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MAY 7 1996

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Before the
Federal Communications Commission
Washington, D.C. 20554

FCC 96-93

In the Matter Of	)	
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	
	)	

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Reply Comments of the
Rural Utilities Service

Introduction

At the Joint Board hearing on April 12, 1996, Chairman Hundt asked how much universal service support would cost. The Rural Utilities Service (RUS) understands the importance of determining the annual cost of universal service when designing the support mechanism. RUS has been estimating the cost of serving rural America for about 50 years, and may have the best rural-specific statistics available. RUS analyzed the issues involved in preparing an estimate, and concluded that it would be more constructive to offer a process that could be used by knowledgeable parties to develop an answer for Chairman Hundt.

The RUS Test

In RUS' April 12 Comments on the Notice of Proposed Rulemaking on Universal Service (RUS Comments), RUS applied a test to three possible universal service support mechanisms. The support mechanisms tested were the existing set of support mechanisms, a proposed mechanism using competitive bidding, and a proposed mechanism based on the Joint Sponsors' Benchmark Cost Model. The purpose of this test was to determine the suitability of all mechanisms discussed in the Notice to support universal service and remain consistent with the Telecommunications Act of 1996 (Act). This five-pronged test, called the "RUS Test" in the RUS Comments, was created to determine whether a support mechanism, or any component of a mechanism, could meet the goals of the Act. To pass the RUS Test, a mechanism must:

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1. Provide incentives for competition. The mechanism must encourage competition and provide incentives to attract new entrants. It should not, however, artificially support competition in a manner that cannot sustain multiple universal service providers.

2. Provide an adequate safety net. The mechanism must ensure that rural citizens can receive services of like quality, type, and performance as typical urban or suburban citizens.

3. Provide for a changing infrastructure. The mechanism must be flexible enough to maintain good, improve inadequate and serve the unserved with universal service infrastructure, whether wireline, wireless or satellite. All facilities must be cost effective and capable of evolving - migrating - to meet the changing definition of core services, and must not inhibit the evolution to advanced services.

4. Provide affordable service. The mechanism must ensure that core services are affordable both in monthly charge and initial service connection cost, anticipating possible revenue losses from new entrants.

5. Do no harm. The best parts of the rural infrastructure are a national treasure. The new mechanism should not dismantle the good parts of what has taken so long to build.

None of the three mechanisms tested in the RUS Comments passed the RUS Test, but RUS suggested a support mechanism that would. This mechanism, an *augmented costing-model mechanism*, would use a composite-technology costing model to determine appropriate support levels for medium and high density areas, but would provide other methods for determining appropriate support levels in very low density areas where costing models do not capture the population and design characteristics necessary to predict service costs accurately.

In estimating the annual cost of universal service support, the RUS Test should be applied to make sure all aspects of the estimating methodology are consistent with both Section 254 and the remainder of the Act. To show the usefulness of the RUS Test, RUS applied it to an obvious support cost estimating tool, the use of historical plant costs. The RUS Test shows the shortfalls of a methodology using historical costs:

- A historical cost-based methodology fails prong No. 1 because it provides no incentive for competition.
- It fails prong No. 2 in that it won't estimate adequately the cost of providing services of like quality and performance as that typical of urban or suburban areas. It is based on the quality and performance of services in *rural* areas, which, in the aggregate, are not quite at levels offered in urban and suburban areas.

- Such an estimating methodology fails prong No. 3 because rural telecommunications plant is less likely to be capable of evolving toward improved services. A case in point is inductive loading, which enables a long loop to have adequate voice transmission but which prevents contemporary modem traffic from passing.
- The methodology fails prong No. 4 because it would not anticipate revenue losses from new entrants.
- The methodology passes prong No. 5 because its strength would be to maintain the status quo.

Because historical costs are not appropriate for use in estimating the cost of supporting universal service for core services, a new model must be developed.

Estimating the Cost of Universal Service Support for Core Services

The answer to Chairman Hundt's question is not available from any one source or statistic. The Joint Board, however, needs to know at least the magnitude of the cost to support universal service in all of rural America. RUS has statistics and knowledge of that portion of rural America that RUS borrowers serve, which is approximately 40% of the geographical area of the nation. Other LECs serve the remainder of rural America, which RUS estimates to be approximately another 40% of the nation's landmass.

RUS would be pleased to assist the Joint Board and the FCC in developing an estimate of the cost to support universal service. Working with others who know the costs of serving their portion of rural America and the state of their rural service (what is provided and how), RUS believes that a reliable estimate could be made.

Any estimate will be based on assumptions and extrapolations from existing rural-specific data. The quality and wisdom of those assumptions and extrapolations will determine the accuracy of the estimate. To avoid the problems that RUS encountered with the Joint Sponsors' Benchmark Cost Model (see the RUS Comments), RUS suggests that the estimating methodology be designed carefully, and with input from many interested parties.

RUS suggests that any estimate of the cost to support core universal services follow these principles, that they:

1. Be based on the cost to support probable core services, rather than the cost to support existing services provided to rural areas;

2. Be based on rural-specific service costs, and not on averaged urban, suburban and rural costs, because those costs are dominated by urban and suburban costs;

3. Include the total cost of providing service to subscribers, rather than only the cost of constructing plant to serve rural areas; and

4. Include the cost of supporting universal service for all of rural America, and define that segment of the population.

Defining rural America is a major challenge. The characteristics of facility cost are largely geography dependent, but how? RUS analyzed population data and facility cost and has begun to formulate some relationships. In urban and suburban areas, the cost of serving a subscriber is dominated by the switching cost. In rural areas, the cost is dominated by outside plant costs. Density is generally the controlling cost factor for outside plant costs, but density is not uniform even within a low density service area. This is why some low density service areas cost much more to cover than other areas with the same density. Clearly, density needs to be analyzed further. Communities, villages, towns and cities all concentrate subscribers into cost-saving clusters, but many are not incorporated and do not register in census data. The Rand McNally Commercial Atlas, which is based largely upon census data, provides information on unincorporated villages and communities as well as towns and cities. Using the Commercial Atlas, RUS was able to begin to quantify those areas which have the characteristic challenges of rural service.

Starting with 1990 population data, RUS determined that about 47 million people live in towns of fewer than 5000 or outside of towns. Assuming 2.7 people per household, this translates to 17.4 million households, or subscribers, or access lines. Using a 1.18 multiplier (based on 1993 RUS data) to account for business lines and assuming 94% penetration, this gives over 19 million access lines in rural areas broken down as follows.

Total Existing Rural Access Lines

	RUS	Other LECs
Access lines in towns of 0 - 5000	1,860,000	7,814,000
Access lines outside of towns	3,600,000	6,260,000

The areas served by RUS borrowers are generally more rural than those served by the other LECs. The non-RUS borrower LECs tend to have more towns than RUS borrowers and their towns are usually larger. This characteristic of the non-RUS borrower LEC portion of the rural areas prevents RUS pricing models from applying to those areas.

RUS has 893 borrowers, a number of which come in for loans periodically. RUS in the last 5 years has loaned money for infrastructure that is capable of providing the probable core services. An examination of "core services" type borrowers gives an idea of the cost of providing core services.

For example, one could look at a sample of actual cost data and extrapolate from there. RUS studied 69 borrowers who received loans in 1991 (the assumption being that those borrowers would have essentially completed the purposes for which the loans were made and be capable of supporting the probable core services), and has calculated an annual cost to provide service on a per subscriber basis using 1995 operating expense data. We have determined (see Attachment) that the average gross operating cost on a per line basis to serve this sample of RUS-like rural systems is $692 per year.

This cost estimate is based solely on the operating cost experience reported by our borrowers and, since it is not an income statement, it does not reflect any cost recoveries thru revenues, universal service support, or margins for profit. Therefore it is not, by itself, indicative of any support or revenue requirement. While we believe that these borrowers represent a population that would be capable of supporting the probable core services, we recognize that a broader sample may be required and that some areas will require substantial infrastructure investment, some moderate, and others none at all, resulting in increases or decreases to the total costs. Today, RUS borrowers receive 65% of total operating revenues from long distance services. However, since those mechanisms which account for a large portion of the rural LECs' revenues are currently being studied and may be subject to change, we did not attempt to include any cost recovery from local service, toll, or the various universal service support mechanisms.

Following the principles outlined above, along with analysis of costs along the lines of this sample of RUS borrowers, RUS believes a group of rural service providers (or a cost expert) could estimate the cost of providing core services for the adequately served, the underserved, and the unserved in all of rural America.

Estimating the Cost of Universal Service Support for Rural Telemedicine

The task of estimating the cost of ensuring comparability of rates for advanced services for rural telemedicine users is also difficult. The focus should be on providing like services for a like price.

RUS has provided 39 grants for telemedicine applications since 1993 through its Distance Learning and Telemedicine Grant Program. Some of these projects can offer anecdotal evidence of the difference in cost of similar services between rural and urban areas. RUS studied three telemedicine projects to determine differences in cost between services required between urban and rural connecting facilities. At a telemedicine project with a hub site located in Seattle, Washington, monthly fixed costs of ISDN service were $81, with an average installation charge of $253. However, a remote site in Colville, Washington, 350 miles from Seattle, incurred a monthly fixed cost of $475 and an installation charge of $623. The annual difference in cost between urban and rural users for the same ISDN circuit was $5100.

Another example of rate difference from urban to rural is a telemedicine system recently implemented in Montana which utilizes dedicated T-1 connections. This system, providing interactive real time video capability, connects five rural facilities to an central urban hub in Billings. The five rural facilities, located an average 66 miles from the central urban site, incurred an average cost of $1,200 for installation, and they are currently paying $973 in monthly service fees. However, the central urban site, while incurring the identical $1,200 installation fee, is paying only $216 in monthly service charges. The annual difference in cost of T-1 services between urban and rural users, for each of the five rural facilities, is $9,084.

A final example is a Minnesota telemedicine network which utilizes T-1 lines to link five rural sites to a medical facility in Minneapolis. While installation charges were a uniform $625 per site, monthly fixed costs range from $250 to $1,250, and usage rates (a reported minimum of $4,000 annually) range from $15 to $42 hourly based on the required distance of the T-1 connections. In this example, the difference in annual cost of T-1 services is $19,200 per rural site.

At this time, it appears that charges for both ISDN and T-1 services vary greatly from state to state, and from city to city, but most of all from urban to rural.

Summary

There is no easy or direct answer to Chairman Hundt's important question. RUS believes that an estimate of the cost of supporting universal service could be developed by convening a group of knowledgeable parties, and asking them to agree on assumptions and parameters for the process. RUS offers to participate in this process and would bring substantial rural-specific knowledge and information.

Regarding the cost of ensuring comparability of the pricing of advanced services for rural telemedicine applications, RUS believes the use of telecommunications is not widespread enough, and is too diverse, to make exact cost estimates. However, a principle can be set. The principle is that the discount should focus on the service provided the end user, whether the service travels a few miles in urban and suburban areas or a few hundred in rural areas. RUS offered several case studies which confirm that rural costs are substantially higher than urban costs for the same services, and that both rural and urban costs vary widely from state to state. RUS would be pleased to study additional cases if the FCC believes this information would be useful.

RUS appreciates the opportunity to offer comment on this matter.

Dated: May 7, 1996

WALLY BEYER
Administrator
Rural Utilities Service

Attachment

Sample of Annual Operating Costs Per Subscriber

(based on 69 borrowers that received loans in FY 1991)

Rural Utilities Service **Sample Estimate of Rural Operating Costs**	*Composite of 69 Borrowers w/ Loans Approved in FY 91*
Operating Expenses	*As of 12/31/95*
Plant Specific	*$95,174,961*
Plant Nonspecific	*34,558,437*
Depreciation & Amortization	*117,312,941*
Customer Operations	*45,294,655*
Corporate Operations	*76,825,352*
Other	*239,778*
Federal Taxes	*29,332,890*
State & Local Taxes	*31,395,230*
Fixed Charges	*39,607,727*
Total Operating Expenses	*$469,741,971*
Route Miles of Line	*98,845*
Square Miles Served	*111,639*
Subscribers	*678,891*
Annual Operating Cost Per Subscriber *(total oper. expenses divided by total subscribers)*	*$692*

Attachment A

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o An oversize page or document (such as a map) which was too large to be scanned into the RIPS system.

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