

UNIVERSAL RESIDENTIAL TELEPHONE SERVICE:

NEEDS AND STRATEGIES

PRESENTED TO:

NARUC Annual Meeting
New York, New York

PRESENTED BY:

Roger D. Colton
Fisher, Sheehan & Colton
Public Finance and General Economics (FSC)
34 Warwick Road
Belmont, MA 02178
617-4484-0597

November 1993

1.1 INTRODUCTION: THE LACK OF UNIVERSAL SERVICE

Most of us believe that universal telephone service is the standard in the United States. Yet large portions of the low income population cannot afford telephone service in their homes, and this number has grown since divestiture as the cost of basic service continues to rise. In 1991, while fewer than one out of 100 upper income families did not have a telephone, roughly 25 out of 100 low income families did not.

1.1.1 No Racial Neutrality

Certain aspects of this lack of universal service are particularly disturbing. Telephone penetration patterns are not racially neutral, regardless of income. While the national average penetration rate for telephone service is 94 percent, the penetration rate for black households (regardless of income) is only 86 percent. The penetration rate for Hispanic households (regardless of income) is only 86 percent. This racial inequality carries over into the elderly population.

Among homeowners, only three percent of older whites are without telephones, compared to eight percent of their black and Hispanic counterparts. Likewise, only eight percent of older white renters do not have telephones, compared to 19 and 18 percent, respectively, of older blacks and Hispanics.

Moreover, the racial inequality is a particular problem for the poor. While 75 percent of all households with incomes less than \$5,000 had telephones, only 64 percent of black households and 65 percent of Hispanic households with incomes less than \$5,000 had telephone service.

1.1.2 No Adequate Substitute

Unlike what many people believe, low-income households cannot simply use pay phones as a substitute for service in the house. The pay telephone has often been assumed to be the "poor person's response" to the lack of a telephone in the home. When all else fails, the low income person can simply make a trip to the local convenience store, or to the phone booth on the corner, to place a telephone call. Increasingly, however, access to affordable local pay telephone calls is becoming a thing of the past. Pay phones are being restricted or removed from many poorer neighborhoods, to discourage drug dealing,¹¹ and those that are available are frequently busy --and expensive. COCOT providers routinely charge more for a local call than do LECs.

1.1.3 "Ease of Access" a Problem

The problem of inaccessible or excessively costly local pay phone service is not simply one of lacking telephone contact altogether; ease of making contact is also a factor. To illustrate this point, one can examine the process for making inquiries of the Social Security Administration. According to a 1988 General Accounting Office (GAO) study, fewer than 70 percent (66.5%) of all telephone calls to Social Security Telephone Service Centers and fewer than 60 percent (58.2%) of all telephone calls to Social Security offices designed to service a statewide region were done with easy accessibility. Busy signals, unanswered calls, disconnected calls, and calls placed on hold for longer than two (2) minutes were all difficulties experienced by households seeking to contact the Social

¹¹ Drug dealers generally prefer to use pay phones that allow them to remain anonymous and make calls difficult to trace. Many communities are targeting the restriction or elimination of pay phones as one means to curtail drug dealing. Pay phones are being restricted to outgoing calls only, and push button phones, a prerequisite for many call-routing systems, are being replaced by rotary phones.

Security Administration. Overall, more than one-in-seven phone calls to a Social Security office received a busy signal; a repeat call made within one minute generated a busy signal in 60 percent of the cases. For a household using a telephone in the home, this difficulty is a nuisance. For a household that lacks telephone service in the home, and lacks easy access to a pay telephone, this difficulty is a serious threat to health, safety and welfare.

1.2 IMPACTS OF LACK OF UNIVERSAL SERVICE

1.2.1 Impact on the Elderly

Inability to obtain affordable, accessible telephone service can create life threatening situations for the poor. Frequently, the most important problem arising from the lack of access to telephone service is the denial of access to agencies and institutions that can provide help. For example, the most frequently cited danger that results from lack of telephone service involves access to timely medical attention. The elderly, in addition, suffer more acutely from problems compounded by their physical isolation. In a Connecticut study conducted by RPM Systems, three groups were found to be "at greater-than-normal risk" because of lack of telephone service, including "persons over 60 and living alone." The study found that of 59 "no-telephone households" with elderly members, 30 were senior citizens living alone, 23 had a disability or serious medical problem, and 10 of those disabled seniors lived alone. More than half of the seniors living alone (17 of 30) lived more than three minutes away from the telephone they would need to rely upon in an emergency.

Findings from a Michigan study on telephone usage among the elderly indicate that the elderly were far more likely to consider the reason for their telephone calls to be essential than were non-elderly callers. Medical calls were cited by 22 percent (compared to 1 percent of non-elderly); social service calls were mentioned first by 10 percent (as compared to zero percent of non-elderly).

1.2.2 Impact on Obtaining Public Assistance

Lack of access to a telephone jeopardizes access to public assistance programs as well. According to one study looking at why households do not participate in the Food Stamp program in Vermont, even for those households who knew who to contact for assistance in understanding the application and income reporting requirements, the inability to contact the agencies by phone was one of the most significant problems in obtaining such assistance.

1.2.3 Impact on Retaining Energy Service

While the lack of telephone access ramifies throughout a household's social and economic wellbeing, one of the most serious impacts is on the ability of a household to retain energy service. Lacking access to telephone service adversely affects the ability to retain energy service in a number of different ways:

1. **ACCESS TO THE UTILITY: DEFERRED PAYMENT PLANS:** Whether the non-access to telephone service does, in fact, restrict access to energy assistance has never been directly studied. However, prior NCLC research provides a basis to conclude that this result will be found. A 1988 study conducted by NCLC for the Maine Public Utilities Commission discovered that 80 percent of the Maine households whose energy service was disconnected during the winter months lacked telephone service. The lack of telephone service was found to jeopardize continuing energy service by denying the household an opportunity to contact the utility so as to enter into payment plans, make contact with social service agencies to receive public assistance and to otherwise respond to the household's inability to pay. The "no-phone" population was statistically underrepresented in the payment plan population of Maine utilities.
2. **ACCESS TO LIHEAP:** The reliance of LIHEAP agencies, or their subgrantees on the telephone as a primary means of contact with their client populations may have the impact of introducing a systematic bias against low-income minorities. Because of changes in the way that social service providers are doing business, these phoneless consumers are being denied equal access to critical social services, such as fuel assistance. As budget cuts have eliminated staffs, and as technological developments have introduced new, less staff intensive methods of contact, social service providers across the country are depending more on the telephone in providing services. Outreach, consultation and, increasingly, intake and referral functions are being conducted over the phone for a host of essential services including energy assistance.

I have selected energy and utility services as the focus for articulating the adverse impacts of lacking telephone service because of the severity with which utility terminations affect low income and minority Americans. Having a utility turned off is the legal problem most frequently reported by low income households, according to a 1989 study done for the American Bar Association (ABA). Utility shutoffs were the most frequently mentioned individual problem regardless of the availability of legal help, the ABA study found. Nearly one in eight (11.4 percent) of all low-income households surveyed had faced a shutoff.

1.3 SUMMARY

In sum, telephone service is an essential service in today's modern society. Nevertheless, it is a service that has been denied to nearly one of every four low-income households. Given the strong public policy in favor of universal service, the recommendations below are offered to protect the local phone industry's interest in maintaining its financial viability while at the same time removing unreasonable barriers to maintenance of service. Low-income households cannot afford even basic local telephone service and special efforts must be made to ensure the maintenance of universal service.

2.1 CONSUMER INFORMATION AND UNIVERSAL SERVICE

2.1.1 Decisions Where Information is Assumed

Regulators and the telephone industry frequently assume ready access to, and use of, information in making decisions about universal telephone service. Consider that:

- o Proposals to permit relaxed regulation in the local, intraLATA or interLATA markets assume that competition will keep prices in line. Workable competition, however, is directly dependent upon the use of consumer information.
- o Proposals to implement local measured service (LMS) assume that consumers will obtain and use information to determine their least-cost service and implement that choice.
- o Proposals to implement intraLATA toll dialing without a "1+ toll indicator" assume the existence of consumer information regarding what is a toll call and what is not.
- o Proposals to implement Lifeline and Link-up programs often assume ready access to, and use of, consumer information concerning eligibility for and means to obtain rate relief.

As will be seen below, however, this pervading assumption about consumer information is inaccurate and affects virtually every aspect of the preservation of universal service.

2.1.2 The Role of Consumer Information

In order for programs¹²⁾ ostensibly designed to promote universal service to have a positive impact on universal service, consumers must know and understand that the programs will both: (1) result in reduced local phone bills; and (2) result in bill reductions of sufficient magnitude to make local phone service affordable when it otherwise would not be. The key element in this equation, however, is *knowledge, i.e.,* clear, objective standards of comparison, not vague suspicions of the affordability of local service.

¹²⁾ With apologies to rate regulators, I will lump "rate discounts" such as Lifeline, Link-Up and measured service into the term "programs," recognizing that they are not "programs" but "rates."

Consumer information serves multiple functions. Two in particular are important:

1. **Identifying alternatives:** The customer, or potential customer, must know that alternatives exist to their current course of action not involving local service, and must have information about the nature of those alternatives. Will the service be of comparable kind and quality? What steps and what expenditures are involved in obtaining the alternative?
2. **Providing price information:** Accurate pricing is at the core of most information: What is the relative price of comparable goods or services? Price information is considered desirable from the individual consumer's perspective in order to allow the consumer to shop efficiently and to achieve the maximum return on her monetary expenditure.

In contrast, shopping based on a lack of adequate information promotes behavior based on habit. The more complex the product, the more ignorant the shopper will be. And the greater the shopper's ignorance, the greater will be the reliance on habit shopping. The consumer will simply continue to do whatever she *has* been doing. Without adequate knowledge, there will be no increased access to local telephone service and no increase in universal service.

2.1.3 Consumer Access to and Use of Telephone Service and Rate Information

As a general rule, residential consumers face a scarcity of information regarding their local telephone rates. Moreover, barriers exist that will prevent such information from being secured. Each of these aspects is discussed briefly below.

2.1.3.1 Access to Information

There is every reason to believe that consumers do not adequately process price and service information within the telecommunications arena today. There is still substantial confusion, if not outright ignorance, in the residential community regarding the differences between intraLATA, intrastate interLATA, and interstate telephone calling and the significance that those differences hold for carrier choice. Moreover, residential customers really know very little about their local telephone bill or what they might find affordable. In one study, respondents receiving public assistance from the Michigan state Department of Social Services were asked what the maximum local bill they could afford would be; the average response was \$43.³¹ At another point in the same survey, however, these same households indicated that they could afford to absorb an increase of \$24 above their current local bill of \$30 a month.

Another study of local service found that residential customers have little idea of what type of service they use. Three-quarters of the customers in West Virginia who were surveyed reported that they were not aware of their own local usage plan.⁴¹ While unlimited or flat service of some form was the most

³¹ Cooper, Mark. *Low Income Households in the Post-Divestiture Era: A Study of Telephone Subscribership in Michigan*. Washington D.C.: Consumer Federation of America, 1986.

⁴¹ Chilton Research Services, *Residential Customers' Attitudes Toward Telephone Service in West Virginia*. Charleston, WV: West Virginia Public Service Commission, 1986.

commonly cited form of usage plan, even these were mentioned infrequently. Moreover, only one in five of the customers surveyed were aware that their local phone company offered more than one usage plan. Even when provided with descriptions of various local usage plans and then asked if any of them were offered by their local telephone company, "the majority of West Virginia residents recognized that different usage plans exist[ed]. . .[but] without prompting, nearly eight in ten customers (78%) did *not* know other plans were available."

The response in Connecticut was not quite as dramatic. Nonetheless, researchers concluded that nearly one quarter (23 percent) of the households surveyed did not know what type of local service they were using. When queried about whether specific service options might be available, the percentage of households who were either "unsure" or who said that the option "maybe" was available ranged from 22 percent to 36 percent.¹⁵¹

In Michigan, where roughly half of the customers surveyed (46 percent) said they knew which type of service they had, the residential customers did not reveal a reasoned or sophisticated search process for that service. Fewer than one in five households said that they had shopped for the least expensive service provided by the local telephone company. More disturbing for those who argue that residential customers will shop for telephone service based on price, the Michigan research found that "those on flat rate service are much more likely to have said that they don't know why they chose their service." Moreover, the elderly (54+ years old) are three times as likely as the non-elderly to say they chose their service because they've "always had it."

A recent study of low-income residential telephone consumers in Boston found that "many of those who subscribed to measured service probably made too many phone calls each month to benefit by this service, and those who could benefit most, people who made few phone calls, did not subscribe to measured service."¹⁶¹ Indeed, of the 11 percent of the survey respondents who reported using measured service, the Boston study found that the mean number of phone calls per week was 16 (64 a month), "which is probably too many phone calls to benefit from [measured service]." Moreover, the Boston study found that "only 8 percent of those making five or fewer calls per week had measured service."

2.1.3.2 Barriers to Obtaining Information

A host of barriers now inhibit consumer access to information. These barriers limit individual consumers' ability to make effective use of the information which is available. They also include the cost of searching out information, uncertainty, and complexity of information.

Information "costs" the consumer time, money or effort to obtain. When a consumer initially considers a purchase ("I think I should buy a car"), she is probably unaware of the various prices offered. The ensuing search is not costless, and economic theory holds that the consumer must weigh the potential benefits of seeking the information against the costs. In theory, the larger the dollar amount of the purchase, and the greater the range of prices, the more the consumer will search. In theory, also, the consumer will search up to the point where the gain from further searching equals the incremental cost of the search.

¹⁵¹ RPM Systems, *An Exploratory Study of Low-Income Telephone Subscribers and Non-subscribers in Connecticut*. New Haven: RPM Systems, 1988.

¹⁶¹ Quinn, Adrienne and Colton, Roger. *The Impact on Low-Income People of the Increased Cost for Basic Telephone Service: A Study of Low-Income Massachusetts Residents' Telephone Usage Patterns and Their Perceptions of Telephone Service Quality*. Boston: National Consumer Law Center, 1992.

In short, information is a commodity that consumers must spend resources to obtain. If the perceived gain relative to the search cost is low, the consumer's hurdle rate will become a barrier to a consumer purchase.

A consumer's decision to initiate local phone service in response to the price of that service at any particular time involves weighing the costs of the search against the amount of the gain. Against the investment in the new service, the consumer must weigh the potential savings. The consumer will only make the investment if the savings results in a desired rate of return. The rate of return necessary to prompt consumer investment in a measure designed to save money is generally referred to as the "hurdle rate." The difference between what the customer does now and what the phone company is promoting as a boon to universal service, in other words, must be sufficient, *i.e.*, must have a substantial enough spread, to meet the customer's hurdle rate. Unless this exists, no consumer action will occur.

Consumer reaction to prices will involve a variety of identifiable costs. One *genre* of costs is the cost of the search. Consumers will, at the least, be required to devote time to making a determination of what the cost of local service now is. One factor that makes the search for usable information more difficult is the fact that consumers do not come naturally to this information. Because information is presented in a manner which does not permit efficient use, a consumer's evaluation of her actual cost of local service can only follow from the consumer's use.

A second *genre* of costs to be considered is the fixed investment in the current behavior. The consumer will have been required to invest time, effort and perhaps even money in making the choice she currently has made to the alternative of having local telephone service in the home. Any change in behavior will require an abandonment of that fixed investment. Once a customer goes through the effort of obtaining and using information, and making a choice, in other words, it is highly unlikely that the consumer will be willing to go through that process again any time soon thereafter.

Against her costs, the consumer will weigh the potential for gain. In measuring the potential savings, however, the consumer will take into account the risk that the projected savings will not occur. As the risk increases that the projected savings will either evaporate or not arise, the consumer's demanded rate of return will increase, thus increasing the consumer's hurdle rate.

The risk that projected savings will *not* in fact arise is great. For example, even if measured service appears to be an affordable choice at any given instant, there is no assurance that rates will remain in effect for any extended period and that measured service will remain affordable over time. With telephone rates in particular, consumers are asked to bear the risk that the investment they make in the choice of measured service may or may not be rewarded with stable rates over some period of time sufficient to justify the investment.

Another example involves toll competition. Against the known costs of choosing one carrier over another, a consumer must weigh the fact that telephone price comparisons (and thus projected savings) cannot generally be determined in advance at any given point in time. Instead, price comparisons must generally be made both retrospectively and over a period of time, taking into consideration the amount of calling, the time of calling, the distance of calling, and other factors. Just because the rates of Carrier A might yield the least-cost bill in January, for example, does not mean that the rates of that same carrier will yield

the least-cost bill in March as well. This is true regardless of whether there are rate changes.

The difference between months can arise from any number of factors. Primarily, consumers do not hold their call basket constant over time. Calling patterns, in other words, not only "might" change, but will *most likely* change from month to month as consumers change the number of calls, the time-of-day of their calls, the duration of their calls, and the place being called.

In sum, for a consumer to respond to universal service initiatives by the telephone company, the savings generated by the choice will need to represent a stream of revenue that will provide a rate of return on the consumer investment that is sufficient to prompt the investment. With rates that are not fixed or guaranteed, the stream of "savings revenue" cannot be calculated. In this instance, the rational consumer would project the stream of revenue based on current rates, discount it to account for the uncertainty, and then make a decision based on that analysis. It is much more reasonable to assume, however, that the consumer will choose to do nothing, recognizing that the savings that might appear to result from current relative rates may never in fact arise.

3.1 COMPANY CONTRIBUTIONS TO INFORMATION FAILURES

The telephone industry's focus on selling services, whether needed or not and whether affordable or not, contributes to the failure of consumer information. A 1992 study in Massachusetts by the National Consumer Law Center, undertaken for the Massachusetts Attorney General's office, demonstrates the problem. That study found that New England Telephone systematically sold unaffordable custom calling services to those households least able to afford such services, irrespective of their need. This result need not have happened. Custom calling services are not generally "bought," they are sold.

3.1.1 The Results of the Massachusetts Study

An investigator for NCLC, in cooperation with the Massachusetts state Attorney General's office, called twenty-four New England Telephone offices statewide in 1992 and asked: "I am probably moving to (name of town) next month and am interested in getting information on how much it would cost to have telephone service in my home?"

Though the customer service representatives were generally friendly, they uniformly gave little information about what services New England Telephone offered and the prices of these services. Since so little information was given out, the survey administrator added: "I'm moving from out of state, so I am not really familiar with what type of services are offered in Massachusetts." The amount of information given out in response to this statement was varied. Table 1 below indicates the percentage of customer service representatives that mentioned and/or explained various services. What is obvious from Table 1 is that while a number of basic and custom calling services were mentioned, few were explained, and almost none were referred to as being optional. It is not surprising that the services which were mentioned most frequently by NET customer service representatives (touch tone and call waiting) have the highest subscribership among survey respondents.

Before the Massachusetts survey call was concluded, the survey administrator asked the service representative what the cheapest possible service was that he could get. Eighty-five percent of those who were asked this question (18 customer service representatives) responded that measured service was the cheapest or

quoted the price for measured service without naming it.

The most troubling failure with this result came in NET's failure to comply with its own dictates that company service representatives ascertain the usage patterns of prospective customers in order to best match the services available to them. Indeed, NET's operating procedures manual, at page Part 1, section 1, page 87, states that "in order to present a recommendation for the best type and grade of service and the appropriate line features, the following facts *are determined*: obtain additional information from the customer, *e.g.*: calling habits; number of users* * *." (emphasis added) Indeed, the company's manual states specifically that "based on obtained facts," the service and line features recommendation is: "appropriate grade and type of service; *e.g.*, 1MR, 1FR, etc.* * *local usage allowance, if any, or unlimited calling area."

The impact of NET sales practices on the poor was particularly noticeable. As part of New England Telephone's response to an Attorney General's data request, NET submitted the percentages of residential customers in each Massachusetts city or town who subscribed to touch tone or any of the custom calling services (call waiting, call forwarding, 3-way calling, Speed-8 and Speed-30). The statewide average for percentage of subscribership to touch tone service among all residential customers was 73.7 percent. Analysis of the data provided by NET on an exchange by exchange basis showed that exchanges which had higher percentages of people living in poverty also had higher percentages of subscribership to touch tone service.

The City of Boston leads Massachusetts in the number of people below the federal Poverty Level. Out of the 15 exchanges with the highest percent of touch tone lines, six were Boston exchanges. Roxbury had the fourth highest subscribership rate in Massachusetts and the second highest rate in Boston with 90.46 percent of all Roxbury residential customers subscribing to touch tone. Roxbury also has one of the highest poverty rates in the state with 30.1% of the population falling below the federal Poverty Level. The lowest rate of subscribership of any Boston neighborhood is West Roxbury which has the lowest number of people below the federal poverty level (5%). Table 2 below presents what percentages of these respondents indicated that they subscribed to these custom calling services.

The pattern of low-income areas having above average subscribership prevailed statewide as is evident from the information regarding select lower income cities in Table 3 below. Each of these cities is above the statewide average and above the total rate of subscribership for touch tone service in that particular city's geographic region. For example, the total percent of subscribership for the geographic region in which Springfield is located is 60.64% (vs. Springfield at 73.84%).

The high rates of subscribership for touch tone in low income communities is even more dramatic when compared with subscribership levels for some wealthier communities as shown in Table 4 below. Newton (77.48%) even falls below the area average of 78.37% for its geographic region. Residents of these communities are far more likely to be able to afford touch tone, yet the percent of subscribership is far below that of the poorest Boston neighborhoods, as well as of many cities with low-income populations statewide.

An even more striking pattern emerges with subscription rates for custom calling services: people in low income areas subscribe to custom calling services at two and three times the state average. As part of a Massachusetts Attorney General's data request, New England Telephone submitted a combined percentage for all custom calling services. As a result, some percentages are above 100% if large numbers of customers within a particular exchange subscribe to more

than one custom calling service.

The statewide average for custom calling features in service on residential lines is 50.76%. The three highest rates of subscribership to custom calling services in Massachusetts are in Roxbury (141.41%), Dorchester (121.42%), and Mattapan (115.55%). As shown in Table 5 below, the percentages of subscribership far surpass those for any other community in Massachusetts and are three to five times higher than most other cities. Roxbury's percentage of custom calling features in service is almost three times the statewide total percentage for custom calling features in service. All of the areas with the highest percent of custom calling features are predominantly lower income communities, specifically low-income minority areas within Boston. As with touch tone service, the rate of subscribership to custom calling services in many low income communities is above the average (50.76%) statewide as shown in Table 6. This is substantially different than the non-low-income communities, as set forth in Table 7.

3.1.2 Impact of Overselling Custom Calling Services

There is a relationship between the sales of custom calling service and the loss of local residential phone service. The Michigan study, which examined disconnections among the other issues mentioned, found that "in all comparisons of enhanced services (touch tone, call forwarding and call waiting), involuntary disconnects have higher levels of subscribership to enhanced services than active accounts."⁷¹ Having high numbers of custom calling services as part of one's telephone service appears to be one factor leading to loss of telephone service.

3.1.3 Reasons for Overselling Custom Calling Services

The question arises as to why low-income telephone customers subscribe to touch tone and custom calling services in numbers that far exceed the statewide averages and in many instances exceed the subscribership rates of people in communities who could more likely afford additional services. The answer lies in part with the inadequate provision of information and in part with the corporate culture of sales within the local phone industry. In NET's operating procedures regarding "negotiation of orders," NCLC found the following statements to appear:⁸¹

⁷¹ *A Study of Telephone Subscribership and Use in Michigan*, p. 144.

⁸¹ *NET Operating Procedures*, at pages 89 and 96.

1. "Regardless of anyone's job classification, *selling* (emphasis in original) has become an essential responsibility of all personnel."
2. "It is the negotiator's *responsibility* (emphasis added) to recommend/accept requests for Touch-Tone service as follows: * * *."
3. "It is the negotiator's *responsibility* to recommend Custom Calling Service (CCS) feature(s) on all appropriate contacts, *e.g.*, new service, moves, etc., based on customer's needs."

This has been the general experience with other local telephone companies as well. So long as this corporate culture exists to sell expensive services to low-income households, it is wrong to conclude that discrete telephone company "low-income programs" will be useful in promoting universal service.

4.1 A PROPOSAL: AMENDING QUALITY OF SERVICE CRITERIA TO PROMOTE UNIVERSAL SERVICE

In response to these information problems generally, state and federal regulators should adopt particular "quality of service" requirements for the telephone industry to implement. If the telecommunications industry is to seek continuing increases in its regulated rates, and a continuing deregulation of an array of other services which it deems to be "competitive," regulators have a right to expect the industry to provide the highest quality service possible.

4.1.1 Definition of "Service"

While the analysis presented below can be generalized, for the moment, it is limited to the provision of basic local telephone service to residential customers. This helps focus the discussion on the issues at hand. Rather than developing a definition of "service" by laundry list, it is necessary to *define* what constitutes the "service" provided by a local telephone company. There are three tests: (1) the revenue requirements test; (2) the inextricable relationship test; and (3) the product acquisition cycle test.

4.1.1.1 The Revenue Requirements Test

Under the revenue requirements test, any action of the local phone company, the cost of which is included in its jurisdictional revenue requirement is part of the "service" offered to ratepayers. Numerous regulatory principles lead to this conclusion. First is the principle of causation. If the ratepayers caused the company to incur particular costs, those costs are chargeable to ratepayers. If, in contrast, actions are *not* caused by serving ratepayers, the costs of such actions are non-jurisdictional and are not includible in revenue requirement. By definition, therefore, if a local telephone company is including the costs of certain activities in its jurisdictional revenue requirement, the actions must in some sense be part of the "service" being provided to those jurisdictional ratepayers.

4.1.1.2 The Inextricable Relationship Test

A simple "but for" analysis should govern the inextricable relationship test. If a company would not be engaging in the activity "but for" the provision of wire service, there constitutes an "inextricable relationship." The term "inextricable relationship" connotes an inability to divide or an "inseparability." If a company activity bears an inextricable relationship to the provision of wire service, it is included as part of the "service" offered by that company. The repair of outside lines is a company activity that bears such an inextricable relationship. Also included as one example of activities that have an "inextricable relationship" to the provision of wire service are billing and collection activities (*i.e.*, it means nothing for a local phone company to provide wire service if it cannot bill and collect for such provision).

4.1.1.3 The Product Acquisition Cycle Test

The "product acquisition cycle" test encompasses the entire process of providing telephone service to residential ratepayers, from beginning to end. The relationship begins with a customer inquiry about obtaining telephone service (or with a company solicitation), continues with the provision of the basic wire service, and ends with a final bill or subsequent collection activity. To use the product acquisition cycle is not uncommon at all in commercial law. Indeed, from a consumer protection perspective, such an analysis is what lies as the foundation of the Equal Credit Opportunity Act. If, therefore, a company activity is part of the product acquisition cycle associated with the provision of wire service to a residential customer, it is part of the "service" being rendered to the customer by the local telephone company.

4.1.2 Definition of Service "Quality"

The term "quality" in the phrase "quality of service" cannot be generically defined to fit all aspects of the product acquisition cycle. Instead, "quality" must be defined in terms of indicia that are specific to each individual part of the cycle. It is thus necessary to define the individual segments of the product acquisition cycle and to develop indicia of "quality" associated with each of those segments. Applying the criteria of "quality" must take into consideration the character of the population at issue.

The most obvious example involves the engineering criteria developed to measure the "quality" of wire service provided by a phone company. It is easy to see the segment of the product acquisition cycle, the aspect of "service" rendered by a local company, to which these criteria relate. Moreover, it is easy to see that these criteria must take into consideration the character of the population at issue. The engineering quality necessary for data transmission, for example, substantially differs from the engineering quality necessary for voice grade communication.

There are seven basic segments to the product acquisition cycle: (1) the provision of information (whether in company solicitations or in response to customer inquiry); (2) sales; (3) service installation; (4) wire service; (5) billing; (6) payment; and (7) collection.

While this paper has not developed (and does not propose here) "quality" of service criteria for each segment of "service" offered by a local phone company, there are criteria that can be applied to specific segments. Examples of these criteria are set forth in Table 8 below.

The term "quality of service" goes far beyond the issues that are addressed in traditional engineering "Quality of Service Reports." In particular, the quality of service criteria recommended here for regulators to adopt relate to whether the local phone company:

- (1) adequately informs customers of the least-cost service available to them; and
- (2) adequately avoids "overreaching" in the sales and solicitation of custom calling services.

4.2 SUMMARY

In sum, adoption of the quality of service criteria is essential for universal service to be achieved for residential customers. Particularly if regulators are to approve continuing relaxation in regulation, these quality of service criteria are necessary to overcome the problems identified above. "Quality of service" goes beyond the traditional notions of engineering adequacy. Quality of service criteria can and should be used as a means to promote universal service as well as a means to evaluate whether a local telephone company is taking actions that impede or advance universal service. Quality of service criteria regarding the provision of information and the overreaching of sales are appropriate strategies through which to advance universal service.

5.1 SUMMARY AND CONCLUSIONS

This country has not yet reached its goal of universal telephone service. The lack of universal service ramifies throughout the social and economic wellbeing of low-income households. It interferes with obtaining medical attention, prevents obtaining social services, and jeopardizes continuing energy services. Decisions of phone companies and regulators routinely affect universal service. These decisions, however, often make unwarranted assumptions concerning access to, and use of, consumer information. To overcome the problems associated with these unwarranted assumptions, this paper proposes the adoption of "quality of service" criteria regarding the provision of information in all aspects of the product acquisition cycle.

TABLE 1. PERCENT OF NET CUSTOMER SERVICE REPS OFFERING AND EXPLAINING SERVICES			
SERVICES	Service offered?	Service explained?	Are you told service is optional?
Touch Tone	58% (n=14)	21% (n=5)	4% (n=1)
Call Waiting	75% (n=18)	25% (n=6)	8% (n=2)
Call Forwarding	46% (n=11)	17% (n=4)	8% (n=2)
Speed Calling	38% (n=9)	8% (n=2)	8% (n=2)
Three Way Calling	42% (n=10)	13% (n=3)	0
Telesure (inside wire maintenance)	17% (n=4)	0	0
Additional Listings	4% (n=1)	0	0
Nonpublished listings	0	0	0
Lifeline (low-income discount)	0	0	
Link-up (low income installation discount)	0	0	
Measured	75% (n=18)	50% (n=12)	79% (n=19)
Flat Rate	38% (n=9)	21% (n=5)	
Circle	29% (n=7)	25% (n=6)	
Suburban	8% (n=2)	4% (n=1)	
Metropolitan	8% (n=2)	13% (n=3)	

TABLE 1. PERCENT OF NET CUSTOMER SERVICE REPS OFFERING AND EXPLAINING SERVICES			
Bay State East/West	33% (n=33)	17% (n=4)	

TABLE 2. COMPARISON OF POVERTY LEVEL AND RATE OF SUBSCRIBERSHIP TO TOUCH TONE IN BOSTON NEIGHBORHOODS		
NEIGHBORHOOD (EXCHANGE NAME)	PCT OF RESIDENTS BELOW THE FEDERAL POVERTY LEVEL	% OF RESIDENTIAL CUSTOMERS SUBSCRIBING TO TOUCH TONE
Allston/Brighton (Brighton)	20.1%	83.08%
Back Bay/Fenway (Back Bay)	15.4% (BB), 37.2% (FNWY)	92.82%
Beacon Hill/West End (Bowdin)	10.7%	86.44%
South Boston (South Boston)	17.3%	80.32%
Charleston (Charleston)	12.7%	84.48%
East Boston (East Boston)	19.3%	78.22%
South End/Downtown/ China Town (Harrison)	22.3%	85.90%
Roxbury/ Mission Hill (Roxbury)	30.1%	90.46%
Dorchester (Dorchester)	22.6%	85.62%
Mattapan/Neponset (Mattapan)	17%	87.58%
Jamaica Plain (Jamaica Plain)	16.5%	81.63%
West Roxbury (West Roxbury)	5%	70.44%
Hyde Park (Hyde Park)	7.5%	75.25%

TABLE 3. COMPARISON OF POVERTY LEVEL AND RATE OF SUBSCRIBERSHIP TO TOUCH TONE: LOW-INCOME COMMUNITIES		
	% of Residents Below the Federal Poverty Level	% of Residential Customers Subscribing to Touch Tone
Chelsea	24.1%	82.82%
Lowell	27.5%	80.35%
New Bedford	16.8%	76.26%
Springfield	20.1%	73.84%

TABLE 4. COMPARISON OF POVERTY LEVEL AND RATE OF SUBSCRIBERSHIP TO TOUCH TONE: NON-LOW-INCOME COMMUNITIES		
	% of Residents Below the Federal Poverty Level	% of Residential Customers Subscribing to Touch Tone
Cohasset	2.2%	79.85%
Concord	3.3%	77.4%
Marblehead	3.3%	78.54%
Newton	4.3%	77.48%

TABLE 5. COMPARISON OF POVERTY LEVEL AND RATE OF SUBSCRIBERSHIP TO CUSTOM CALLING SERVICES IN BOSTON NEIGHBORHOODS		
NEIGHBORHOOD (EXCHANGE NAME)	% OF RESIDENTS BELOW THE FEDERAL POVERTY LEVEL	PCT OF RESIDENTIAL CUSTOMERS SUBSCRIBING TO CUSTOM CALLING SERVICE
Allston/Brighton (Brighton)	20.1%	76.44%
Back Bay/Fenway (Back Bay)	15.4% (BB), 37.2% (FNWY)	81.24%
Beacon Hill/West End (Bowdin)	10.7%	66.33%
South Boston (South Boston)	17.3%	57.65%
Charleston (Charleston)	12.7%	68.69%
East Boston (East Boston)	19.3%	66.95%
South End/Downtown/China Town (Harrison)	22.3%	67.70%
Roxbury/Mission Hill (Roxbury)	30.1%	141.41%
Dorchester (Dorchester)	22.6%	121.42%
Mattapan/Neponset (Mattapan)	17%	115.55%
Jamaica Plain (Jamaica Plain)	16.5%	76.95%
West Roxbury (West Roxbury)	5%	51.3%
Hyde Park (Hyde Park)	7.5%	68.58%

TABLE 6. COMPARISON OF POVERTY LEVEL AND RATE OF SUBSCRIBERSHIP TO CUSTOM CALLING FEATURES: LOW-INCOME COMMUNITIES		
	PCT OF RESIDENTS BELOW THE FEDERAL POVERTY LEVEL	PCT OF CUSTOM CALLING FEATURES IN SERVICE WITHIN SPECIFIED EXCHANGE
Chelsea	24.1%	56.00%
Lowell	27.5%	62.73%
New Bedford	16.8%	52.26%
Springfield	20.1%	66.51%

TABLE 7. COMPARISON OF POVERTY LEVEL AND RATE OF SUBSCRIBERSHIP TO CUSTOM CALLING FEATURES: NON-LOW-INCOME COMMUNITIES		
	PCT RESIDENTS BELOW THE FEDERAL POVERTY LEVEL	PCT OF CUSTOM CALLING FEATURES IN SERVICE WITHIN SPECIFIED EXCHANGE
Cohasset	2.2%	37.60%
Concord	3.3%	37.75%
Marblehead	3.3%	33.17%
Newton	4.3%	45.95%

**TABLE 8. QUALITY OF SERVICE CRITERIA
FOR SELECTED SEGMENTS OF
RESIDENTIAL TELEPHONE SERVICE**

INFORMATION PROVISION

Complete
Correct
Neutral
Objective
Sufficient
Nondiscriminatory

BILLING

Timely
Accurate
Complete
Informative

SALES

Avoid "overreaching"
Nondiscriminatory

COLLECTIONS

Cost-effective
Effective
Fair
Regulatory compliance

PAYMENT

Accessible
Timely
Nondiscriminatory