

intra-state programs, and -- most importantly -- would also replace any LEC internal "subsidy" programs.

Regardless of where USA is implemented, the details that follow will guarantee that universal service is provided in the most efficient manner possible.

Defining Basic Service

Fundamental to any universal service program is the definition of the telecommunications services that should be universally available at affordable rates to all residential consumers-- that is, basic service. The goal of USA is to enable all consumers to receive the services they want, at affordable prices, without paying for services they do not want. The definition of essential basic service should **reflect the choices made by non-subsidized consumers**. To do otherwise would simply drive more consumers into the category of universal service recipients, because the broader the definition of basic service, the higher the price that must be charged all residential consumers to obtain it, and the fewer the consumers who will find the price "affordable."

The key attributes of universal service are access and connectivity. Today, basic service should include the following services:

- ☐ dial tone
- ☐ touch tone

- ☐ calling within a local area
- ☐ access to long distance carriers
- ☐ access to emergency services

This definition reflects broad consumer demand and guarantees all residential customers access to essential telephone services. In the future, adjustments to the basic service definition should be based on the extent of unsubsidized residential customer demand for new services. An additional service should not become part of the basic service definition until it is selected by a substantial majority of unsubsidized residential customers. Such a policy will protect all customers from paying for services they do not want, while ensuring that all residential customers have access to services that are defined by the market to be "basic."

Carriers have a private as well as a social interest in participating in USA, because subsidies are efficient when they keep subscribers on the network who otherwise could not afford access. Those customers will generate revenues through usage and through discretionary services (which revenues may in fact be sufficient to recover all of a carrier's costs of providing connectivity). Subsidies, however, are inefficient when they go to consumers who can well afford to pay a reasonable, cost-based rate for basic service, and who would not leave the network if they were required to pay cost-based prices.

Clearly the conclusion must be that every residential telephone customer does not need to be subsidized. Under a new

USA program, therefore, it would be possible to move towards a situation where "affordable" rates are tested against each consumer's income status-- for example, by excluding high-income consumers in high-cost areas from the pool of customers eligible for universal service support. If this rationalization of the system would add a political dimension to the problem that prevents needed reform, it should be deferred until basic reform has been achieved.

**Independent Universal
Service
Assurance Fund
Administrator**

Separation of the subsidy fund from the rates and revenues of any particular carrier is the first critical component of Universal Service Assurance. Management of the Universal Service Assurance Fund (USAF) by an independent agent removes even the appearance of bias in the collection and disbursement of subsidies. The first step in establishing the USAF, therefore, is to select an independent administrator. The independent administrator will be responsible for: 1) collection of carrier contributions; 2) disbursement of the USAF; 3) review and adjustment of the funding requirement; and 4) resolution of disputes regarding the fund.

One option for administrator might be the state regulatory commission, especially in states where the regulatory agency already has considerable knowledge of the telecommunications industry and sufficient resources. This is appealing in certain respects, not the least being that because the USAF is self-

sustaining, its administration would not require additional taxpayer support. However, a regulatory agency does not seem ideal because the USAF administrator must have in-depth accounting skills, and regulatory experience is not needed. Also, civil service procedures may inhibit flexibility and result in less efficiency than a private organization would achieve. Furthermore, the state regulatory commission will be the ultimate arbiter of disputes regarding the fund, and thus could not also be the fund administrator without endangering independence.

Another option is to create a quasi-governmental agency dedicated to the administration of the USAF. Although proper creation of a new organization would guarantee the fund's independence, it would be costly, time-consuming, and unnecessary. Conversely, existing quasi-governmental organizations (e.g., NECA), while perhaps less costly, lack the necessary independence.

A third option and, in TCG's view, the most promising, is to put the administration responsibility out to bid. A request for proposals (RFP), managed by the commission, would elicit proposals from organizations possessing the requisite skills and qualifications: accounting and consulting firms. Such firms have the necessary independence, the experience and the appropriate skills and computing infrastructure. By selecting a private firm with appropriate experience after the bid, the public agency guarantees that the administration of the USAF will be correct and efficient.

**Determining
The Initial
Size of the Fund**

The debate over whether or not cross-subsidies exist and to what extent they exist is a contentious one. The United States Telephone Association (USTA) has asserted that nationally, cross-subsidies of local residential service amount to \$20 billion annually. However, in three states, Illinois⁴, Maine⁵, and New Hampshire⁶, analysis has shown that local service is not subsidized by other services or by other customers. If extensive cross-subsidies exist, their amount has yet to be agreed on by all parties. MCI Communications, Inc. used valid economic cost principles to estimate the cost of universal service at less than \$4 billion annually.

Most states have not undertaken the expensive and time-consuming task of performing a cost study to determine the existence or the extent of cross-subsidies in their states, and TCG does not propose that they do so. Instead, to avoid unnecessary delay (which only benefits the incumbent LECs) and needless rancor (which forces prospective competitors to squander scarce resources), the monopoly local exchange carriers themselves should specify the size of the subsidy, subject to the following parameters:

1. only basic service for residents is eligible for a subsidy;
2. the cost of providing basic service should be determined according to the Uniform System of Accounts (USOA), and should be calculated

according to Total Service Long Run Incremental Cost (TSLRIC) principles;

3. the subsidy is the difference between the cost of providing basic service to each customer and the rate for basic service established by regulators.⁷

Ideally, cost calculations would be on an exchange area basis, to reflect the cost differentials resulting from distance and terrain.

The incumbent LEC must identify each customer now being subsidized, and submit to the fund administrator, in a presubscribed database format, the customer's name, address, phone number, any other geographic locators, and the amount of the subsidy which each customer receives. The fund administrator will collect the same information from all local exchange carriers in the state to determine the total "base" funding requirement. The administrator will also make the list of subsidized customers available to all local exchange carriers contributing to the fund.

Because all eligible Lifeline customers do not actually subscribe to subsidized telephone service, the administrator must work with the state social services agencies to estimate the increase or decrease in the number of eligible subscribers during the funding period. The administrator will then adjust the "base" requirement accordingly, to determine the total initial funding requirement.

In addition, local exchange carriers planning to build into previously unserved areas in expectation that customers in those

areas will qualify for high-cost subsidies, must notify the administrator at the time the funding requirement is being established.⁸ Working with the commission, the administrator will determine the validity of the carrier's cost estimates. Absent such oversight, incumbent LECs may continue to find it beneficial to inflate their costs, especially if they face no competition.⁹

Finally, the USAF must also include the administrator's compensation, determined during the RFP process.

Collecting Contributions for the USAF

The "first-best" method of funding USAF is through direct taxation, which spread the social burden widely and progressively. However, since the likelihood of adopting this approach nationwide or state-by-state within a reasonable time is slim, the second-best solution is to establish USAF by means of contributions from all telecommunications common carriers.

Following determination of the initial size of the fund, the fund administrator must bill all facilities-based telecommunications common carriers for their contributions. Each carrier will contribute to the fund according to its market share. There is some question, however, regarding the most equitable measure of market share. In *USA I*, we mentioned the possibility of using Net Transmission Revenue, a concept developed by Eli Noam of Columbia University.¹⁰ Another possibility is simple gross revenue, the method used for the federal Telecommunications Relay Service (TRS) fund for the hearing or speech impaired.

Other options include net income, access lines or minutes of use. Each has its strengths and weaknesses and all parties should have an opportunity to comment as part of an official proceeding. Because carriers are likely to gain and lose customers over time and thus see changes in market share, the same proceeding should seek comment on the frequency of market share recalculations.

Regardless of how market share is determined, a new entrant or a small incumbent may not initially have sufficient resources to contribute to the fund. It would be unreasonable, of course, to expect a carrier to contribute to the USAF before it has revenues or if it has no profits. (Cooperative telephone companies present a limited special case not considered here.) One way to create fairness in contributions is to establish a minimum threshold that carriers must cross before being required to contribute to the fund. The threshold can be based on the carrier's absolute size or on its market share. For example, interexchange carriers with less than .05% of all presubscribed lines, are not now required to contribute to the federal Universal Service Fund. As a model, policy makers might also look to the United Kingdom, where carriers are exempt from universal service contributions if their market share is less than 15%.¹¹

**Equal Access
to the USAF**

With the establishment of the initial fund and the mechanism necessary to keep it solvent, carriers may begin drawing from the fund to support their service to eligible

customers. To draw from the fund, a local exchange carrier must submit the names of its customers who qualify for the subsidy. (These customers must be on the master list; new eligible customers can be added as they subscribe, if they meet the established criteria.) Each eligible customer triggers a pre-set support "credit." The carrier's subsidy credit can offset the carrier's USAF liability; the carrier would be liable in cash only for net contributions to the USAF (or would receive net cash subsidies from the USAF.)

An automated system will allow the fund administrator to check each carrier's list against the USAF master list to verify the customer's eligibility, on the basis of location for customers in high-cost areas, and on the basis of income support rolls for low-income customers. To facilitate verification and to speed the credits and debits of the USAF, carriers should submit their payments and subsidy requests via electronic means: magnetic tape, diskette, or datalink.

The Effect of Competition

Assuming the removal of the legal, technical and economic barriers to entry and sustainable local competition, it is likely that numerous carriers will enter every local telecommunications market. With USA providing the incentive to serve any customer in any area, new carriers will strive to find ways to gain market share. The way to do this is to offer either better service, lower prices, or both. Under USA, such competitors will seek to serve

subsidized customers along with all others: they will have no incentive to discriminate against any consumer based on the cost of serving the consumer or on the consumer's income level.

The effect will be a relative reduction in the rates paid by all customers. Because all carriers are equally eligible for the same subsidy, each has the same incentive to serve all customers, subsidized or not. Indeed, subsidized customers might be the most attractive for new carriers since they may have been "ignored" by the incumbent, their rates may be higher than necessary, and being "paid" (partially) by USA reduces the carrier's risk of uncollectibles.

Review and Adjustment of the Subsidy

There are three options for adjusting subsidies during any time period or for any customer.

1. Keep the subsidy constant and let the end-user's rate fall;
2. Keep the end-user's rate constant and reduce the subsidy;
3. Adjust both the subsidy and the end-user's rate so that both the end-user and the fund contributors share the benefits of declining costs.

Originally, TCG anticipated that the subsidy would remain fixed during a pre-determined period, and adjusted at the end of the period.

Example: The incumbent LEC's rate (including profit margin) of serving a subsidized consumer is \$20 per month. The serving carrier receives \$10 per month in subsidy from the USA Fund, and charges the customer \$10. During the period, the customer switches to a CompLEC offering service for \$18 per month. The customer then pays \$8 and the CompLEC receives the \$10 subsidy on the customer's behalf.

Following discussions with state regulatory staff, however, TCG has concluded that such built-in lag in the adjustment of the subsidy level would create an undue benefit for inefficient carriers and burden efficient carriers by requiring higher contributions than otherwise would be necessary. Keeping the subsidy constant while the rate falls (option 1) delivers the entire benefit of competition to the end-user and encourages competition by carriers; the carrier-contributors, however, remain burdened with the original subsidy level. The second option corrects the failings of the first but removes the customer's incentive to switch to the lower-priced carrier.

The third option strikes the appropriate balance between the carrier-contributors and the consumers. Using the figures from the example, the customer's new LEC would report the customer's new rate, \$18 per month, to the administrator. Based on the initial rate of \$20 and a subsidy of \$10 per month, the administrator would immediately permit the new carrier to draw \$9 from the USAF each month on the customer's behalf and the carrier would accept payment from the customer for the balance of \$9. This option guarantees that the subsidy never exceeds its initial share of

the customer's bill and distributes the benefits of competition equally between subsidized customers and USAF contributors. The customer retains the incentive to switch to the carrier with the best value, which in turn encourages the carriers to compete on price. This sharing of efficiencies between consumers and carriers should best satisfy the public interest by linking market dynamism and universal service. These same rules would apply when a carrier lowers its rates for its existing customers.

**Service Versus
Price Competition**

As with any subsidy program, the possibility exists that the subsidy will be applied to other services besides basic. For example, instead of offering a customer a lower monthly fee, a competitor might offer more services at the same rate. This is a natural outcome of competition and should not be confused with the desirability of offering unbundled services.

Unbundling has been and will continue to be an important feature of a competitive market for local exchange services. Therefore, only basic service should be included in the rate eligible for subsidy. All other services must be billed at their full cost to subsidized customers.

Addition of Qualified Customers

Income-Based Eligibility: All Areas

Each carrier is responsible for notifying the administrator of new customers who qualify for subsidized service or existing customers who notify the carrier of their eligibility. The administrator must work with the state's social services department to verify the income-based eligibility of additional customers.

Cost-Based Eligibility: Areas Not Served

Interconnection of carrier networks adds an important dimension to determining the cost of serving previously unserved areas. Instead of relying upon the incumbent LEC for an estimate of the cost of extending service, the commission or the fund administrator should solicit cost estimates from a number of carriers willing to provide service. By auctioning the right to serve new areas, the Commission will guarantee that rates and subsidies (if necessary) are minimized. See the discussion of *Carrier of Last Resort*, below, for further discussion of the auction mechanism.

Having established the cost of providing service to this new area, the commission and USAF administrator will determine the extent to which customers in that area require a subsidy. The customers living in the new high-cost area will qualify for USAF support only if the right to serve that area was awarded to a carrier (or carriers) via an auction. The regulatory commission (or the fund administrator, if administrative procedure laws permit) will review the USAF subsidy request and approve, adjust, or deny it,

based on pre-established standards of reasonableness (e.g., a limit on the subsidy awarded each customer). The auction and the reasonableness standards will encourage efficiency and guarantee that costs and subsidies are minimized.

**Carrier of
Last Resort**

To assure that at least one carrier serves every exchange area, the carrier of last resort (COLR) obligation should be retained even in a competitive environment. Because the incumbent carrier sets the initial subsidy, it should retain carrier of last resort obligations during the initial funding period. Before the end of the first funding period, however, the incumbent may indicate that it no longer wishes to serve a particular exchange area at existing rates and with existing USA subsidies. If other carriers (using any technology) are then willing to provide service to the area at existing rates and subsidies, intervention by the administrator is unnecessary. If no carrier is willing to serve at those rates, the administrator (or the commission) must hold an auction of the service area. Under such circumstances, the right to provide service to the customers in the area will be offered to the carrier willing to provide service at the lowest price to the end user and at the lowest subsidy. Having agreed to serve at that rate and subsidy, that carrier must serve all customers in the service area so long as it is the only carrier in the area. (Cooperative telephone companies in particular might become bidders in such auctions.) Until the auction is completed, the incumbent carrier

will continue to provide service at its former rate. The incumbent may then exit the market and may sell its facilities.

Any number of carriers may bid for the facilities of the previous COLR because, even after the auction of the service area, the right to provide service in that area is not exclusive. Competitors, including the previous incumbent carrier of last resort, are still permitted to serve customers in the area and to receive the same subsidies for serving eligible customers. As described above (See, *Review and Adjustment of the Subsidy*), non-exclusivity will ensure that customers will continue to benefit from competition throughout each subsidy period.

Will non-exclusivity remove the incentive for a carrier to bid for the COLR responsibility? No, the auction will establish the COLR as the least costprovider of basic service and USA will guarantee the COLR a subsidy for each eligible customer it serves. The COLR will thus retain a monopoly for as long as it is the most efficient provider of service. The opportunity to have 100% marketshare will encourage bidding for the service territory, and the threat of competition will encourage efficiency by the COLR.¹²

It is possible that the incumbent might be a bidder and would use this auction to generate a rate increase, and/or a higher USAF entitlement. Competition, and only competition, would most effectively constrain such behavior; that is why an auction is superior to the traditional regulatory action of a "cost-justified" rate increase.

**Facilities-Based
Carriers
and Resellers**

To be eligible for equal access to USAF it is not necessary that a carrier provide its own facilities -- although a requirement that an eligible carrier have at least some switching, transport or loop facilities would encourage infrastructure investment. If pure ("switchless") resellers are eligible for USAF support, and a net transmission revenue mechanism is used to determine market share and thus contributions, a reseller's price position will simply reflect the resold carrier's costs. True, the incentive to the incumbent to lower cost or improve service quality will be eliminated if only resellers "compete" in its market. On the other hand, to require that all carriers build duplicate networks in order to qualify for equal access to USAF would be meaningless, as it would be uneconomic in many instances to do so.

So long as USAF operates, no carrier need fear that by losing one customer it is losing funds with which to subsidize services for other customers and therefore risks losing them as well. On the contrary, USAF assures the carrier that it may lower rates of competitive services to cost, without jeopardizing other customers. Facing competition from a business customer, an incumbent carrier may safely price its business services to exclude "contribution" formerly garnered to enable below-cost rates for residential customers -- but residential customers' rates need not rise, because USAF will support them.

Free Entry and Exit

With procedures in place to guarantee that all customers will have service, free entry and exit become a natural feature of the competitive local exchange marketplace. Regardless of subsidies and USA, LECs will have the right to compete or not as suits their business plans. USA simply acts as an incentive mechanism to bring service to customers that might not otherwise receive it.

USA: The Customers

Although Universal Service Assurance is designed to provide incentives to carriers, **the ultimate goal is to ensure the provision of basic telephone service to people.** Competition and USA will give all customers a choice and greater control over their telephone services. However, competition and universal service will not work unless consumers understand it and are comfortable with it. This is not difficult to achieve. Many, if not all, customers are already familiar with telecommunications competition. They buy their own phones from a variety of vendors and manufacturers, and they buy their long distance service from one of over 400 competitors. Competition for local service will offer consumers even more choices. Now, instead of just complaining about the telephone company, people will be able to do something about it: switch to another carrier.

The question is, How? Today, a customer just has to call "the phone company" to get service, and the company's number is in every directory. How does a customer find out about "the other

local phone company?" The surprisingly simple answer is patterned on successful precedent: "1 + equal access."

Presubscription and Primary Local Carrier

The divestiture of the Bell System was accompanied by the equal access requirement that the Bell local exchange carriers provide the same quality interconnection for all long distance carriers as they afforded AT&T. GTE was also required by a consent decree to provide equal access in certain central offices, and the FCC required other local exchange carriers to offer equal access to all interstate toll carriers. Equal access is now virtually complete in most central offices, so subscribers may choose their primary long distance carrier with 1+ dialing. This essential boost to competition arguably is the model for intraexchange competitive choice that will allow new local carriers to have a fair opportunity to attract customers, unhindered by differences in the number of digits a customer must dial to reach them.

Also, at divestiture, customers were asked to choose a long distance carrier through an affirmative choice, via a presubscription ballot distributed by the local exchange carriers. There is presently no consensus among competitive local exchange carriers as to whether similar balloting would be a benefit or a detriment in the local exchange marketplace. Clearly, however, any balloting process would have to be overseen to preclude an incumbent dominant local exchange carrier from pre-selling its service before its competitors were in the marketplace. Many

logistical questions need further exploration, but the principle that all consumers must be given an opportunity to select any carrier without being handicapped in any technical or financial way should guide the answers. Clearly, too, as was the case when long distance competition was launched, an information process is needed as the transition to local competition speeds up. Regulatory agencies and industry should participate in the informational program.

Initiating Service

Regardless of how they select carriers, customers will need a way to identify the local telephone companies serving their area when they move or wish to change carriers. Naturally, competitors will engage in marketing efforts according to their business objectives and their resources. Incumbents will generally have a marketing advantage, at least during the early stages of local exchange competition, and it is reasonable for regulators to require them to notify customers that a choice of local carriers will be available to them. However, consumers may be assured of accurate information, at least during a transition period if a provider-neutral source of information about service providers in each community is also established. For example, by dialing an area code and 555-USA1, a consumer could access a data bank of carriers serving any exchange area. A customer could call each carrier to obtain a list of prices and services. This telephone database could also be managed by the USAF administrator.

Changing Carriers

The technical aspects of switching from one carrier to another should be transparent to the customer. A customer simply notifies the current carrier to terminate service, and orders service from the new carrier. To the extent that a premises visit is required, the new carrier will be responsible for any on-site work that is needed. More likely, all the work will be done at the respective switches of the old and new carriers.

Until service provider number portability is available, the customer must obtain a new number from the new carrier. This additional "transaction cost" is a substantial deterrent to changing carriers, negating real efficiencies provided by the alternate carrier. It is effectively a barrier to entry. Thus, service provider number portability is one of nine essential interconnection arrangements needed to facilitate local competition (See Appendix A). Service provider number portability is technically feasible now; the economics should be swiftly determined and costs fairly allocated. Until a solution is implemented, the excessive "transaction cost" should be offset by below-cost tariffs for interconnection by new entrants with the incumbents' networks.

Subsidies Are Transparent to Subsidized Customers

The customer bill may be used to notify all consumers of how USA works, without stigmatizing any particular subsidized customer. A description of USA on the bill, including how the

subsidy is calculated, would emphasize that customer eligibility is assured regardless of which carrier the customer chooses. The telephone number of the USAF administrator should be included. Any consumer could discover whether he or she is benefitting from a subsidy by calling that number.

Conclusion

Many details of Universal Service Assurance appear complex at first blush, but in fact are very manageable. If individual states begin to implement a system of this type, the "bugs" will soon be apparent and can be worked out within a short time. Such was the case when Lifeline service was introduced. States varied in the methods by which they provided Lifeline service, both among themselves and within each state over time. No serious hardship resulted. Experience has taught both the carriers and the regulators that certain techniques work better than others, so the move into a Universal Service Assurance environment can be accomplished smoothly.



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ENDNOTES

1. Senate Bill 311, "An Act Relating to an Enhanced 911 Emergency Response System." passed by the House and the Senate, and signed by the Governor on June 20, 1994.
2. State of Connecticut, Public Act No. 94-83, Section 5.
3. "Resolution to Consider Taxation as a Means of Supporting Universal Service," Resolution No. 7, adopted by the NARUC July 27, 1994.
4. The Staff of the Illinois Commerce Commission found that revenue from local residential service covered its costs. See, Local Competition and Interconnection, Staff Report to the Illinois Commerce Commission, July 2, 1992, p. 31. The Commission itself, however, did not endorse the Staff report.
5. The Maine PUC Staff concluded "...that, in economic terms, basic exchange service was subsidizing other services." See, State of Maine Public Utilities Commission, Investigation into New England Telephone Company's Cost of Service and Rate Design, Docket No. 92-130, Order, April 13, 1994.
6. See, Generic Investigation Into IntraLATA Toll Competition Access Rates. DE 90-002. Report of the New Hampshire Public Utilities Commission, June 10, 1993, pp. 6,7.
7. This calculation of the subsidy obviously ignores other sources of revenue that residential access customers may generate for the local exchange carriers. When revenue from such discretionary services as call-waiting, voice mail, etc., are included, many customers that appear to require subsidies are in fact net profit-generators for the local exchange carrier. Below-cost access charges for such customers, therefore, are nothing more than "loss-leaders" and, under ideal circumstances, should not be subsidized in the name of "universal service." A support program designed to prevent such subsidy flows would be more finely-tuned than the program presented here.
8. A rather unique example of this type of planning has been proposed by Border-to-Border, a telephone company in Texas. Border-to-Border has requested subsidies from the federal Universal Service Fund as seed money to establish service to some rural areas. The company claims that because these areas would eventually qualify as high-cost areas, there is no reason to delay disbursement of the subsidies for two years (the standard procedure). While TCG does not advocate advance disbursement of subsidies from the USAF, proper planning is essential to guarantee the fund's solvency.

Endnotes, continued

- 9 . It is possible that an incumbent LEC's costs may indeed be lower than the costs of a potential entrant. The administrator or Commission, therefore, must retain oversight responsibilities to prevent the LEC from exploiting this cost difference at the expense of captive ratepayers.
- 10 . See, Noam, E. "NetTrans Accounts: Reforming the Financial Support System for Universal Service in Telecommunications," (mimeo) November 1993.
- 11 . "U.K.'s Oftel Waives 'Access Deficit Charges' For 8 Domestic, International Service Licensees," *Telecommunications Reports*, 60:29, p. 17.
- 12 . It is not necessary to require all local telecommunications carriers to be carriers of last resort to be eligible to draw from the USAF. In fact, the notion is oxymoronic.