

Rural Telecommunications from
an Urban Perspective

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This paper argues in favor of strengthening communications, even if financial transfers are required. But it is more optimistic about the present state of rural telephony than many other analyses are, and it advocates a reciprocal support for the needs of metropolitan areas for regulatory reform.

1. Is There A Rural Telecommunications Problem?

Many people seem to believe that rural telephony is the stepchild of the communications revolution. But the statistics tell a more positive story.

The telephone penetration of rural farming states is higher than the national average. Census data from 1988 show that the statewide average for a state like Kansas is 94.4%, and for Iowa 95.4%. One cannot get much higher without emptying the jails. Both of these rural state figures are higher than the U.S. average of 92.7%.¹ If one looks only at the agricultural population, farms have a high penetration rate of 96%² according to the Rural Electrification Administration, while non-farm rural penetration is slightly less than 90%, below the national average.³

Nor are these high rural telephone penetration rates a new

¹ Monitoring Report, CC Docket 87-339, March 1989, p. 17.

² REA, 1988: A Brief History of the Rural Election and Telephone Programs, Washington, D.C., United States Department of Agriculture, p. 7.

³ Fuhr, Joseph P., Telephone Subsidization of Rural Areas in the United States, p. 13.

phenomenon. Historically, American rural penetration has always been strong. In 1902, the state of Iowa had one phone for about every 19 persons. By comparison, New York City had a penetration rate of only one phone per every 39 persons, and Chicago, per 30. European penetration was comparable when it came to the cities: Berlin for example had one telephone per 43 persons, and Hamburg per 52, not much lower than in New York. But at the same time, rural Germany had only one phone for every 500 persons!⁴ So, while European and American urban penetration rates at the turn of the century were quite comparable, a tremendous differential existed between European and American rural penetration. In today's western Europe, practically all farmers remember the day they received phone service. In America, on the other hand, the telephone was a conscious tool of keeping rural America productive and connected to society, just as the parcel post had been earlier.

Second, the financial indicators for the independent telephone companies appears to be generally strong, though there are of course deviations from any average. Some figures from Bruce Egan's research at Columbia clarify this. The amount of the revenues per telephone line is not significantly less for rural than it is for the largest (i.e., mostly urban and suburban) local exchange companies. The largest 25 LECs also serve rural customers, so the destruction is only approximate.

⁴ Holcombe, A.N., Public Ownership of Telephones on the Continent of Europe, Boston and NY, Houghton Mifflin Company, 1911, p.432.

In 1988, rural LECs had average revenues per line of about \$682,⁵ while it was \$757⁶ for the largest LECs. For Rural Electrification Agency-supported independents (that is about 1000 small companies), the operating cash flow per line is about \$250,⁷ slightly higher than the LECs' \$220.⁸ Similarly, rates of return for both urban and rural LECs have been and remain about the same.

The basic monthly subscription price for rural households is similar to that of all other households. In 1986, 81 percent of rural subscribers with service from REA borrowing companies had telephone rates of less than \$16, not including the subscriber line charge of \$3.50. 31 percent of REA companies' subscribers had rates less than \$10 per month.⁹ This can be compared with the nationwide average for all subscribers in 1986, which is between \$12-\$13.¹⁰

⁵ Annual Reports from Top 25 LECs [citation]

⁶ REA Bulletin: 1988 Statistical Report, Rural Telephone Borrower, USDA, 1988, p.300-304.

⁷ Annual Reports from Top 25 LECs [waiting for Bruce Egan citation]

⁸ REA Bulletin: 1988 Statistical Report, Rural Telephone Borrower, USDA, 1988, p.300-304.

⁹ Fuhr, Joseph P., Rural Telephone Finance Divestiture, p.4.

¹⁰ Monitoring Report, March 1988. op. cit.

In New York State, the average monthly rate for residential phone service varies considerably between New York Telephone and the rural Independents. 1986 data show that the independent telephone companies charged more than \$2 less than New York Telephone. Monthly phone subscription from independents was only \$8.65 in 1986, while from New York Telephone it was about \$11.71 per month.¹¹

There is a similar differential for single-line business subscribers between those who are in the New York Telephone service area and those who are in independent service areas. (Independent companies' monthly service rate to small businesses averaged only \$16.08 in 1986; New York telephone were \$30.75. ¹²)

How can all this be explained? Isn't rural telephone service expensive to provide because of the long distances, low densities, and the lack of economies of scale? Again, the numbers do not support such a blanket conclusion.

In 1988, investment per line for the top 25 LECs was about \$1881,¹³ while that for REA telephone companies was \$2288, or only about 20 percent higher.¹⁴ This difference is really quite small. In light of the fact that rural telephone companies have average loop lengths at least twice that of other LECs, this would

¹¹ Calculated using data from NY PSC Case No. 138425, Phase IIB (as of 4/2/86).

¹² Ibid.

¹³ Annual Report from Top 25 LECs.

¹⁴ 1988 Statistical Report, Rural Telephone Borrower.

indicate a higher investment efficiency for rural independent telephone companies.

REA independents have also managed to keep operating costs much lower than the large LECs. In 1988, their annual operating cost per line was about \$522,¹⁵ while the cost for the largest LECs was higher at \$558.¹⁶

One may think that this is caused by old equipment. But here too, the evidence is mixed. On the one hand, it is true that some of the last electro-mechanical switches are found in rural areas. But on the other hand, REA borrower companies have converted 45 percent of their central offices switches to digital, while urban LECs at the same time had converted only about 35 percent of their central offices to digital.¹⁷ So these independents are often technically more progressive.

If this is so, why is everyone worrying about the problem rural telephony?

¹⁵ Ibid.

¹⁶ Annual Report from Top 25 LECs.

¹⁷ Schrage, Gerald S., "Rural Subscribers Loop Performance," Telecommunications Engineer and Management, January 15, 1988, p. 79.

2. Problems with Rural Companies

First, some independent telephone companies indeed have problems. But my numbers do not show that these companies are the smallest, nor that they are located in any particular region of the country. Often, the companies in trouble are poorly managed, sometimes by the heirs to the earlier operators. The identification of specific causes for rural telephone companies' financial problems would certainly be a useful topic for research.

Second, there are also people who have problems. There are the rural poor. FCC data show that households lack telephone service because of low incomes, not because they live in rural areas. This indicates a social problem, not a regional one. It calls for a lifeline policy, not a rural policy. Furthermore, there is a distinction between rural and remote subscribers. One should not equate rural America with agriculture. 65.2 percent of rural employment is actually in the service sector as of 1988, 17.2 percent is in manufacturing, 5.3 percent in construction, and only 9 percent in farming.¹⁸ As far as rural policy is concerned, what needs attention and protection is the interconnection of remote rural subscribers. They have the most to gain from telecommunications, because the longer the distance, the greater the savings in travel cost and time, and the more

¹⁸ Parker, Edwin B., Heather E. Hudson, Don A. Dillman, and Andrew D. Roscoe, Rural America in the Information Age: Telecommunications Policy for Rural Development, Lanham, Maryland: The Aspen Institute and University Press of America, Inc., 1989, p.12.

important communications become. [need to add number of party line subscribers in NYS]

And the third and major reason for concern about rural telecommunications is the fear about the future. New forms of networks like narrowband ISDN and broadband IBN may not be affordable. We seem to be moving towards fiber to the home, but the question is, can there also be "fiber to the barn"? We should not be pessimistic. When it comes to narrowband ISDN, REA estimates, based on digital switches financed by it in 1987, show that the upgrade cost is about \$500 per line. The cost of digital service is estimated at an additional investment of about \$462 million (in 1987 dollars) or about \$46.2 million per year over the next 10 years.¹⁹ This is clearly affordable. An ISDN network would permit rural subscribers to have full digital capability for home and business computers, and high-speed facsimile transmissions.

Integrated broadband networks, however, are a much more expensive proposition, because they require a substitution of conventional copper wire with fiber. Today, the average cost of a copper loop in urban centers is about \$1800²⁰, but the average cost of a fiber loop at these locations is estimated at about \$3000.²¹

¹⁹ Ibid., p. 81.

²⁰ Company Reports, from B. Egan.

²¹ Egan, Bruce and Jonathan Taylor, Working Paper No 336, Columbia University. Center for Telecommunications and Information Studies.

However, costs are coming down. Soon fiber will match the cost of copper for new loops and for replacements. Fiber to the rural home may actually make more sense than to the urban ones if there is no cable television. In urban communities, cable television siphons off a large part of the potential telephone company fiber-to-the-home revenue. But in rural areas, that problem may exist much less because everything, including video, could be on the telco fiber line. (On the other hand, where rural cable already exists, it may be more difficult to support a telco fiber because of the smaller densities.) Another advantage of fiber to the rural home, relative to urban areas, is that amplification electronics are less distance sensitive.

3. Support of Rural Telephony

Thinking about broadband in the future gets us to the question of subsidies. There are several ways in which rural telephone service receives contributions.

First, there are various kinds of rate averaging that benefit rural users.

Second, the separations and settlements process is a considerable source of support. (The data on that question is difficult to access, and cannot be readily analyzed. This would be another good research topic.)

Another support mechanism is through the High Cost Fund implemented by the FCC, which targets high cost local exchange carriers. In 1988, the total subsidy provided by this means

amounted to about \$500 million,²² alleviating some companies' problems during the 8 year transition to a 25 percent non-traffic sensitive allocator. Retargeting the program's formula is helping the small and medium sized carriers that were previously excluded.²³

There are also REA loan subsidies and guarantees. In 1986, about 5 million rural subscribers benefitted from REA loans, about 4.2 percent of all telephone subscribers. In 1986, the REA had about \$5 billion in low interest loans outstanding. Annual loans are about \$340 million, and the annual subsidy amounts about \$500 million per year. This is not very much money considering its impact.

4. Should there be a Support for Rural Telephony?

No one seems to be upset that New York City residents pay much higher electric rates than do rural areas, particularly those with hydro-electric resources. And, no one seems to be upset that parking a car in midtown Manhattan for one evening costs more than a monthly rural telephone service. So why shouldn't people pay more for their telephones if they choose to locate in areas where land is cheap and the air is clean? There are some pragmatic reasons. Such assistance helps rural areas to perform better economically so that they can be an "equal opportunity participant" in the national economy, and be a market

²² Monitoring Report, March 1989, p. 64.

²³ Ibid., pp. 60-1.

and supplier for other parts of the country. It would be undesirable to depress rural areas and cause a mass migration into the cities.

Furthermore, there are the externalities of being able to reach everyone in the country.

On the whole, however, these practical arguments go only so far, because they cannot truly negate some modest price differential if indeed the cost of rural service is higher. Telephone demand is fairly inelastic. Subscribers are willing to pay astonishingly higher amounts before they disconnect their telephone service. Some users, maybe 10 percent, may well drop off the network. But there is more to this question than pure economic logic. The real argument is not a pragmatic one. The main justification for support of rural communications is the notion of interconnectivity as a society. In the information society and information economy, not being interconnected is being excluded. It is not a constitutional guarantee or a legal right, but it is increasingly close to an entitlement, because the absence of service is beginning to represent an exclusion from a functioning role in society -- as citizen, producer, consumer, and human being.

The support should not be only for the purpose of keeping basic rates down, for that would be a POTS view in a POTS and VANS world (where the VANS are new types of value added network services). There is room for some targeted distribution of low-cost terminals to places like retirement homes and schools.

I have no problem in advocating the support of rural telephony. But the problem is that too many camels crowd under the tent. As a consequence of this political reality, the redistributory burden over time becomes too high, and some large users drop off and form their own private networks or join rival networks. The public network, which is a sharing coalition, is not able to hold together, interests diverge, and the one public network breaks apart. So pushing for too much of a transfer is ultimately self-defeating.

5. Rural Support for Urban Consensus

There must be reciprocity. Rural states cannot ask for assistance in the telephone sector if they are not equally prepared to help the weak in urban areas, of which there are many.

What the metropolitan areas of this country need, with their mix of poor and middle class, their large businesses and their information-intensive services, are advanced services, rapid upgrade of networks for businesses and residents. Metropolitan economies benefit from low communications costs and the great variety of services and equipment. New York City, for example, needs to compete with Tokyo, London, and Singapore,. Many of the regulatory changes that broke the monopoly system were resisted by rural states, with a few exceptions, for 20 years now.

In order not to harm some of their people, rural states thus

were willing -- in effect though not by design -- to slow things down for the metropolitan areas. There were many ways to do this. The U.S. Senate is not a balanced body; nor is NARUC, where the smaller states have a large influence.

For example, many rural state commissions fought the FCC's Carterfone liberalization of terminal equipment, arguing that allowing alternative telephones would endanger the system's effort to provide telephone service to those in rural areas. These had been AT&T's arguments.

Other examples are the resistance to long distance competition, the transition to a more cost-causative allocation for non-traffic sensitive costs in the local exchange network, and resistance to competition in the local exchange.

The next series of pressures on traditional networks will be on the concept of franchise territories itself; it has already been tested in the Arco case in Texas. If the lessons of the past 20 years mean anything, it is that this kind of development cannot be resisted for long.

This is all part of the transformation of the network from one that is territorially organized to one that is functionally linked, connecting groups that communicate with each other, whether they are in Chicago, Boise, or Tokyo. This requires very innovative ways of regulation and approaches to regulatory jurisdiction, and new methods of financing the traditional subsidies.

The resistance to regulatory reform is harmful to the growth

of metropolitan economics. (In fairness, many regulators from urban states do not share this view.) I have no problem in supporting direct transfers to rural areas. But I have a problem with the indirect cost, for example the drag on New York's competitive position because of a stalemated policy process.

Furthermore, the contribution of rural communications to the national economy should be additive, rather than only redistributive. As a cardholder, I am happy that Citicard's credit card processing can be performed in North Dakota. But if it is purely a diversion of activities from New York City, and if it is encouraged by some peculiar tariff structure, it does not result in much social gain. Therefore, rural areas' development policy cannot simply be to divert activities that were previously performed elsewhere. Not to do this is both smart politics and smart business. A purely redistributive rural policy will only induce back office functions to continue migrating. Today to North Dakota, tomorrow to Malaysia.

6. Conclusion

Communications are important to urban and rural development and well-being. Rural areas deserve help so they will not fall behind. But help should not become a one-way street. Those who have worked long and hard for rural communications and made it should also be mindful of the cities and their needs.