universal telephone service, not supported.

b) Voluntary reduction in number and length of relay calls. A preferred, but not recommended, approach to limitation would be an awareness campaign designed to enlighten all relay users to the cost of the service including a request to reduce call frequency and length during "peak" relay times.

c) 12-Hour Service. A reduction in hours of service was briefly discussed as a cost-saving measure. A projected comparison between a proposed 24-hour or 12-hour service follows:

	24-HOUR SERVICE	12-HOUR SERVICE
START UP	$ 400,000	$ 400,000
ANNUAL EQUIP. & LINE CHARGES	840,000	700,000
PERSONNEL	$ 1,860,000	$ 1,490,000
TOTAL	3,100,000	2,590,000

In analyzing the projected cost savings, availability of the DPRS would be cut in half, but would result in only a 17% savings (based on the reduction in the overall budget). The primary reason is that start-up and mechanical costs between the two options remain relatively unchanged, and 80% of personnel costs would remain during the proposed 12-hour day (due to reduced usage and rates incurred during the evening and late-night hours). The savings to the subscriber would be only 1.4 cents per month, whereas service availability to the Commonwealth would be reduced by 50%.

Any reduction in service, which creates unequal access, will be perceived as contradictory to the philosophy of equal access.

G. Future Technology

Work is underway to find ways of providing DPRS at a lower cost. Reduction of the required operator force by automating some functions is where most research is being focused. Under this concept, a relay system might exhibit the following features:

1) Processing of TDD user text, where a TDD typed message is stored until complete thereby reducing operator idle time,

2) Automated call setup which allows a TDD user or someone using a regular telephone to initiate a call without operator assistance,

3) Use of multiplex operators who are assigned specific tasks for a call. This increases efficiency, confidentiality, and operator availability.

Such systems can probably be operational by 1992.

By the mid 1990s it is possible that DPRS systems using speech recognition and speech synthesis will further reduce operating expenses. The deaf community is concerned that such systems would have a limited vocabulary and could not properly recognize dialects of speech. However, it is too early to draw any conclusions about this yet undeveloped technology.

H. Funding Alternatives

The following provides an evaluation of the various funding strategies that could be used to support a Virginia DPRS system.

1) Surcharge

A surcharge is a specific amount of money or a percentage of the subscriber's monthly basic telephone service added to the monthly telephone bill. The monthly bill could have this surcharge printed on a separate line of the bill indicating the surcharge amount. Many states have adopted this method.

Advantages:

a) Since everyone, TDD users and regular telephone users, can access the relay service, the cost for the relay service is distributed among residence and business telephone subscribers.

b) The Virginia State Corporation Commission (SCC) would oversee funding of the relay service by assuring adequate funding to meet the demand without having to go back to the legislature for supplementary or emergency funding using tax monies. This gives the flexibility needed to provide the relay service, and assures consistent and adequate auditing and cost control.

c) This method is familiar to the various telephone companies involved and is similar to existing accounting systems now in place.

Disadvantages:

a) Listing a surcharge on telephone bills often causes confusion and/or resentment toward the relay service. This has been the case with several state relay programs, but the number of complaints has been very small.

b) Listing a surcharge on a telephone bill should not be necessary, because a relay service is an enhancement to network access.

c) A surcharge is perceived as a "tax" to fund a service, and may be viewed negatively by some people.

2) General Funds:

The Virginia General Assembly, through its legislative activity, appropriates state funds to support any services which the state provides. State funding of programs is generally supported by taxes collected from the general public and specific commodity users.

Advantages:

a) Avoids potentially negative customer reaction to surcharges.

Disadvantages:

a) The General Assembly appropriates funds for a short- term financial commitment and this method is not ideal for relay service users, since DPRS is an ongoing activity. The projected need for the service dictates flexible, long-term financial commitments which the General Assembly may not wish to give.

b) If less than the needed amount of General Funds are committed for the relay service, the quality of service provided by the relay service would decline.

c) A DPRS system is a part of universal telephone service; therefore the telecommunications industry or the telephone subscribers should provide the funding for the relay service.

d) Programs funded by the state are usually of a "social service" nature. The DPRS system is not a social service.

e) Funding of the relay service with general funds could drive up the cost of providing the service, since more than one state agency will be involved with administering the program.

3) Tax Credit for Telephone Companies

Amounts expended by telephone companies to fund this service could be applied as a tax credit by the telephone companies.

Advantages:

a) Cost would not be prorated to the individual subscribers to telephone service.

b) Would allow for adequate funding to support the relay service.

c) Avoids potentially negative customer reaction.

d) Costs would not appear on telephone bills; thereby eliminating many questions concerning the service.

Disadvantages:

a) Would reduce revenues to the state treasury by the amount needed to fund the relay service.

4) Telephone Company Operating Expense

Local telephone companies would cover the costs of providing the services. Since these would be operating expenses they would be included in phone companies' requests for increases in rates.

Advantages:

a) This provides uniform cost-sharing among the telephone companies and subscribers for the provision of the service.

b) Funding through the telephone company rate base ensures the flexible, long-term financial commitments needed to support the DPRS system.

c) Since most Virginia telephone companies operating expenses are monitored by the SCC, there would be adequate auditing and cost control measures.

Disadvantages:

a) Any time telephone companies ask for an increase in the monthly cost to provide service, subscribers may raise questions.

5. Funding Provided by Private/Non-Profit Sectors

Funding provided from private and/or non-profit sectors to provide the relay service would come from sources other than governmental units. These could include private donations, grants from foundations, contributions from corporations, revenue generating programs, etc.

Advantages:

a) None.

Disadvantages:

a) It would be difficult to depend on private and non-profit sources to provide the funding needed for a statewide relay service.

b) When these type contributions are used to fund a program, volunteers are often needed to keep the cost of the service down to the level of funding raised. It would probably be impossible to secure sufficient, well-trained, volunteers who would be able to handle the increased load of calls generated by a statewide DPRS system.

c) With an inconsistent funding base, professionalism and accountability could be compromised. Should the quality of service decline, equal access to telephone services for the hearing and speech impaired would diminish.

I. RECOMMENDATIONS

With the passage of House Bill No. 34, which revised the Code of Virginia thereby empowering the Virginia Department for the Deaf and Hard of Hearing (VDDHH) to implement a distribution of telephone equipment to hearing-impaired and speech-impaired residents of the Commonwealth, the State of Virginia made the commitment to equitable access to all users of telephone service. The Telecommunications Assistance Program (TAP) implemented subsequent to that Act provides specialized customer premise equipment which allows basic access to the telephone network.

House Joint Resolution No. 272, passed by the 1989 General Assembly, requires VDDHH and the Virginia State Corporation Commission (SCC) to jointly make recommendations concerning implementation of a statewide Dual Party Relay Service (DPRS) in Virginia.

Subsequent to studies of the extent of DPRS services and systems in Virginia and in other states, the VDDHH and SCC make the following recommendations:

1) The Commonwealth of Virginia establish a centralized DPRS whereby a hearing-impaired or speech-impaired person using a Telecommunications Device for the Deaf (TDD) and a non-TDD user can communicate with each other via telephone. The system shall be of the same level of accessibility and quality as the service provided to other users of the

telephone network at a cost to its users not to exceed that charged to non-hearing-impaired and non-speech-impaired persons. The centralized DPRS shall include, but not be limited to, the following considerations: (1) 24-hour-a-day, 7-day-a-week statewide DPRS access with no limitations or restrictions that are not applicable to voice users of the telephone network, (2) the access rate of the DPRS shall exceed or equal 85% of incoming calls answered within 20 seconds and 100% of incoming calls answered within 90 seconds, and (3) the DPRS shall incorporate technological advances, including the capability of voice carry over (VCO).

2) That the SCC, with the expertise of its Communications Division, be responsible for the establishment of the DPRS to include the selection of a competent business entity to operate the relay service. The VDDHH, with its expertise in the needs of DPRS clients, should have the authority to concur in all decisions regarding the establishment.

3) That, after the DPRS is established, the VDDHH be responsible for overseeing its operations. The SCC should give technical support for this function.

4) That, in order to assist the VDDHH in fulfilling its responsibilities with

regard to DPRS, an advisory board should be established. The board should be made up of three deaf persons, a hard-of-hearing person, a speech-impaired person, an SCC employee, a VDDHH employee, a representative of the Virginia Telephone Association, and a representative of the relay service provider.

5) That all costs associated with the DPRS, including the expenses of the advisory board, should be funded by assessments on all local exchange telephone companies operating within Virginia. Each company's assessment should be based on its share of all subscriber lines in Virginia. These assessments, when paid, should be allowed as tax credits.