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March 26, 1997

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Federal Communications Commission
Office of Secretary

Honorable Reed E. Hundt, Chairman
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Chairman Hundt:

Enclosed for your review is a document entitled "State Members' Report on the Use of Cost Proxy Models." In this report the State members of the Federal-State Joint Board on Universal Service recommend that the FCC adopt the rural service proposals of the LEC Associations made during a February 13, 1997 ex parte. We also suggest that the FCC appoint a rural task force to work with the Joint Board on these and other matters.

In addition, we conclude that there are "serious concerns about the adequacy and accuracy of the cost models at this point." We further suggest that one model be selected as soon as possible in order to allow subsequent work efforts to be more focused.

A copy of this report will be formally filed today in CC Docket No. 96-45.

Thank you.

Sincerely,

Kenneth McClure, Chair
State Members of the Federal-State
Joint Board on Universal Service

KM:nh
Enclosure
cc: Honorable Sharon L. Nelson
Honorable Laska Schoenfelder
Honorable Julia Johnson
Honorable Martha S. Hogerty

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MAR 2 6 1997

Federal Communications Commission
Office of Secretary

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

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

STATE MEMBERS' REPORT ON THE USE OF COST PROXY MODELS

Kenneth McClure, Missouri Public Service Commission
Julia Johnson, Florida Public Service Commission
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Martha S. Hogerty, Public Counsel for the State of Missouri

March 26, 1997

STATE MEMBERS' REPORT ON THE USE OF COST PROXY MODELS

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STATE MEMBERS' REPORT ON THE USE OF COST PROXY MODELS

I. INTRODUCTION

In its Recommended Decision in CC Docket No. 96-45 (Recommended Decision), the Federal-State Joint Board on Universal Service (Joint Board) expressed the belief that a properly crafted proxy model could be used to calculate the forward-looking economic costs for specific geographic areas to determine the level of support a carrier may need to serve a high cost area. The Joint Board did not recommend the adoption of one particular cost proxy model because no model had been sufficiently developed for use at the time of the Recommended Decision. The Recommended Decision outlined criteria for evaluating a proxy model and recommended that the Federal Communications Commission (FCC) staff and the State staff work collaboratively to develop an adequate proxy model for use in determining the appropriate level of universal service support.

The Recommended Decision indicated that the State members of the Joint Board should submit a report on the outcome of these efforts and on any state recommendations with sufficient time for the FCC to review the report prior to the issuance of an Order implementing the Recommended Decision.

Both state and federal efforts have been hampered by the delay in the availability of the proxy models. As discussed elsewhere in this report, the most recent versions of the models have been available for less than one month, and analysis has been stymied by lack of nationwide data, lack of consistency among copies of the models, and general difficulty in obtaining timely information regarding the underlying details of the models.

As a preliminary matter, the State members of the Joint Board would submit that the state and federal staff members have worked in a cooperative manner in an earnest attempt to resolve questions surrounding the proposed cost proxy models. Communicating by voice, fax, e-mail, and in face-to-face meetings, both state and FCC staff have expended significant resources on this project. The State members and staff are appreciative of the candor and openness with which this matter has been addressed.

II. SUMMARY OF RECOMMENDATION

The state members have serious concerns about the adequacy and accuracy of the cost proxy models at this point. We recommend that the Commission select one model as soon as possible in order to focus the efforts of industry participants and regulators toward the resolution of the concerns. Due to the delays in obtaining the latest versions of the proxy models, we will postpone our recommendation on the selection of the model to be used until additional analysis has been completed. We intend to issue a subsequent report in approximately two weeks. At this time, we propose that the model submitted by Ben Johnson Associates not receive further consideration as the model for use in the interstate USF program, but be used only as a reference for improving the other models. As discussed in Appendix A, the BJA model -- despite its entry as an independent option to the industry models -- has not been developed to the extent necessary to yield usable nationwide results.

In this report, we are providing recommendations on a number of issues related to the models: rural service issues, implementation issues, and the future role of the Joint Board on proxy modeling. In addition, we are providing, as appendices, preliminary analysis by State staff on the mechanics of the proxy models, selection of input variables, and other factors which will impact the level of USF support for eligible carriers.

III. RURAL SERVICE ISSUES

A. Frozen Support Levels

In the Recommended Decision, the Joint Board proposed the continued use of embedded cost methodology for rural companies[1] for three years after the non-rural companies begin to use proxy models. The delayed transition would allow time to refine the proxy cost model to accommodate the unique circumstances of rural companies. To encourage competitive entry and minimize undue disruption during the three year time period, the full Joint Board recommended rural carriers continue to receive support from the high cost assistance fund, Dial Equipment Minute weighting (DEM), and Long Term Support (LTS) based on frozen 1995 historical per line amounts. The support would be paid from the new Universal Service Fund (USF). Many parties[2] expressed concern that the frozen high cost assistance, DEM and LTS support would not recover new investments prudently made before and during the transition.

To alleviate this concern, the LEC Associations[3] in a February 13, 1997 ex parte proposed modifications to the Joint Board's recommendation. The LEC Associations proposed plan has the following key elements:

High Cost Assistance

- To estimate the nationwide average loop cost, the nationwide 1995 loop cost would be adjusted annually to reflect inflation by application of the Gross Domestic Product Price Index (GDPPI). This would establish an easily administered control and eliminate the need for annual submission of data for calculation of the nationwide average from non-rural LECs that will not be eligible to receive high cost support based on reported costs.
- The embedded loop cost of rural ILECs would be calculated annually and support would be received for loop costs in excess of the indexed nationwide average loop cost.

DEM

- The 1995 interstate allocation factor based on weighted DEM would be frozen for each study area. This allocation factor would be applied annually to the traffic sensitive investment and expenses. All interstate allocated amounts in excess of unweighted DEM would be recovered through the new USF.

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[1] As defined in the 1934 Act, as amended in 47 U.S.C. §153(37).

[2] Comments Wyoming Public Service Commission p.6.

Reply Comments United States Telephone Association p.7.

Comments Rural Alliance p.7.

[3] United States Telephone Association, Organization for the Protection and Advancement of Small Telecommunications Companies, National Telephone Cooperative Association.

- The interstate allocation based on unweighted DEM would continue to be recovered through interstate access charges.

LTS

- The level of long term support would be frozen for the transition period at the percentage that LTS represented of the total common line pool for 1996. This ratio would be applied to the annual common line revenue requirement. The LTS amounts would be transferred to the new USF and recovered through contributions from all interstate carriers.

Under the Recommended Decision, support would have been provided for growth of new lines.[4] However, additional support for investment in substantial upgrades to existing networks would not have been provided during the transition. The State Joint Board members find merit in the arguments that freezing USF, DEM, and LTS support at the current per-line amount could be a disincentive to invest in the network during the transition. We recommend the FCC adopt the LEC proposals as outlined above. We reiterate our previous recommendation that any per-line support available to an incumbent rural carrier should also be available to an eligible competitive local exchange carrier (CLEC). The support payments should be portable. If a CLEC serves a subscriber formerly served by a rural carrier eligible for support, the per-line payment should transfer to the CLEC.

B. Lines Eligible for Support

In the Recommended Decision, the proposed definition of universal service limited the support payments to eligible carriers providing service to single-connection business, and to a residential customer at their principal residence. Comments from small carriers and other parties expressed concerns that businesses in rural high cost areas would experience severe rate increases that would result in businesses relocating to urban areas. Other commentors described the proposals as being administratively cumbersome, as it may be very difficult to ascertain whether or not a residence is a principal residence. There is an increased possibility of gaming such a program, with verification and investigation adding administrative concerns.

The state Joint Board members recommend that, during the three year transition, high cost support for rural telephone companies should remain as it has been historically applied, to all of a carrier's working lines. The Joint Board recommended that the FCC, working with the state commissioners, review the proxy models before requiring rural carriers to use them.[5] We recommend the review also include the appropriateness of limiting support for rural carriers to residential and single line business.

C. Rural Companies and Proxy Models

In the Recommended Decision, the full Joint Board recommended that a rural carrier should be permitted to elect to use a proxy model to determine its support level prior to the mandatory transition to proxies.[6] At this time we do not believe that the proxy models are developed sufficiently to be used for any rural carriers. Recent comments[7] and ex partes[8] by rural

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[4] Recommended Decision, footnotes 89 & 91.

[5] Recommended Decision, para. 283.

[6] Ibid.

[7] Feb. 13, 1997 ex parte comments RUS p.4.

carriers convince us that even the latest versions of the models have not progressed sufficiently to reflect the cost to serve in rural areas.

Some parties[9] expressed concern that rural carriers would only choose the proxy option if they were going to receive more funding than under the embedded cost formula. If the carrier's decision is based upon the calculations of an inappropriate proxy model, the fund would be unduly increased and cause a windfall to those companies that opt to proxies.

We recommend the FCC not allow rural telephone companies to receive funding calculated by a proxy model prior to the transition starting on January 1, 2001. Rural companies should neither receive a windfall nor be undercompensated during the transition to a support program based on proxy models. During this transition, eligible incumbent rural carriers and CLECs should receive per-line support based upon the incumbent carriers' embedded cost.

D. Rural Task Force

Pacific Telecom, Inc. (PTI)[10] and USTA[11] recommended that the FCC establish a rural task force, under continuing Joint Board oversight, to begin the evaluation of proxy models for use by rural companies. The parties propose a task force that would report directly to the Joint Board and would be comprised of representatives of rural telephone companies.

The Joint Board in its Recommended Decision recognized the unique characteristics of rural carriers and, in order to provide time to address rural issues, recommended a three-year transition before rural carriers would be required to use a proxy model. A rural task force should provide valuable assistance in identifying the issues unique to rural carriers and analyzing the appropriateness of proxy cost models for rural carriers. We recommend that the FCC, in its order, appoint a rural task force to work under the auspices of the Joint Board to assist in efforts to improve the cost proxy models for rural carriers. We further recommend that the Joint Board and the FCC solicit public comment on any findings or reports of the rural task force.

IV. IMPLEMENTATION ISSUES

A. Transition to the New Program

The State members recommend a transition to using proxy models to distribute universal service support to non-rural carriers. A three year phase-in will allow continued evaluation of the proxy model's accuracy in identifying high cost service areas. Any improvements that are needed can be implemented prior to the completion of the transition. A transition will also allow the implementation of the new universal service distribution mechanism to be coordinated with changes in pricing and competition. The State members recognize the interrelationship of the universal service docket, access charge reform docket and the emerging competitive environment. We believe it is important to coordinate changes in these areas to avoid undue harm to the industry and to ensure that consumers reap the benefits of a truly competitive market. We continue to support the full Joint Board's recommendation to make the contribution system and

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[8] Feb. 20, 1997 ex parte by GVNW Inc./Management.

[9] Initial Comments of Maryland PSC, p. 8.

[10] Feb. 18, 1997 ex parte comments PTI.

[11] Feb. 18, 1997 ex parte comments USTA.

funding mechanism of the federal universal service fund competitively neutral and consistent with the requirements of the 1996 Act.

B. Monitoring

The State members recommend that the members and staff of the FCC and Joint Board work with the fund administrator to monitor the proxy models subsequent to their implementation and especially throughout the proposed transition period. The results of detailed monitoring should be used to determine if changes must be made to improve the effectiveness of the proxy models in targeting the high cost support accurately.

We continue to support the position reflected in the Recommended Decision that state regulators should provide the FCC with service quality data as supplied by the carriers. The State members feel strongly that eligibility for receiving universal service funding should be linked to a carrier's provisioning of quality services at just, reasonable, and affordable rates, as required by Section 254(b)(1) of the 1996 Act. The requirement of Section 254(b)(1) is closely interrelated to the mandate of Section 254(e). To assist state and federal regulators in their efforts to ensure a carrier's compliance with Section 254(e), at a minimum a carrier should have to verify, subject to state review, that it is using federal universal service funds "only for the provision, maintenance and upgrading of facilities and services for which the support is intended." To comply with Sections 254(b)(1) and 254(e), state and federal regulators should work collaboratively to ensure that recipients of universal service funding are appropriately using such support to make high quality services available to consumers in high cost areas.

C. Revenue Issue

The 1996 Act states that universal service support "should be explicit and sufficient to achieve the purposes" of Section 254.[12] It is generally assumed that in both interstate and intrastate rates there exists implicit support for basic local service in high cost areas. As the explicit funding mechanism is adopted, it is critical that the appropriate reductions in the implicit supports are made. Once the details of the new federal mechanism are decided, the coordination between the new explicit and current implicit supports must be determined.

V. FUTURE ROLE OF THE JOINT BOARD ON MODELING ISSUES

In its Recommended Decision, the Joint Board acknowledged the importance of the State members' role in developing a proxy model.[13] It seems apparent that refinements to the model will continue subsequent to the FCC's order and the implementation of the model. Furthermore, the model will need to be adapted to address the special needs of the rural carriers.

We believe the State members should have a continuing role in the development the proxy models for Tier I and rural carriers. We recommend that the FCC and the State members and staff of the Joint Board continue to work cooperatively to improve the proxy models throughout the transition period and to implement the new universal service fund.

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[12] Section 254(e) of the 1996 Act.

[13] Recommended Decision, para. 269.

VI. CONCLUSIONS

The State members of the Federal-State Joint Board on Universal Service believe that to effectively address the issue of using a cost proxy model for targeting universal service support, efforts must become focused on a single model as quickly as possible. After additional analysis of the models is completed, the State members will recommend a specific cost proxy model. In this report, we provide our initial views on a number of the difficult modeling issues confronting the Joint Board and the Commission. We intend to submit a supplemental report in the near future on additional issues surrounding the cost proxy models, including the selection of one model with which to proceed.

Appendix A
COST PROXY MODELS

This appendix provides the State staff's view of the cost proxy models under consideration in this proceeding, along with a description of the concerns regarding those models.

A. Benchmark Cost Proxy Model (BCPM); sponsored by U.S. West, Sprint, et. al.

The BCPM has been revised to address some of the criticisms of the BCM2. The BCPM reflects changes which add flexibility to the model and increase the ease of reviewing cost calculations. The major changes affecting the calculation of costs were in the inputs, which consisted of replacing historical ARMIS-related expense factors with forward looking expense factors. Structure costs have also been changed to reflect forward looking cost, based on a survey sent to a sample group of local exchange companies. The sponsors were asked to file the survey in the docket, but it has not yet been filed. The failure to submit the survey for the record has made it difficult to analyze the reasonableness of the new inputs.

The staff has had limited time to review the BCPM since the initial CD copies were missing data and files. Because the sponsors had the model set up for demonstrations in conjunction with the recent NARUC meetings, we have been able to obtain some cost and support information using various inputs.

Based on critiques of the BCM2, the BCPM has attempted to correct the inaccurate line counts and assignment to wire centers. In the BCPM, the CBG is assigned to the serving wire center that contains the centroid of the CBG, and the line counts are reportedly trued up to the total number of customer lines served by the company. However, analysis of data has revealed that while the company line count appears to be reasonably close, the assignment of CBGs to serving wire centers still has major inaccuracies.

The State staff will continue to review the BCPM, and further analysis will be provided in a subsequent report.

B. Hatfield 3.1 Model; sponsored by AT&T, MCI, et. al.

Version 3.1 of the Hatfield cost proxy model was distributed on February 28, 1997 and was not received by state staff until the week of March 3. Previous versions of the Hatfield model included data for only a small number of states.

In version 3.0 of the Hatfield model, its sponsors contended that the model was revised to address many of the criticisms of commentors, especially those that stated that the network modeled would not work in low density areas. For example, the loop structure has been changed to assure that extremely long loops will provide voice grade service. The Hatfield 3.0 attempted to address the problems of incorrect line counts for companies and for wire centers within the company. As will be discussed further, our limited review of data indicates the problem has not been solved.

The State staff will continue to review the Hatfield 3.1 model, and additional analysis will be presented in a subsequent report.

C. Ben Johnson (Telecom Economic Cost) Model

The sponsors of the TEC promote flexibility as the major advantage of the model structure. If the information is available at the corresponding level of detail, the user can input the individual geographic and cost details by wire center. If this information is not available, the model uses default network structure information (length of loops and number of lines) from the BCM2 model. The Ben Johnson TEC model calculates costs at the wire center level.

The review of the Ben Johnson model was limited since the model only provides data for one state, Texas. Furthermore, the model filed in the docket does not have the capability to aggregate the wire center cost to a state level. For these reasons the State staff does not recommend the use of the Ben Johnson TEC model for calculating the level of support for the federal universal service fund.

D. Recommended Criteria

The State staff is continuing to evaluate the proxy models based on the criteria established in paragraph 277 of the Recommended Decision of the Federal-State Joint Board (Joint Board) on Universal Service. These criteria establish the standard for a model to estimate the forward looking costs of providing supported services. Our summary view is that the models have made progress in addressing some, but perhaps not all of the criteria.

According to our preliminary analysis, the criterion which appears to cause the most difficulty for the models is criterion seven, which states:

> (7) The model and all underlying data, formulae, computations, and software associated with the model should be available to all interested parties for review and comment. All underlying data should be verifiable, engineering assumptions reasonable, and outputs plausible.

Criterion (7) has a number of facets, all of which appear to pose problems for the models. Thus far, interested parties have not had adequate time to review and comment on the models. Much of the critical data, such as the cost of digital loop carrier (DLC) and switching, is inadequately documented. Further, the models do not appear to be generating plausible results according to simple measures, such as wire center line counts.

E. Discussion

The State staff members are concerned that the current versions of the proxy models still have structural flaws that must be corrected before a model can be used to calculate universal service funding. For example, both models have gross inaccuracies in the estimates of the number of lines served in a wire center. The inaccuracies appear to be the result of mapping households in the CBGs to incorrect serving wire centers. This flaw must be corrected in order to determine the most efficient engineering practices to serve the wire center. Another concern related to mapping involves built-in errors based on the location of the wire center relative to the centroid of the CBG. Such errors cause the model to incorrectly determine, in some instances, that an entire exchange is served by digital loop carrier rather than by copper cables.

There is a vast difference in the amount of support calculated by the Hatfield and the BCPM models. For example, the universal service support for Southwestern Bell of Texas as calculated using the BCPM is over 500% greater than the support amount calculated using the Hatfield 3.0 model. Some of the disparity can be attributed to the difference in major inputs. Because the models have diverse network structures and calculate expenses using dissimilar

methodologies, it is difficult to determine if the models would produce the same results if all inputs were the same.

In the Analysis of Proxy Models (Appendix F) of the Recommended Decision, the Joint Board indicated its concern about large changes in the relative position of the states when comparing the embedded cost results to the results generated by the proxy models. This concern has not been resolved in the most recent versions of the models. In both the Hatfield 3.1 and the BCPM models, numerous states that were considered low cost to serve under an embedded methodology continue to be shown as high cost under the proxy models. While embedded cost will not be the same as forward-looking costs, the characteristics that indicate high cost, such as density and geography, should be true for both embedded and forward looking costs. The lack of an explanation of this apparent anomaly causes concern about the reliability of the current models. As stated in the Recommended Decision, it is necessary to determine why these large changes occur.

Despite the continued flaws in the models, the State staff maintains that a proxy cost model can be refined for use in accurately targeting universal service support payments. To facilitate the improvement of the model, industry and regulatory analysts must focus on improving **one** model for calculating the cost of universal service. Currently, both models are deficient and would need structural revisions to be ready for use by the proposed January 1, 1998 implementation date. All parties can maximize their efforts if resources are directed toward perfecting one model. The State staff recommends that the FCC choose one proxy model in its order and continue to work with the Joint Board and the industry to improve the model.

Due to insufficient time for thorough review of the most current revisions of the Hatfield and BCPM models, the State staff is not prepared at this time to recommend the single model to be used. The most recent version of the BCPM was distributed on February 25th, and the Hatfield version 3.1 was made available on February 28th. Both models have had extensive revisions from previously filed models. The State staff will review the models, and a supplemental report will be issued in the near future that will recommend a specific model.

APPENDIX B
INPUT VARIABLES

Preliminary staff analysis of the input variables of the models suggests the need for changes in several major inputs, regardless of the specific model chosen. We reserve the right to modify these recommendations in our supplemental report on the proxy models.

A. Cost of Capital

We recommend an overall Rate of Return (ROR) of 10.05%, based on a cost of equity of 11.75 at 60 percent of the capital structure and a cost of debt of 7.50 at 40 percent of the capital structure. Our recommendations are compared below to the most recent default inputs of the three model vendors, the FCC and the National Cable Television Association (NCTA). These comparisons are followed by a discussion of our rationale within the context of general comments on three important areas of risk assessment made by the parties.

Proposed Cost-Of-Money Inputs

	BCPM	Hatfield	BJA - TEC	FCC	NCTA	State Staff
ROR	11.39	10.01	10.60	11.25*	10.31**	10.05
Equity	13.12	11.90	12.00	13.00	--	11.75
Debt	7.85	7.70	8.50	7.21	--	7.50
Debt/Equity	.33/.67	.45/.55	.40/.60	.42/.58	--	.40/.60

*The overall ROR does not reflect direct derivation from its components below, which would indicate an ROR of 10.57. The FCC chose to pick an ROE toward the upper end of the range of reasonableness based on concerns of "infrastructure development."

**See filed comments in CC-96-45 by Economics and Technology, Inc., April, 1996, pp. 69-70 for weighted jurisdictional average of 25% of FCC ROR of 11.25 and 75% of State PUC ROR, represented by a ROR of 10.00 authorized by the California Public Utilities Commission in 89-10-031.

Discussion

From a modeling standpoint, the technical treatment of the cost of money is straightforward. All of the models allow adjustments to the unit cost of equity, the unit cost of debt and their respective determinations of the capital structure to generate the desired overall rate of return. The remaining modeling question is essentially one of sensitivity, particularly the influence of changes in the cost of equity on the cost of universal service. We found this to be approximately 3 to 1 in all three of the cost models, meaning a 10% increase in equity cost would cause an approximate 3.3% increase in the total (average) cost per access line. For example, if the cost of universal service was $30 and the cost of equity increased by 10% (say from 12% to 13.2%), the cost of universal service would increase from $30 to about $31.

The remaining issues rest on the justification of the cost of money itself as an input to the forward looking cost of universal service. In turn, these issues center on the risks associated with the competitive provision of universal service and manifest themselves in three primary ways in the calculation of the cost of money. Higher (lower) risks should be reflected by a higher (lower) unit cost of equity as well as a higher (lower) proportion of equity in the capital structure. Likewise, as the respective proportion of equity declines (increases) and debt increases (falls), higher (lower) risks should also be reflected in a rising (falling) unit cost of debt. No party disagreed with these fundamental risk determinants and their relationship to the cost of money.

Most if not all the differences among the parties rest on the degree of risk that should be assigned to the *competitive* cost of providing universal service. These risks tend to fall into three categories which were identified in the workshops on the cost proxy models.[14] They are the irreversible risks associated with investment, the risk associated with providing non-universal services in combination with universal service, and the risk associated with market share.

Irreversible Investment Risks

Conventional telecommunication utilities are characterized by investments which are capital intensive, highly indivisible, immobile and have specialized uses. These characteristics impose a risk on the cost of money referred to as "irreversible" risks. The primary manifestation of these risks are the huge sunk costs associated with the investment which could become "stranded", or unrecoverable under certain economic conditions such as that associated with competitive entry. Traditionally, these risks have been minimized through franchised territories coupled with a variety of regulatory mechanisms designed to allow the opportunity for full recovery of prudently incurred embedded costs.

Under *long run* competition, all facility-based competitive entrants would face the same irreversible risks associated with the economic cost of universal service. Each would be faced with the possibility of unrecovered costs for the huge investments necessary to become an efficient, facility-based provider. Each would face a decision-making horizon long enough to vary all factor inputs as desired - capital, labor and materials - in constructing a universal service network.

However, once the investment is made, its cost is no longer avoidable and becomes a sunk, embedded cost. Beyond that point, some competitors in an effective competitive market will not survive due to factors such as poor planning and management. Other competitors, otherwise referred to as *efficient competitive entrants* under TA '96, would survive (hypothetically) because their cost of providing universal service would be at the minimum, least-cost level necessary to earn a normal profit at the going competitive market price of universal service. Some parties argue that this is the rate of profit that should represent the standard of irreversible risks associated with the cost of money for universal service.[15]

Other parties argue that the scenario above overestimates the irreversible risks of universal service.[16] They claim that the realistic conditions of competitive entry are not as ideal as they are made to appear. They argue that a *shorter* planning horizon, albeit forward looking, reflects

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[14]See Staff Workshop on Proxy Models, FCC, Washington, D.C., January 14 and 15, 1997.

[15]For example, see positions taken by James Vander Weide of Financial Strategy Associates in the workshop cited above.

[16]For example, see positions taken by Susan Baldwin, Economics and Technology, Inc. in the workshop cited above.

more realistically the existing economic conditions of incumbent Local Exchange Companies (LECs). This horizon would capture competitive advantages of the LECs associated with market power, existing market share, scale and scope economies, the potential of cross subsidy and other anti-competitive advantages, all of which reduce the risk of irreversible investment.

Proponents of this position point out that realistically, it is the LECs which will receive the bulk of universal service funds in the early years and therefore it is *their* economic conditions that should best represent the irreversible risk component of universal service. The claim is that this kind of risk would be misrepresented by a competitive entrant over the *long run*, given that the long run is assumed to represent effective competition. Instead, the result will be a windfall to the LECs whose actual *short run* conditions will prevent effective competition in the universal service market over the time period relevant to the cost of money.

Non-Universal Services

All parties agree that no one would ever actually provide universal service on a stand-alone basis. It would be economically inefficient and not consistent with the cost of an efficient competitive provider of universal service. Instead, universal service will always appear among other services provided from common and joint platforms, however they may be defined. For example, one party estimated the total savings of providing non-universal services in combination with universal services to be over two billion dollars, compared to providing each on a stand-alone basis.[17]

The physically inseparable mix of universal service with non-universal services raises the question of how to estimate different risks for each group of services with regard to the cost of money. Traditionally, universal service (basic local service) has been assigned lower risks than non-universal services. However this distinction generally included corresponding differences in competitive versus non-competitive risks which are less clear with regard to the forward looking cost of universal service. Relevant again is whether the focus should be on a short-run horizon that emphasizes the non-competitive characteristics of existing LECs or instead a longer-run horizon which assumes that universal service can be provided efficiently by any competitive entrant, including a LEC.

Incumbent LECs and their representatives argue that LEC risks are increasing now, evident through indicators such as measures of beta, discounted cash flow and capital structures with high proportions of equity.[18] Opponents of this position argue that the indicators of high risk are driven by the more competitive non-universal services (such as wireless) and if isolated correctly, the risk associated with universal service would be significantly lower.[19] In addition, market indicators reflect investors' expectation of all risks, including the impact of local exchange competition, which has been anticipated for some time. The LECs claim that this position mistakenly relies on historical measures of risk such as book measures of debt-equity ratios which are irrelevant to the forward looking cost of money for providing universal service. Opponents respond that these measures of risk are forward looking and that any similarity to historical measures is coincidental, driven only by correct measures of risk associated with the absence of significant competition in the universal service market rather than any carry-over of historical criteria.

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[17]See Further Comments of the National Cable Television Association, Inc., August 9, 1996, p. 105-108.

[18]See Vander Weide, Ibid.

[19]See positions taken by Labros Pilalis, Pennsylvania Public Utility Commission in the workshop cited above.

Market Share

Over the long run, characteristics of market share in a competitive industry are driven by the cost nature of the industry. Under certain conditions, a regulated natural monopoly can provide universal service more efficiently than two or more unregulated providers, in which case a 100% market share is considered an appropriate base of risk assessment. Under other conditions, multiple firms may be able to provide universal service efficiently. If so, then the question is at what scale does that efficiency occur. One party which has addressed this issue in detail states the following:

> "A cost proxy model used to estimate the forward-looking economic costs of efficiently configured competitors should do more than determine the static engineering characteristics of an efficiently configured network. The costs and scale of efficient competitors are fundamentally different than monopolists. An efficient monopolist builds a network designed to serve the entire market demand. In contrast, an efficient competitor may build a network to serve a particular geographic area or customer segment of the entire market. Thus, to reflect the cost of efficient competitors, a cost proxy model should not estimate the total costs of building a monopoly network, but should estimate the costs of competitors that each serve a segment of the [universal service] market. ... For its market segment, an individual new entrant may have average costs that are far lower than the monopoly provider. However, to serve the entire market an individual competitor's average costs may be greater than the monopolist's average costs. However, the entire market demand can be served at lower average costs by several competitors each sized to service individual market segments rather than a single monopoly provider sized to serve the entire market."[20]

While we do not necessarily agree with all of the claims made in this statement, we do agree that it correctly describes the framework of risks associated with competitive entry and the cost of money. Specifically, the risks associated with market share under genuine facility-based competition over the long run will be determined by that market share necessary to attain efficiency over the long run, or the least-cost provision of service by any competitive entrant. We believe that efficiency under these conditions is most likely to occur at the wire center level.

As stated elsewhere in this report, we recommend that the cost of universal service should be estimated at the wire center level. Competitive entrants which attempt entry at a lesser scale than the wire center level would be expected to fail due to inefficiencies and higher costs than their competitors. Therefore, we believe that estimating costs at an aggregation level lower than a wire center level would over estimate the average cost of an efficient competitive entrant.

In this context, the relationship of risk to market share and the cost of money becomes that of the wire center to the total universal service market. In effect, over the long run, an *existing* provider could hypothetically lose market share down to the level of a wire center and remain efficient, while market *entrants* must enter at least at the wire center level in order to compete effectively with existing providers. Given that the efficient provision of universal service

[20]See comments of World Com, Inc. on Forward-Looking Economic Cost Proxy Models, before the FCC, p. 6-7, CPD Docket No. 97-2.

does indeed occur at the wire center level, then the risk of losing or gaining market share associated with the cost of money has been correctly specified.

Where the BCPM and Hatfield 3 models both employ the forward-looking economic construct of long-run average cost, the implications of market share risks associated with an efficient competitive entrant are not clear. They both imply that the relevant total market of universal service to be "shared" begins with the total service territory of the LEC since this is the total cost over which the first measure of average cost is derived. However, from that point each model vendor proceeds to develop lower levels of aggregation apparently considered appropriate as the *total* market to be *shared* by an efficient entrant. This is accomplished by defining relatively small areas *within* wire centers as if they represented an efficient cost level of aggregation and then treating the wire center itself as the "market" to be shared. We disagree with this interpretation, believing as described above that the total market demand to be served begins with that of the incumbent monopolist and the relevant question is the efficient cost of serving either the entire market or segments of *that* market with multiple competitors at the wire center level.

Conclusion

In the Recommended Decision, the Joint Board stated: "We find that forward-looking economic costs should be used to determine the cost of providing universal service. Those costs best approximate the costs that would be incurred by an *efficient competitor* entering *that* market." (emphasis added)[21]. Further, the Joint Board included in the criteria of this cost estimation that the incumbent LECs' wire centers would be used as the center of the loop network, that the time period used should be long enough that all costs are treated as variable and avoidable, and that the models should reflect economies of scale and the reasonable allocation of joint and common costs to universal service.

Taken together, we believe that the cost of money must reflect a planning period sufficiently long that all factors necessary to construct a wire center are variable. Further, we believe that wire center cost should reflect that of an efficient entrant and therefore include a normal profit expected over the long run just sufficient to cover the opportunity cost of money to investors in the wire center. Likewise, because this is a true long-run planning horizon, we do not incorporate short-run profits or losses into the calculation. In this context, we tend to side with the LEC arguments that stress the cost of money associated with the long run.

However, we note that the cost incurred by an efficient competitor does not necessarily require that the total market itself, entered and shared by the competitor, is competitive. Even over the long run, even if wire centers reflect an efficient cost basis, we are quite uncertain at this point whether competition will take hold to the point that universal service will be provided efficiently by multiple firms, none of which have significant influence over the price of universal service. In this context, we tend to side with competitive entrants to the LECs.

In this context, we believe the cost of equity should be 11.75, the cost of debt 7.50 and the capital structure composed of 60% equity and 40% debt, all well within the ranges of reasonableness cited by the parties of record.

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[21] Recommended Decision, para. 270.

B. Depreciation

Treatment by Current Models:

BCPM

The BCPM model contains lives, salvage values, and resultant depreciation rates for 19 accounts that generally correspond to the FCC's chart of accounts. The depreciation parameters have been estimated as a part of a LEC industry data survey, and are purported to be forward looking lives. The chart below lists the default values of the depreciation parameters used in the BCPM.

Hatfield

The Hatfield 3.0 model allowed user adjustment of "economic lives" for 13 plant accounts. These accounts are not directly correlated to the USOA accounts, but most are reasonably close, given certain intuitive assumptions. Preliminary analysis of the Hatfield 3.1 model reveals that it provides additional accounting detail.

	BCPM		Hatfield 3.1
Account:	Life (yrs)	Rate (%)	Economic Life (yrs)
Poles	30	6.8	16.13
Conduit	50	2.27	51.35
Aerial Cable - Copper	12.5	9.15	16.80
Aerial Cable - Fiber	19	6.29	22.11
U.G. Cable - Copper	11.5	9.08	21.17
U.G. Cable - Fiber	19	6.03	22.87
Buried Cable - Copper	14	7.37	19.86
Buried Cable - Fiber	19	5.81	24.13
Intrabldng Cable - Copper			15.64
Intrabldng Cable - Fiber			23.65
Switching Equipment	10	9.53	16.54
Circuit Equipment	8.5	11.54	10.09
OS Investment			9.94
Public Telephones			8.01
Buildings	42.5	2.50	48.99
Motor Vehicles	8	10.85	9.16
Special Vehicles	10	7.57	
Garage Work Eqpt	12	8.12	11.47
Other Work Eqpt	14	7.10	13.22
Furniture	16	6.03	16.56
Office Support	11	8.96	11.25
Gen. Purp. Computers	5.5	17.24	6.24
Company Comm. Eqpt.			7.59

Analysis and Recommendation

Approval of depreciation rates by the FCC and states have in the past been based on the "remaining life" method, which takes into account the depreciation reserve that has accumulated the account over the years. It is not appropriate for depreciation reserve accruals to be included because of the nature of the forward-looking cost models. Analysis must recognize that the proper depreciation parameter for comparison should be the average service life rather than the actual depreciation rate. Most of the service lives for minor accounts in the BCPM are in line with parameters approved in past years by the FCC. However, major accounts such as copper cable, switching, and circuit equipment are significantly shorter than have been approved historically. For instance, average service lives for metallic cable -- aerial, underground, and buried -- have typically been set in the range of 20 - 25 years, compared to the 11.5 - 14 year lives used in BCPM. Similarly, digital switching and circuit equipment lives have historically been set at 14 and 10 years, respectively, compared to the 10 and 8.5 year parameters used in BCPM. Those major accounts represent approximately half of the overall investment in LEC plant.

If the BCPM is used, input variables for average service lives in the depreciable accounts should be changed to the following (all other depreciation inputs may remain at their default value):

	BCPM Default: (years)	Recommended: (years)
Switching Equipment	10	14
Circuit Equipment	8.5	10
Aerial Cable - Copper	12.5	18
U.G. Cable - Copper	11.5	18
Buried Cable - Copper	14	18

If the Hatfield model is used, input variables for average service lives in the depreciable accounts should be changed to the following (all other depreciation inputs may remain at their default value):

	Hatfield Default: (years)	Recommended: (years)
Poles	16.13	30
Switching Equipment	16.54	14
Aerial Cable - Copper	16.80	18
U.G. Cable - Copper	21.17	18
Buried Cable - Copper	19.86	18

C. Fiber/Copper Crossover

In determining forward-looking costs for constructing a telecommunications network, an engineering economic decision must be made regarding the point at which fiber optic cable and digital loop carrier (DLC) circuit equipment replace traditional copper cable. For short routes with few loops, copper is the obvious choice. For extremely long loops or for very high

concentrations of circuits in a route, fiber and DLC are appropriate. The threshold between the two scenarios is in contention.

Both major cost proxy models attempt to describe the manner in which a local feeder/ distribution network would be constructed under a forward-looking, least-cost technology scenario. Determining the appropriate copper/fiber threshold requires a series of decision points involving the placement of fiber and digital loop carriers instead of copper cable in the subscriber loop. The copper/fiber threshold has taken on added importance with the architecture of the current models, as the relationship of the wire center to the centroid of the CBG may tend to overstate the use of fiber in very rural areas.

The BCPM model places fiber and DLC under three conditions. First, the BCPM will use fiber in the event that the total loop length from the wire center to the subscriber exceeds the Cable Break Point. The default distance for the Cable Break Point variable is 12,000 feet, but can be varied from 6,000 feet to 18,000 feet. The 12 kilofoot default distance allows for the provisioning of services up to and including DS-1.

The second condition that will necessitate the placement of fiber and DLC technology is if the "CprMaxDistr" variable exceeds the default threshold, which is set at 12,000 feet. The CprMaxDistr variable represents the longest copper distribution distance allowed within a CBG, and is used in the calculation of Part 2 sub-feeder facilities.

The third condition under which the BCPM model places fiber rather than copper is when the number of pairs needed for a feeder exceeds the maximum copper cable capacity. This variable is set at 4,200 copper pairs, above which the facility must use fiber and DLC technology.

The Hatfield 3.0 model uses fiber in the feeder plant whenever the feeder length exceeds its user-defined threshold or the default of 9,000 feet. While the Hatfield default is lower than the default of the BCPM model, this distance does not include additional length of cable for distribution facilities. The Hatfield model uses loop conditioning rather than DLC to accomodate long loops. According to discussions in ex parte presentations, the Hatfield model may not provide adequate line conditioning for extremely long loops, where the feeder is less than 9,000 feet but the distribution facilities in the CBG are very long.

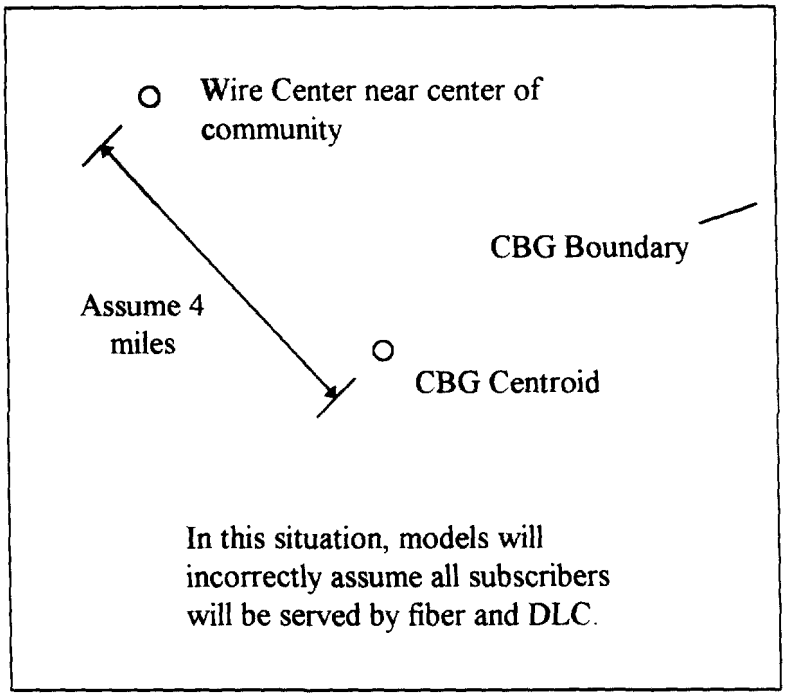
Unlike the BCPM's assumption on placing fiber where the capacity of copper cable is exceeded, the Hatfield model assumes that multiple cables will be installed when the capacity is exceeded.

Analysis and Recommendation

As used for development of costs for universal service support, the fiber/copper crossover distance in a proxy model should be set to allow the transmission of voice grade services as defined for universal service support. This should not include costs for a transmission network that will provide for advanced or broadband services. It should also be noted that the optimal fiber/copper crossover threshold depends on the relative costs of the equipment and materials used. As the cost of DLC equipment falls, the threshold is likely to fall as well. The BCPM assumes higher DLC costs, especially for smaller systems, than the Hatfield 3.1 or BCM2, so a reduction in the use of fiber is more critical if these costs are used.

Based on discussions in the workshop and in various ex parte presentations, the State staff recommends that the thresholds to be used in the BCPM be set as follows: CprMaxDistr equal to 18 kilofeet; Cable Break Point equal to 15 kilofeet. For the Hatfield model, the copper/fiber maximum distance threshold should be set at 12 kilofeet. The differences in these thresholds reflect the dramatic differences in the models' network design architecture.

A major concern of the State staff is the inappropriate use of fiber and DLC in a wire center as a result of erroneous modeling of the wire center relative to the CBG, which occurs in both the BCPM and the Hatfield models. This erroneous modeling has the potential to overshadow other issues concerning the cost and crossover threshold for fiber placement. As alluded to earlier in this report, there are examples of wire centers in which the models erroneously assign all subscriber loops to fiber and DLC as a result of the location of the centroid of the CBG in relation to the location of the wire center. If the CBG centroid is more than 12 kilofeet from the wire center, then all subscriber loops will be assigned to fiber/DLC, even though the engineering economics would support a copper-based architecture. This drives up the cost of service for the wire center.



D. Operating Expenses

This report will address three elements of operating expenses: (1) service expenses, (2) certain plant specific operating expenses and (3) corporate overheads. The models diverge significantly in both the level and treatment of costs in these three categories of expense. The BCPM treats all operating expenses as a fixed, per line addition to costs while the Hatfield 3.1 ties some operating expenses to the number of lines and others to the level of investment or level of other costs. The BCPM assumes a uniform nationwide amount for all expenses, although the model can accommodate a differentiation between per line expenses for large, medium and small companies. The Hatfield 3.1 by contrast calculates some expenses on a nationwide basis, and others based on the reported costs of individual companies. Consequently, the following recommendations address both the level and treatment of expenses in the models.

In general, the models are far less sophisticated in their treatment of operating expenses than capital expenses. Neither the BCPM nor the Hatfield 3.1 attempts a bottoms-up approach to operating expenses or a genuinely forward looking approach. This report does not address some categories of operating expense, such as network operations, because the two models are relatively close (as opposed to being better documeted or supported by others).

1. Service and Marketing Expenses

Service expenses fall into two general categories: customer services and number services. Customer service expense consists of expenses associated with processing service orders, maintaining and billing customer accounts and collections. Number services include call

completion services, directory assistance and directory listings. Customer service expenses pose a problem because they are shared between basic service and other services. Number services are less problematic because the Recommended Decision clearly removes the services which constitute the bulk of these costs from the definition of universal service, so they should not be included in calculating the cost of supported services. Supporting marketing expenses also raises concerns because it will be difficult to separate the marketing of universal service from a firm's other products and to justify subsidization of marketing in a competitive environment.

How the Models Treat Service and Marketing Expenses

The Hatfield 3.1 includes $1.22 for the cost of bill generation and billing inquiries and $0.15 for white page listings.[22] The Hatfield model does not include any costs for marketing or advertising. Neither the Southern New England Telephone (SNET) incremental cost study,[23] the basis for the bill generation/billing inquiry estimate, nor the method for deriving costs from it have been presented in this proceeding. The cost for creating and maintaining white page listings are based on "judgment based on proprietary information and industry experience."[24]

The BCPM includes $2.42 for the cost of services, which includes both number and customer service expenses. This amount, together with all other BCPM operating costs, is based on a weighted average of costs based on data provided by several LECs to the BCPM sponsors.[25] The BCPM also includes $0.35 for marketing. According to the sponsors, responding companies made forward looking adjustments to 1995 actual costs.[26] The BCPM sponsors did not provide a copy of the survey instrument, the raw data collected in their survey or the method for compiling the data.

Analysis and Recommendations

The customer service default values in both the Hatfield 3.1 and BCPM are both poorly supported. The sponsors of the Hatfield model have not included the SNET cost study upon which their estimate is based. The BCPM sponsors have not explained or provided documentation for the special study performed to develop the model's default values. The BCPM survey raises concerns because no one, besides the model sponsors, have examined it. It is difficult to recommend that universal service support be distributed based on this mysterious source of data. The one area where some of the results have been revealed -- switching costs -- have raised a great deal of questions about consistency among respondents. Nevertheless, the estimates of service costs have converged somewhat from previous versions of the models.

The BCPM default numbers no longer appear to correspond to aggregate costs as the BCM2 did, and some effort appears to have been made to align customer service expenses to supported services. This alignment is an essential improvement over the BCM2 which, by using aggregated costs, failed to align expenses with supported services. Unfortunately, the BCPM sponsors have not revealed what this disaggregation effort has entailed. Similarly, it is unclear to

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[22] Hatfield Associates, Model Description Hatfield Model Version 2.2, Release 2, Appendix C, p. C-6.

[23] Attachment 5B Hatfield Model Inputs and Assumptions, January 7, 1997, p. 37.

[24] Id, p. 37.

[25] These LECs include Alltel, Ameritech, Bell Atlantic, Bell South, Pacific Bell, Pacific Telecom Inc., Sprint LECs and US West. Pacific Bell, Sprint and US West, Benchmark Cost Proxy Model: Model Methodology Preliminary, Attachment 10, p. 3.

[26] Id. 23.

what extent the customer service expenses included in the Hatfield model correspond to supported services. Ideally, two levels of disaggregation of customer services should take place: (1) costs directly associated with non-supported services should be removed and (2) shared costs should be allocated only partially to universal service. Without more information about how service expenses were estimated, it is unclear whether these two steps were achieved.

The Recommended Decision provides definitive guidance regarding the treatment of costs for number services which is ignored by the model sponsors. The Recommended Decision explicitly excludes directory assistance and white page listings from the definition of universal service.[27] First, although the Joint Board indicates that access to directory assistance (the ability to place a call to directory assistance) should be included in the definition of basic service, it recommends that directory assistance service itself should not be included. Consequently, costs for directory assistance should not be incorporated in the model. The Hatfield 3.1 does not include any cost for directory assistance, so modification is not necessary. The BCPM appears to include costs for directory assistance as part of its customer service expense. Second, the Recommended Decision also says that the provision of white page listings should not be included in the definition of universal service. The Hatfield includes costs for white page directory listings; these costs should be removed to be consistent with the Recommended Decision. It is unclear whether or not the BCPM includes the costs of white pages directory listings.

Marketing or advertising expenses should be excluded from the cost of supported services. While it is certainly true that in a competitive environment marketing and advertising expenses will increase, it does not follow that these costs should be subsidized. Universal service policies seek to increase penetration in the market as a whole, not for any particular provider. Moreover, it would be extremely difficult to disaggregate the cost of marketing universal service from the cost of marketing other services. Finally, aggressive marketing may imply that subsidies are unnecessary.

We recommend that $1.75 per line, per month be included in the models to account for service expenses. This amount is based on the $2.42 included in the BCPM, less the 29% attributed to operator services and directory assistance which have been explicitly excluded from the definition of universal service.[28] No amount should be included for marketing.

2. Plant Specific Operating Costs

Plant specific operating expenses include the costs of repair and maintenance of specific types of plant. The models differ greatly in both the treatment and the resulting amount of plant specific expenses. Both models have moved away from the treatment of the original BCM where all operating expenses were related to investment.

The models follow ARMIS practice and track plant specific operating expenses in three primary categories: (1) central office switching (Account Number 6210), central office transmission (6230) and (3) cable and wire expenses (6410). The third category, cable and wire expenses, contains most of the cost of maintaining and represents most of the difference between the models.

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[27] Recommended Decision, paras 67 and 68.

[28] Ex Parte Letter, Response to Public Notice of December 12, 1996 (DA 96-2091) p. 13.

How the Models Treat Plant Specific Operating Expenses

The BCPM adds a fixed per line amount for each type of plant. The level of expenses does not vary with the level of investment, so it will be identical in urban and rural areas, throughout the country. The BCPM estimates repair and maintenance on a per line basis based on responses to a survey of incumbent local exchange carriers. As previously mentioned, neither the survey instrument nor results of this survey have been provided. The sponsors of the BCPM assert that "statistical analyses" demonstrate that most expenses are highly and positively correlated with lines.[29] The BCPM sponsors have not provided or referenced these statistical studies. The BCPM sponsors maintain that these responses were based on 1995 expenses with forward looking modifications.

The Hatfield 3.1 model calculates repair and maintenance expenses on the basis of the relationship between investment and expenses for specific categories of plant. The factors for cable and wire are based on historical relationships between investment and expenses reported in the ARMIS filing of individual companies. Consequently the ratio will change from operating company to operating company. The Hatfield 3.1 model's central office switching factor is based on a value drawn from the New England Incremental Cost Study.[30] Both the switching and circuit factors are nationwide, rather than company specific.

Analysis and Recommendations

The approach that the models take regarding plant specific operating expenses is an area where the econometric analysis suggested by the FCC's economic cost model paper may be helpful.[31] Econometric analysis may be able to determine whether expenses vary according to the number of lines, the level of investment or some other measure. Until this analysis is available, we recommend relating plant specific operating costs to the level of investment, because this approach seems to be the most reasonable. However, the notion that added congestion and other factors present in urban areas with generally lower loop investment levels may raise the cost of repair and maintenance in these areas cannot be dismissed.

The state staff does not consider either model's approach to plant specific operating costs to be forward looking. Both models use historical information on operating cost and neither model attempts to reconcile the assumed network with a corresponding level of repair and maintenance costs. There are several reasons why the historical plant specific operating costs may not be appropriate. Both models generally assume a greater percentage of underground and buried plant than is present in the existing network. Both models also assume that a great deal more fiber and DLC will be present in the forward looking network. These forward looking deviations from historical practice are justified in part by an assumed reduction in operating costs. In the case of the BCPM, the use of shorter economic lives for certain equipment may imply more recent vintages of equipment and correspondingly reduced repair and maintenance costs. Finally, both models appear to include rearrangement costs. It is unlikely that these costs are caused by primary residential lines. The need to rearrange facilities to serve primary residential lines is minimized in states where "warm lines" or "quick dial tone" practices mean that primary residential lines are "nailed open".

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[29] January 8, 1997 Ex-Parte response to Answer to Question 13.

[30] Hatfield Model Inputs and Assumptions, Attachment 5B, p. 38 January 8, 1997.

[31] "The Use of Computer Models for Estimating Forward-Looking Economic Costs" A Staff Analysis, para. 69.

The state staff recommends that plant specific operating expenses be calculated as a percentage of investment. The percentages should be about 3.5% for cable and wire, 2.8% for central office switching and 2% for transmission. Any major deviation in investment should be accompanied by a corresponding change in the operating cost factors assigned to them to maintain a sufficient level of repair and maintenance expense. The state staff recommends nationwide factors that do not vary by company. Company specific factors may reflect underlying differences in cost characteristics, such as climate, however, they also may reflect a particular company's accounting treatment or level of efficiency.

3. Corporate Overheads

Corporate overheads include general and administrative costs as well as executive and planning costs. General and administrative costs include accounting and finance, external relations, human resources, information management, legal and procurement costs.

How the Models Treat Corporate Overheads

The Hatfield 3 model calculates what it calls "variable overheads" by applying a 10.4% fixed percentage mark-up on all other costs. Companies with lower costs will have correspondingly lower corporate overhead costs. For reasons best known to the model designers, the Hatfield 10.4% mark-up represents a 0.4 percent increase over the Hatfield 2.2.2. The 10% rate was based on AT&T's 1994 financials.[32]

Based on a survey of ILECs, the BCPM assigns $2.15 per line for general and administrative costs and $0.14 for executive and planning costs.

Analysis and Recommendations

The State staff does not believe that corporate overheads should vary among large LECs based on the cost of the line. For example, there is no reason to believe that a large LEC's corporate costs are greater for serving a remote area than for serving a low cost area. The overhead question will become far more critical when the model is applied to small rural companies

The allocation of corporate overheads to universal service is necessarily somewhat arbitrary. Section 254(k) cautions against attributing an excess of common costs, such as corporate overheads, to universal service. The State staff recommends that the model include a uniform, fixed per month amount representing 10% of the nationwide average of all other costs to account for corporate overheads, or $2.29 per line, whichever is lower.

E. Switching Costs

A major difficulty with determining the forward-looking cost of local switching is the absence of reasonable switch vendor data, including discounts, which is considered to be proprietary. As a result, the two primary models take alternative approaches to estimating the cost of local switching, and arrive at divergent results.

The BCPM describes the method of estimating switch costs by compiling data from the RBOCs, Sprint, Pacific Telephone, and Cincinnati Bell concerning the cost of their switches. The resulting cost curve was shown to be:

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[32] Hatfield Model Inputs and Assumptions, Attachment 5B January 7, 1997.