

| | |
|--|------------------------------|
| Kentucky Public Service Commission | Kentucky PSC |
| Keystone-Arthur Telephone Co. | Keystone |
| Kinko's Inc. | Kinko's |
| LCI International Telecom Corp. | LCI |
| LDDS Worldcom | LDDS |
| Learning & Info Networks for Community Telecomputing Coalition | LINCT Coalition |
| Library of Michigan | |
| Lincoln Trail Libraries System | Lincoln Trail Libraries |
| Louisiana Public Service Commission | Louisiana PSC |
| Maine PUC, | Maine PUC |
| Montana Public Service Commission, | |
| Nebraska Public Service Commission, | |
| New Hampshire Public Utilities Commission, | |
| New Mexico State Corporation Commission, | |
| Utah Public Service Commission, | |
| Vermont Department of Public Service and Public Service Board, | |
| Public Service Commission of West Virginia | |
| MCI | |
| MFS Communications Company, Inc. | MFS |
| Matanuska Telephone Association | Matanuska Tel. Ass'n |
| Mendocino Unified School District | Mendocino School District |
| Merit Network | Merit |
| Metricom, Inc. | Metricom |
| Michigan Consumer Federation, | Michigan Consumer Federation |
| Oregon Citizens Utilities Board, | |
| Massachusetts Consumer Association, | |
| Chicago Media Watch, | |
| Environmental Media Association, | |
| Women's Institute for Freedom of the Press, | |
| Center for Media Literacy, | |
| Greater Washington Area Chapter of the Cultural Environment Movement, | |
| Columbus Center for Media Education | |
| Miles River Press | |
| Michigan Library Association | Michigan Library Ass'n |
| Michigan Public Service Commission | Michigan PSC |
| Minnesota Independent Coalition | Minnesota Indep Coalition |
| Minnesota Telephone Association | Minnesota Tel. Ass'n |
| Missouri Public Service Commission | Missouri PSC |
| Missouri State Library | Missouri Library |

| | |
|---|--------------------------|
| MobileMedia Communications, Inc. | MobileMedia |
| Mon-Cre Telephone Cooperative | Mon-Cre |
| Montana Independent Telecommunications Systems | Montana Indep. Telecom. |
| Montana Public Service Commission | Montana PSC |
| Montana Telephone Association | Montana Tel. Ass'n |
| Mountaineer Doctor TeleVision | Mountaineer Doctor TV |
| National Association of Development Organizations | |
| National Association of Regulatory Utility Commissioners | NARUC |
| National Association of State Utility Consumer Advocates | NASUCA |
| National Black Caucus of State Legislators | Nat'l Black Caucus |
| National Cable Television Association | NCTA |
| National Emergency Number Association | NENA |
| National Exchange Carrier Association | NECA |
| National Retail Federation | Nat'l Retail Fed. |
| National Rural Electric Cooperative Association | Rural Electric Coop. |
| National School Boards Association American Library Association | |
| (Comments) | NSBA I |
| (Flexibility Analysis) | NSBA II |
| National Urban League-Boston College | National Urban League-BC |
| Navajo Nation | Navajo Nation |
| Nebraska Association of Hospitals & Health Systems | Nebraska Hospitals |
| Nebraska Rural Development Commission | Nebraska RDC |
| Netscape Communications Corporation | Netscape |
| New Hope Telephone Cooperative | New Hope Tel. |
| New Jersey Board of Public Utilities | New Jersey BPU |
| New Jersey Division of Ratepayer Advocate | New Jersey Advocate |
| New Mexico Attorney General | New Mexico AG |
| New York Board of Regents | New York Regents |
| New York State Consumer Protection Board | New York CPB |
| New York State Department of Public Service | New York DPS |
| North Dakota Department of Health | |
| North Dakota Public Service Commission | North Dakota PSC |
| North Dakota State Health Officer | North Dakota Health |
| North of Boston Library Exchange, Inc. | |
| Nynex | NYNEX |
| OMB Watch | |
| Oakland Unified School District | Oakland School District |
| Office of Communication of the United Church of Christ | United Church of Christ |
| Office of Insular Affairs | OIA |
| Office of People's Counsel of the District of Columbia | OPC-DC |
| Office of Rural Health Policy of HRSA/HHS | ORHP/HHS |
| Office of the Ohio Consumers' Counsel | Ohio Consumers' Counsel |

| | |
|--|------------------------|
| Oklahoma Corporation Commission | Oklahoma CC |
| Oklahoma Dept. of Libraries | Oklahoma Libraries |
| OpTel, Inc. | Optel |
| Oregon Independent Telephone Association & Washington Independent Telephone Association | OTIA-WITA |
| Oregon Public Utility Commission | Oregon PUC |
| Pacific Telecom, Inc. | |
| Pacific Telesis Group | PacTel |
| Park Region Mutual Telephone Co. | Park Region Tel. |
| Pennsylvania Public Utility Commission | Pennsylvania PUC |
| Pennsylvania Rural Development Council | Pennsylvania RDC |
| People For the American Way, Alliance for Community Media, Alliance for Communications Democracy, Benton Foundation, Center for Media Education, League of United Latin American Citizens, Minority Media and Telecommunications Council National Council of La Raza, National Rainbow Coalition | People For |
| People of the State of California, California PUC | California PUC |
| Personal Communications Industry Association | PCIA |
| Public Advocates Inc. | Public Advocates |
| Public Utility Commission of Texas | Texas PUC |
| Public Utility Law Project of New York, Inc. | PULP |
| Puerto Rico Telephone Company | Puerto Rico Tel. Co. |
| Ragland Telephone Company | Ragland Tel. Co. |
| Reed, Smith, Shaw & McClay | Reed Smith |
| Rhode Island Public Utilities Commission | Rhode Island PUC |
| Richard Riley, Secretary of Education | Secretary of Education |
| Robert A. Hart IV | Hart |
| Rock Port Telephone Co. | Rock Port Tel. |
| Rural Iowa Independent Telephone Association | |
| Rural Health Network | |
| Rural Telephone Coalition | RTC |
| Rural Telephone Finance Coop. | |
| Rural Utilities Serv. | RUS |
| STAR Program | STAR |
| Sailor (MD Library Proj.) | Sailor |
| South Carolina Public Service Commission | South Carolina PSC |
| South Dakota Public Utilities Commission | South Dakota PUC |
| South New England Telephone Co. | SNET |
| Southwest Montana Telepsychiatry Network | Montana Telepsychiatry |
| Southwestern Bell Telephone Company | SWBT |

| | |
|--|---------------------------|
| Sprint Corporation | Sprint |
| St. Alexius Medical Center | St. Alexius |
| Staff of Public Utilities Commission of Ohio | Ohio PUC |
| State of Alaska | Alaska |
| State of South Dakota | South Dakota |
| Syracuse University School of Informational Studies | Syracuse University |
| Taconic TCA, Inc. | Taconic Tel. Corp.) |
| Tele-Communications, Inc. | TCI |
| Telec Consulting Resources, Inc. | |
| Telecomm Access Association | Telecomm Access |
| Telecommunications Industry Association | TIA |
| Telecommunications Resellers Association | TRA |
| Telecommunications Subcommittee Commission on the Future of Southwest Virginia | Southwest Virginia Future |
| Telefonica Larga Distancia de Puerto Rico (TLD) | TLD |
| Teleport Communications Group, Inc. | Teleport |
| Texas Advisory Commission on State Emergency Communications | Texas Emergency |
| Texas Department of Information Resources | Texas DIR |
| Texas Office of Public Utility Counsel | Texas OPUC |
| Time Warner Communications Hlds, Inc. | Time Warner |
| United States Catholic Conference, National Coalition for the Homeless, Washington Legal Clinic for the Homeless, American Women's Roundtable, Community Technology Institute, Consumer Action, Farmworker Justice Fund, Fifth Street Connection, Heartland Alliance for Human Needs and Rights, Interstate Migrant Education Council, National Association of Migrant Educators, Marcia Zashin, Education Consultant to Cleveland Public Schools and Project Act, Migrant Legal Action Program, Vermont Migrant Education Program | Catholic Conference |
| US Distance Learning Association | |
| US National Commission on Libraries & Information Science | U.S. Libraries |
| U S West, Inc. | U S West |
| UTC, the Telecommunications Association | UTC |
| United States Telephone Association | USTA |
| United Utilities, Inc. | United Utilities |

| | |
|---|--------------------|
| Vanguard Cellular Systems, Inc. | Vanguard |
| Virginia State Corporation Commission | Virginia CC |
| Virginia's Rural Telephone Co's | Virginia's Rural |
| Warren Library Association | Warren Library |
| Washington State Library | Washington Library |
| Washington State Superintendant of Public Instruction | Washington SPI |
| Washington Utilities and Transportation Commission | Washington UTC |
| WavePhore, Inc. | WavePhore |
| West Virginia Consumer Advocate | |
| Western Alliance | Western Alliance |
| Western Wireless Corporation | Western |
| WinStar Communications, Inc. | WinStar |
| Winnebago Cooperative Telephone Association | Winnebago Tel. |
| Wyoming Public Service Commission | Wyoming PSC |

**APPENDIX B
PARTIES FILING REPLY COMMENTS**

| <u>Commenter</u> | <u>Abbreviation</u> |
|---|-------------------------------|
| 360 Degree Communications Co. | 360 |
| AARP, | AARP |
| CFA, | |
| Consumer Union | |
| Access to Communication for Education Coalition | ACE |
| AD HOC Rural Consortium | ARC |
| AD HOC Telecommunications Users Committee | Ad Hoc Telecom. Users |
| Airtouch Communications, Inc. | Airtouch |
| Alaska Public Utilities Commission | Alaska PUC |
| Alaska Telephone Association | Alaska Tel. |
| Alliance for Community Media | |
| Alliance for Public Technology | Alliance for PublicTechnology |
| American Association of Community Colleges, | Community Colleges |
| Association of Community College Trustees | |
| American Library Association | ALA |
| American Public Power Association | APPA |
| Ameritech | |
| Association for Local Telecommunications Services | ALTS |
| AT&T Corp. | AT&T |
| Bell Atlantic | |
| BellSouth/National Economic Research Associates | BellSouth |
| Benton Foundation | Benton |
| Black Community Crusade for Children | |
| California Department of Education | CDE |
| Cathey, Hutton and Associates | Cathey, Hutton |
| Century Telephone & TDS Telecommunications | Century |
| Cincinnati Bell | Cincinnati Bell |
| Citizens for a Sound Economy Foundation | CSE Foundation |
| Colorado State Libraries | |
| Commnet Cellular, Inc. | Commnet Cellular |
| Commnet Cellular Inc. (Erratum) | |
| Communications Workers of America | CWA |
| Community Technology Centers' Network | |
| Competition Policy Institute | CPI |
| Competitive Telecommunications Association | CompTel |
| CompuServe Inc. | CompuServe |
| Council for Education Development and Research | CEDR |

Council of Organizational Representatives

Curtis Telephone

Dell Telephone Cooperative

Edgemont Neighborhood Coalition

ETEX Telephone Cooperative

Evans Telephone Co.

Humboldt Telephone Co.,

Kerman Telephone Co.,

Oregon-Idaho Utilities, Inc.,

Pinnacles Telephone Co.,

The Ponderosa Telephone Co.,

Siskiyou Telephone Co.,

The Volcano Telephone Co.

Florida Public Service Commission

General Communications, Inc.

General Service Administration

Governor of Guam

GTE

Guam Telephone Authority

GVNW, Inc/Management

Hauben, Ronda

Idaho Public Utilities Commission (States' Joint Reply)

Indiana Utility Regulatory Commission

Information Renaissance

InformationTechnology Association of America,

Electric Messaging Association,

Information Technology Industry Council,

Information Industry Association,

National Retail Federation

Iowa Telephone Association

ISTE

LDDS Worldcom

Libraries for the Future

Lincoln Telepho

Curtis Tel.

Dell Tel.

Edgemont

EXTEX Tel. Coop.

Evans Tel.

Florida PSC

GCI

GSA

Guam Tel. Authority

GVNW

Idaho PUC

Indiana URC

Information Renaissance

ITA/EMA

Iowa Tel. Ass'n

LDDS

APPENDIX F -- ANALYSIS OF PROXY MODELS

1. In the text of the Recommended Decision, we briefly discussed the criteria that the Commission should consider in evaluating the reasonableness of using a proxy model to determine the level of universal service support a carrier should receive for a particular geographic area. In this Appendix, we highlight some of the issues raised by commenters, differences between the models, and the results each model produces. At the workshops that we have recommended that the Commission conduct, we expect that model proponents would be prepared to discuss the relative merits of each model, the criticisms raised by commenters, and the major causes of the substantial differences between the size of the high cost assistance support derived by the models.

2. As we discussed in the text of the Recommended Decision, the proxy model must rely on the forward-looking economic cost of developing and operating the network facility and functions used to provide services supported under Section 254(c)(1). Costs for providing universal service should be based on the most efficient technology that can be deployed using the incumbent local exchange carrier's (LEC) current wire-center locations. For the most part, we believe that the useful aspects of "forward-looking" approach are captured by the least cost concept. To the extent that reliable new technologies represent the least cost method for providing the supported services, they should be incorporated in the model. Firms in a competitive market may well choose to place facilities with the capability of providing a number of competitive services beyond the supported services. To the extent that this is true, the network we are modelling may depart from that which a firm may choose to install. However, to the extent that new technologies are necessary to provide a platform for a number of other competitive services, they should not be included in the model. The model should be sufficiently flexible to incorporate new technologies as the cost of these facilities falls such that they become the most efficient way to provide the supported services. In addition, the model must be sufficiently flexible to include the functionalities necessary to provide an evolving set of supported services.

3. Model Assumptions and Results - Demand. We agree that the models should reflect the impact on costs of the number and distribution of residential and business lines. The models start with an assignment of one residential line to each household in every census block group (CBG) reported in the 1990 Census. The Hatfield model uses recent Census estimates to update the 1990 Census values.¹ Because not all household have telephone service and some households have more than one line, the models are calibrated to match state and study area residential demand totals. Currently, the models use data on employees per CBG to assign the relative number of business lines per CBG. Because the ratio of business telephones to employees is not constant across all industries, a model used for calculating universal service support would need to include a better indicator of business lines

¹ Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Sept. 10, 1996).

per CBG. Numerous commenters have reported unexplained variations between model line demand and expected line demand. The models should attempt to simulate the actual location of households and the placement of facilities to reach those households through a technically feasible route.

4. Loop Investments. Loop investments, i.e., outside plant, include the investments in cable and wire from an end user's home or business to the telephone company central office. They also include the investment in structures that support the cable and wire, such as poles and conduits, and the cost of placing the cable and wire. The models provide different estimates of loop investment because of different assumptions regarding fill factors, terrain impacts, structure sharing and the fiber/copper cross-over point. For the reasons set forth below, we believe that these inconsistencies must be resolved in order for the models to provide reasonable estimates of loop investments. Furthermore, the models should more accurately reflect the network topography necessary to serve an area. For example, many rural areas are extremely high cost regions which the models currently may not adequately represent. If the model does not accurately account for extreme geographic or climatic conditions, it may underestimate support necessary to serve these areas and may put continued service at risk.

5. A fill factor represents the percentage of the loop facility that is being used. Fill factors must be below 100 percent because it is necessary to have reserve capacity to replace damaged facilities and serve new demand. Because it is cheaper to build plant in discrete increments rather than adding one loop at a time, fill factors are generally lower if there is an anticipation of growth. In residential markets, telephone companies traditionally place additional or spare distribution plant so customers could purchase more than one line. In business markets, many telephone companies may increase loop investment as part of a strategy to provide Centrex service. These practices lower the fill factors. The original BCM uses fill factors lower than those in the Hatfield model.² BCM2, however, uses fill factors that are very similar to the Hatfield estimates.³ In response to the Common Carrier Bureau's information request, the models' proponents indicate that the fill factors that are calculated as ratio of demand divided by the number of loops constructed by the models are less than the

² MCI Communications, Inc, NYNEX Corporation, Sprint/United Management Co., and U S West, Inc, Benchmark Costing Model: A Joint Submission, Copyright 1995, CC Docket No. 80-826, filed December 1, 1995. Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Aug. 27, 1996).

³ Letter from Jay C. Keithley, Sprint, and Glenn Brown, US West, to William F. Caton, FCC, in regard to CC Docket No. 96-45 (dated July 3, 1996).

input fill factors.⁴ This occurs because cable can be purchased only in increments, such as 100 pair cable, and therefore, will always exceed the required demand.

6. Terrain impacts refer to the effect of soil composition, the level of the water table and slope characteristics. BCM2 develops unique factors for 54 different combinations of terrain impacts.⁵ It appears that changes in terrain impacts are responsible, in part, for the increase in BCM2 investment relative to the BCM investment. The Hatfield model incorporates adverse terrain conditions by increasing the loop length by 20 percent rather than estimating the impacts of each terrain characteristic.⁶ Detailed documentation to support the terrain-impact-input analysis is essential to an evaluation of the reasonableness of these assumptions.

7. Structure sharing refers to the practice of sharing investments with other utilities in poles, trenches and conduits. The Hatfield model assumes that structures are shared equally by telephone, electric and cable companies; this assumption reduces the assumed investment in structures to one third of their estimated cost.⁷ In contrast, BCM2 assumes that the telephone company is responsible for 100 percent of the structure costs. The difference in the sharing assumption accounts for approximately 13 to 15 percent of the difference in the model's forward-looking cost estimate for high cost areas.⁸ We are unconvinced that sharing exists to the extent the Hatfield model presumes, but we do not conclude, as do the proponents of the BCM2, that the cost of structures is never shared among the utilities. The model proponents should be prepared to supplement their current filings with documentation that supports their position regarding this issue as well as the related issue of whether the percentage of sharing is a function of the type of structure, e.g., is there more sharing of poles than conduit?

8. The fiber-copper cross-over point refers to choice of using copper or fiber in the feeder plant. Each model specifies a default loop length. It then assumes that, if the loop is greater than the default length, the feeder plant will be fiber and if the loop is less than the default length, the feeder plant will be copper. The cross-over point should be based on engineering practice. Neither model proponent submits studies to support the engineering

⁴ Letter from Mike Pelcovits, MCI and Joel Lubin, AT&T, to John Morabito, FCC (dated Aug. 19, 1996). Letter from Warren D. Hannah, Sprint and Glenn Brown, U S West, to William F. Caton, FCC (dated Aug. 22, 1996).

⁵ Letter from Glenn Brown, U S West, to William F. Caton, FCC (dated Sept. 4, 1996).

⁶ Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Sept. 10, 1996).

⁷ Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Sept. 10, 1996).

⁸ Letter from Brian W. Matterson, AT&T, to William F. Caton, FCC (dated Sept. 18, 1996).

practice it assumed. Commenters show that assumptions about this practice can lead to different costs.⁹ We note that an examination of both model results shows that over 50 percent of the lines will be served by digital loop carrier connected to central offices by fiber, while currently less than five percent of lines use that type of facility.¹⁰ We believe that our forward looking cost principles would require a determination of whether either of the engineering practices posited in the models is the least-cost method of placing loop facilities.

9. Switching Investment. Switching investments include the cost of the switch, distribution frame, power expenses and the wire center building. The models use only digital switches. The BCM2 proponents allege that they have placed host, stand alone, and remote switches in wire centers according to the current placement of such switches.¹¹ The Hatfield model uses only host switches. Commenters claim that these assignments do not reflect the forward-looking cost of switching.¹² We share the commenters' concern regarding which type of switch, host, stand-alone or remote is assigned to each wire center and suggest that further work by interested parties would clarify this issue. We also have concerns regarding whether switches are included in the models that accurately reflect switching needs, particularly in sparsely populated areas. These concerns should be addressed.

10. Obtaining non-proprietary estimates of the cost of switches is difficult. The proponents of the Hatfield model and the BCM2 obtained switch cost estimates from several sources.¹³ The BCM2 switch input costs are lower than those in BCM and now approach the switch cost used by the Hatfield model.¹⁴ Moreover, the switching costs reported in the

⁹ NCTA cost model comments at 71-75, Attachment A ("Converging on a Cost Proxy Model for Primary Line Basic Residential Service: A Blueprint for Designing a Competitively Neutral Universal Service Fund," Susan M. Baldwin, Lee L Selwyn (Aug. 1996)).

¹⁰ Letter from Mike Pelcovits, MCI, and Joel Lubin, AT&T, to John Morabito, FCC (dated August 19, 1996). Letter from Warren D. Hannah, Sprint, and Glenn Brown, U S West, to William F. Caton, FCC (dated August 22, 1996). See ARMIS Report 43-07, Table II - Transmission Facilities.

¹¹ Letter from Glenn Brown, U S West, to William F. Caton, FCC (dated Sept. 4, 1996).

¹² NCTA cost model comments at 41-54, Attachment A ("Converging on a Cost Proxy Model for Primary Line Basic Residential Service: A Blueprint for Designing a Competitively Neutral Universal Service Fund," Susan M. Baldwin, Lee L Selwyn (Aug. 1996))

¹³ Letter from Glenn Brown, U S West, to William F. Caton, FCC (dated Sept. 4, 1996). Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Sept. 10, 1996).

¹⁴ NCTA cost model comments at 41-54, Attachment A ("Converging on a Cost Proxy Model for Primary Line Basic Residential Service: A Blueprint for Designing a Competitively Neutral Universal Service Fund," Susan M. Baldwin, Lee L Selwyn (Aug. 1996)).

information requests for each of the three study areas, PacTel of California, GTE of Arkansas, and Southwestern Bell of Texas, are very similar.¹⁵

11. The Hatfield model assigns over 80 percent of the switch cost to supported universal services and BCM2 assigns over 90 percent of the switch to services that are supported. These percentages are greater than the ratio of local usage to total usage. These assignments are higher than the usage ratio because certain switch components, such as the processor, are allocated solely to the provision of supported universal services.¹⁶ We suggest that assignment of switch costs be reviewed to determine whether a more accurate assessment of costs be allocated to universal support mechanisms.

12. Depreciation. Depreciation rates determine the level of expenses associated with the use of investments. Commenters disagree on whether depreciation rates used in the proxy models are too high or too low.¹⁷ Their positions reflect opinions regarding the impact of competition on depreciation rates and the extent to which the cost of supported services should be affected by competitive pressures. We believe that proxy models should use depreciation rates that reflect economic costs and should be flexible enough to permit depreciation rates set by regulators.

13. Annual Charge Factors. Annual charge factors or expense factors determine the level of expenses. In the BCM2 and Hatfield proxy models, plant-specific annual charge factors are determined as the ratio of ARMIS expenses to investment.¹⁸ Several commenters express concern that use of the ARMIS data conflicts with the desire to develop forward-looking costs because the ARMIS data are embedded cost statistics. The proxy models do not rely on the ARMIS expenses, but rather on the ratios of expenses to investment. The ARMIS expense to investment ratio is a ratio of current year expenses to investments purchased over many years. We recommend that the level of expenses be based on an analysis that calculates forward-looking expenses. If the Commission concludes that the ARMIS expense ratios are a reasonable starting position for determining forward-looking expenses, then we recommend

¹⁵ Letter from Mike Pelcovits, MCI and Joel Lubin, AT&T, to John Morabito, FCC (dated Aug. 19, 1996). Letter from Warren D. Hannah, Sprint and Glenn Brown, U S West, to William F. Caton, FCC (dated Aug. 22, 1996).

¹⁶ Letter from Jay C. Keithley, Sprint, and Glenn Brown, U S West, to William F. Caton, FCC, in regard to CC Docket 96-45 (dated July 3, 1996). Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Sept. 10, 1996).

¹⁷ NYNEX cost model comments at 11; PacTel cost model comments at 11; SWBT cost model comments at 12; MCI cost model comments at 4.

¹⁸ Letter from Glenn Brown, U S West, to William F. Caton, FCC (dated Sept. 4, 1996). Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Sept. 10, 1996)

that these ratios be modified to reflect changes in the expenses required to support and maintain forward-looking investments. For example, because the models only use digital switches, switch maintenance expenses should not include maintenance expenses associated with analog stored program or electromechanical switches. Expenses used in the models should be accurately reflected.

14. Joint and Common Costs. In its *Local Competition Order*, the Commission defined common costs as "costs that are incurred in connection with the production of multiple products or services, and remain unchanged as the relative proportion of those products or services varies (e.g., the salaries of corporate managers)."¹⁹ With regard to the proxy models used for the purpose of establishing universal service support the Commission must determine how to allocate common costs among the services supported by the universal service mechanism and all other services.

15. The Hatfield model estimates the common cost of corporate operations by multiplying all other expenses by 10 percent. This procedure generates corporate operations expenses that are between 25 and 50 percent of the corporate operations expenses reported in ARMIS.²⁰ The BCM2 divides ARMIS total corporate operations expenses for all reporting companies by the total number of lines served by these companies. It assigns 75 percent of this per-line value to the cost of providing the supported services.²¹ These differences explain approximately 11 percent of the difference between the average monthly forward-looking costs estimated by the Hatfield and BCM2 models.²² Further investigation is required before it would be possible to conclude that either of the proposed approaches or some other approach to the estimation is a reasonable level of corporate operations expenses to be included in calculation of the cost of providing the supported services.

16. Retail Costs. Retail costs are the costs associated with billing and collection, product management, sales, and advertising and other customer service expenses. The Hatfield model excludes product management, sales, and advertising expenses. It includes billing and collection costs and other customer services expenses. Because of these assumptions, the Hatfield model includes only 21 to 25 percent of ARMIS customer

¹⁹ *Local Competition Order* at para. 676.

²⁰ Letter from Mike Pelcovits, MCI and Joel Lubin, AT&T, to John Morabito, FCC (dated Aug. 19, 1996).

²¹ Letter from Glenn Brown, U S West, to William F. Caton, FCC (dated Sept. 4, 1996).

²² Letter from Mike Pelcovits, MCI and Joel Lubin, AT&T, to John Morabito, FCC (dated Aug. 19, 1996). Letter from Warren D. Hannah, Sprint and Glenn Brown, U S West, to William F. Caton, FCC (dated Aug. 22, 1996).

operations expenses in its cost estimates.²³ The BCM2 model incorporates 75 percent of the ARMIS customer operations expenses in its cost estimates. The differences in the treatment of customer operations accounts for 19 percent of the difference between the average monthly forward-looking costs estimated by the Hatfield and BCM2 models.²⁴

17. NCTA's ETI report asserts that regulators should rigorously evaluate the ARMIS data before accepting them as a basis for forward-looking costs. Its investigation of a Massachusetts cost study reveals that a significant proportion of product management expenses are related to market management and planning for business customers. NCTA argues that close examination of sales and advertising expenses reveals that these expenses are not related to the provision of basic residential service. It concludes that only four percent of marketing expenses should be assigned to the cost of providing the supported services.²⁵ We agree that rigorous evaluation of the ARMIS data, to the extent ARMIS data are used, is necessary. We are not willing, however, to conclude that ARMIS data are the only data that should be used to determine retail costs. Therefore, we are not prepared to recommend what would be the reasonable amount of retail costs.

18. Model results. The model results produce significantly different estimates of the nationwide total amount of support required to maintain the provision of the supported services in high costs areas. For example, at a \$20.00 benchmark, using the model's default settings, the Hatfield model indicates that the universal service support would be \$5.3 billion, which is the sum of \$3.4 billion for large LECs and \$1.9 billion for non-Tier1 LECs. The BCM2, at a \$20.00 benchmark, indicates that support would be \$14.6 billion.²⁶ The remaining difference, \$9.5 billion, is a function of the model input costs and engineering design principles.

19. Another means of evaluating the models is to compare their results to the results generated by embedded-cost studies. Because forward-looking and embedded costs rely on different input costs and technologies, the results from these studies are likely to

²³ Letter from Mike Pelcovits, MCI and Joel Lubin, AT&T, to John Morabito, FCC (dated Aug. 19, 1996).

²⁴ Letter from Mike Pelcovits, MCI and Joel Lubin, AT&T, to John Morabito, FCC (dated Aug. 19, 1996). Letter from Warren D. Hannah, Sprint and Glenn Brown, U S West, to William F. Caton, FCC (dated Aug. 22, 1996).

²⁵ NCTA cost model comments at 29-34, Attachment A ("Converging on a Cost Proxy Model for Primary Line Basic Residential Service: A Blueprint for Designing a Competitively Neutral Universal Service Fund," Susan M. Baldwin, Lee L Selwyn (Aug. 1996)).

²⁶ Letter from Jay C. Keithley, Sprint, and Glenn Brown, U S West, to William F. Caton, FCC, in regard to CC Docket No. 96-45 (dated July 3, 1996). Letter from Chris Frentrup, MCI, and Bruce Cox, AT&T, to William F. Caton, FCC (dated Oct. 31, 1996).

differ. We are concerned, however, about large changes in the relative position of the states when comparing our embedded cost results to the results generated by the proxy models. The state characteristics, such as population density and terrain factors, that cause telephone companies in a state to exhibit high forward-looking costs in the models, do not cause those telephone companies to exhibit relatively high embedded costs. Alternatively, the change in position could be caused by specific management or accounting practices that affect embedded costs but that would not be reflected in forward-looking costs. A state's relative position can be measured by its rank, where the state with the lowest cost has a rank of one and the state with the highest cost would have a rank of 51. A change in the rank order is the difference between the rank order estimated by a model and the rank order according to the current high cost assistance mechanism, which ranks states by embedded loop costs. For example, the change in rank order for California is three because it is the third lowest cost state according to the BCM2 and it is the sixth lowest cost state according to the High Cost Fund.²⁷ There are fifteen states for which the change in rank order is greater than ten.²⁸ We believe it is necessary to determine why these large changes occur, and to ensure that the change in rank order does not threaten the provision of the supported services in these states.

20. Measure of support. The two models on the record calculate support required for the provision of the supported services as the product of the number of lines in a geographic area and the difference between a cost estimate and a uniform benchmark amount. BCM2 uses the CBG as the geographic area to measure the line count and cost estimate. BCM2 sums the support across all CBGs in a state to determine the state-wide support level. Calculation of support at either the wire center, study area, or density zone level is not a standard output of the model. Further manipulation of the BCM2 input sheets is required to obtain these results.²⁹ The Hatfield model estimates the cost per CBG. The model average CBG cost estimates across six density zones. It uses the difference between the density zone average and the benchmark to determine the per-line support per density zone. It multiplies the per-line support by the number of lines per density zone to estimate the density zone support and then sums across all density zones to determine the support for the study area. Calculation of support at either the CBG or wire center level is not a standard output of the

²⁷ Letter from Jay C. Keithley, Sprint, and Glenn Brown, U S West, to William F. Caton, FCC, in regard to CC Docket No. 96-45 (dated July 3, 1996). Monitoring Report, CC Docket No.87-339, Prepared by Federal and State Staff for the Federal-State Joint Board in CC Docket No. 80-286, May 1996, Table 3.3.

²⁸ For those fifteen states, the change in cost per line per month ranged from \$3.06 to \$24.41, with an average change of \$10.47.

²⁹ Letter from Jay C. Keithley, Sprint, and Glenn Brown, U S West, to William F. Caton, FCC, in regard to CC Docket No. 96-45 (dated July 3, 1996).

model. Further manipulation of the Hatfield model input sheets is required to obtain these results.³⁰

29. Any proxy model used to calculate universal support levels should be able to provide estimates of support at various geographic levels with a state, such as on a study area, wire center, density zone, or CBG basis. These estimates would enable the Commission and state commissions to compare alternative decisions regarding support areas, and it is necessary so that we will be able to establish a specific, predictable and sufficient mechanism to preserve and advance universal service.

³⁰ Letter from Richard N. Clarke, AT&T, to William F. Caton, FCC (dated Sept. 10, 1996).

**APPENDIX G
SERVICE LIST**

The Honorable Reed E. Hundt, Chairman
Federal Communications Commission
1919 M Street, N.W., Room 814
Washington, D.C. 20554

The Honorable Rachele B. Chong,
Commissioner
Federal Communications Commission
1919 M Street, N.W., Room 844
Washington, D.C. 20554

The Honorable Susan Ness, Commissioner
Federal Communications Commission
1919 M Street, N.W., Room 832
Washington, D.C. 20554

The Honorable Julia Johnson, Commissioner
Florida Public Service Commission
2540 Shumard Oak Blvd.
Gerald Gunter Building
Tallahassee, FL 32399-0850

The Honorable Kenneth McClure,
Commissioner
Missouri Public Service Commission
301 W. High Street, Suite 530
Jefferson City, MO 65101

The Honorable Sharon L. Nelson, Chairman
Washington Utilities and Transportation
Commission
P.O. Box 47250
Olympia, WA 98504-7250

The Honorable Laska Schoenfelder,
Commissioner
South Dakota Public Utilities Commission
State Capitol, 500 E. Capitol Street
Pierre, SD 57501-5070

Martha S. Hogerty
Public Counsel for the State of Missouri
P.O. Box 7800
Jefferson City, MO 65102

Anna Gomez
Federal Staff Chair
Federal Communications Commission
2100 M Street, N.W., Room 8617
Washington, D.C. 20036

Paul E. Pederson
State Staff Chair
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Lisa Boehley
Federal Communications Commission
2100 M Street, N.W., Room 8605
Washington, D.C. 20554

Charles Bolle
South Dakota Public Utilities Commission
State Capitol, 500 E. Capitol Street
Pierre, SD 57501-5070

Deonne Bruning
Nebraska Public Service Commission
300 The Atrium
1200 N Street, P.O. Box 94927
Lincoln, NE 68509-4927

James Casserly
Senior Legal Advisor
Office of Commissioner Susan Ness
Federal Communications Commission
1919 M Street, Room 832
Washington, D.C. 20554

John Clark
Federal Communications Commission
2100 M Street, N.W., Room 8619
Washington, D.C. 20554

Bryan Clopton
Federal Communications Commission
2100 M Street, N.W., Room 8615
Washington, D.C. 20554

Irene Flannery
Federal Communications Commission
2100 M Street, N.W., Room 8922
Washington, D.C. 20554

Daniel Gonzalez
Legal Advisor
Office of Commissioner Rachelle B. Chong
Federal Communications Commission
1919 M Street, N.W., Room 844
Washington, D.C. 20554

Emily Hoffnar
Federal Communications Commission
2100 M Street, N.W., Room 8623
Washington, D.C. 20554

L. Charles Keller
Federal Communications Commission
2100 M Street, N.W., Room 8918
Washington, D.C. 20554

Lori Kenyon
Alaska Public Utilities Commission
1016 West Sixth Avenue, Suite 400
Anchorage, AK 99501

David Krech
Federal Communications Commission
2025 M Street, N.W., Room 7130
Washington, D.C. 20554

Debra M. Kriete
Pennsylvania Public Utilities Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Diane Law
Federal Communications Commission
2100 M Street, N.W., Room 8920
Washington, D.C. 20554

Mark Long
Florida Public Service Commission
2540 Shumard Oak Blvd.
Gerald Gunter Building
Tallahassee, FL 32399

Robert Loube
Federal Communications Commission
2100 M Street, N.W., Room 8914
Washington, D.C. 20554

Samuel Loudenslager
Arkansas Public Service Commission
P.O. Box 400
Little Rock, AR 72203-0400

Sandra Makeeff
Iowa Utilities Board
Lucas State Office Building
Des Moines, IA 50319

Philip F. McClelland
Pennsylvania Office of Consumer Advocate
1425 Strawberry Square
Harrisburg, Pennsylvania 17120

Michael A. McRae
D.C. Office of the People's Counsel
1133 15th Street, N.W. -- Suite 500
Washington, D.C. 20005

Tejal Mehta
Federal Communications Commission
2100 M Street, N.W., Room 8625
Washington, D.C. 20554

Terry Monroe
New York Public Service Commission
3 Empire Plaza
Albany, NY 12223

John Morabito
Deputy Chief, Accounting and Audits
Division
Common Carrier Bureau
Federal Communications Commission
2000 L Street, N.W., Suite 812
Washington, D.C. 20554

Mark Nadel
Federal Communications Commission
2100 M Street, N.W., Room 8916
Washington, D.C. 20554

John Nakahata
Senior Legal Advisor
Office of Chairman Reed E. Hundt
Federal Communications Commission
1919 M Street, N.W., Room 814
Washington, D.C. 20554

Lee Palagyi
Washington Utilities and Transportation
Commission
1300 South Evergreen Park Drive S.W.
Olympia, WA 98504

Kimberly Parker
Federal Communications Commission
2100 M Street, N.W., Room 8609
Washington, D.C. 20554

Barry Payne
Indiana Office of the Consumer Counsel
100 North Senate Avenue, Room N501
Indianapolis, IN 46204-2208

Jeanine Poltronieri
Federal Communications Commission
2100 M Street, N.W., Room 8924
Washington, D.C. 20554

Michael Pryor
Federal Communications Commission
2100 M Street, N.W., Room 8905
Washington, D.C. 20554

James Bradford Ramsay
National Association of Regulatory Utility
Commissioners
P.O. Box 684
Washington, D.C. 20044-0684

Brian Roberts
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Gary Seigel
Federal Communications Commission
2000 L Street, N.W., Suite 812
Washington, D.C. 20554

Richard D. Smith
Federal Communications Commission
2100 M Street, N.W., Room 8605
Washington, D.C. 20554

Pamela Szymczak
Federal Communications Commission
2100 M Street, N.W., Room 8912
Washington, D.C. 20554

Lori Wright
Federal Communications Commission
2100 M Street, N.W., Room 8603
Washington, D.C. 20554

Statement by
Federal Communications Commission
Chairman Reed Hundt
November 7, 1996

Today America takes a major step forward in our quest to bring the benefits of the Information Age to every person in the country.

Carrying out the mandate given to us by Congress in the Telecommunications Act of 1996, a joint board of federal and state commissioners today voted unanimously to urge the full FCC to adopt a rule that makes affordable, high-quality telecommunications services available to all children and teachers in every classroom and library.

The recommendation asks the FCC to create a federal-state, country-county, public-private partnership. Schools and libraries will pay something for communications technology, but the telecommunications companies will together meet them more than halfway in funding these partnerships.

By providing discounts on all telecommunications services, on internal wiring, as well as on Internet access, the bipartisan Joint Board on Universal Service has shown its dedication to ensuring schools get the full spectrum of tools they need.

Schools will be able to connect every single classroom to the Information Highway. The ramp will be a high-speed, high-bandwidth, cutting-edge connection. The discounts, tailored to each school's individual level of need, will make building and maintaining the ramp truly affordable for every school.

In the 21st Century, technology literacy will be a necessity, not a frill. To give every child in America a true opportunity at succeeding and fulfilling his or her potential, affordable access to information technology and communications services is the new ground zero. Today, we begin working to make that opportunity a reality so that the economic divide between rich and poor is not exacerbated by a digital divide between technology haves and have-nots.

Discounts will also be provided for the first time to rural health-care providers, so that they can use modern telecommunication services to provide their patients with better, faster, more efficient care. The new guidelines also reaffirm and strengthen the commitment to provide telecommunication services to low-income consumers and rural or hard-to-reach consumers. In designing the mechanisms to guarantee this service, we have maintained our firm commitment to designing policies that enhance competition.

My thanks and compliments go to the President and the Vice President for their leadership as well as to Senators Snowe, Rockefeller, Exon and Kerrey who were instrumental in making schools, libraries and rural health care providers a priority in our new telecommunications law. My thanks go to all the other bipartisan senators, congressmen and other leaders who supported this initiative.

We have a lot of work ahead of us as we finalize the guidelines in the next few months. But the support and dedication of the joint board members in reaching this unanimous decision today sets us on the path to have schools and libraries that are not only institutions of learning, but true beacons that will bring the promise and potential of the 21st Century to every man, woman and child in the country.

November 7, 1996

**SEPARATE STATEMENT
OF
COMMISSIONER SUSAN NESS**

Re: Federal-State Joint Board on Universal Service Recommended Decision (CC Docket No. 96-45)

Today's decision is another milestone in the implementation of the Telecommunications Act of 1996. The task at hand is as challenging as any that Congress assigned under this landmark legislation. Our job is to construct a new universal service regime that makes subsidies more explicit, more targeted, more efficient, and more compatible with competition, even as the vision of universal service is boldly extended.

The new legislation seeks to make quality services available at affordable rates to all Americans. Congress chose competition as the surest route to that end. Yet the law also mandates special measures to protect low-income consumers and those living in rural, insular, and high-cost areas. Congress also enlarged the universal service program to encompass schools, libraries, and rural health care providers.

Congress told us to "thoroughly review the existing system of Federal universal service support." We have done what Congress directed and determined that our current system of support for universal service is not sustainable. It relies on billions of dollars (no one can say how many) of implicit subsidies. Access charges, vertical services, and business lines, for example, are all priced well in excess of cost, and some of the excess helps to keep local phone rates low. Competitors, naturally, will target the high-margin services, and these sources of subsidies will inevitably diminish over time.

Our current system is not competitively neutral. The obligation to support universal service is not fairly distributed, and neither is the opportunity to receive universal service support. To effectuate the will of Congress, new mechanisms are necessary to expand the base of carriers who fund universal service and to expand eligibility to receive universal service support.

These challenges call for a comprehensive restructuring of universal service support mechanisms. Today's Recommended Decision is a promising start in that endeavor.

Principles

Throughout our deliberations, we have adhered to the principles Congress enumerated in the legislation. We have also taken the opportunity created by the law to add "competitive neutrality" as a guiding principle of universal service policymaking. This decision is consistent with the intentions underlying Section 254 and the legislation as a whole.

Definition of universal service

As we defined the services to be supported, we were mindful that the funds for universal service ultimately come from consumers; and so we have resisted entreaties for an expansive definition. The menu of services initially to be supported for high-cost areas and low-income consumers is limited to those services that most consumers already receive. We look to competitive supply and consumer demand to establish higher levels of service, which the Joint Board can take into account as it reviews the definition of supported services in future years.

Prudence also requires that (except as directed in the case of schools, libraries, and rural health care providers) we limit universal service support to single-line residences and single-line businesses. There is no reason why ratepayers as a whole should bear the burden of supporting multiple lines to a single residence, single lines to second homes, or multi-line businesses.

Low-income consumers

Charges for telephone service appear to be generally affordable throughout the nation. Subscribership is at 94 percent overall. The problem of access appears to be concentrated at the lower end of the income scale, and this necessitates certain focused changes in our low-income programs. Extending these programs to states that do not have them, encouraging the deployment of toll limitation services, and prohibiting disconnection for nonpayment of toll charges of Lifeline customers should, in the aggregate, promote the goal of increased telephone subscribership by low-income consumers.

High-cost support

We have made good progress in addressing the challenge of high-cost areas, but much remains to be done. We have achieved consensus on the important principle that support should be based on forward-looking economic costs. We have established principles and procedures for further development and evaluation of cost proxy models. We have agreed to bifurcate the treatment of rural and non-rural local exchange carriers, recognizing that rural carriers are more vulnerable to errors that may be caused by the proxy models and that Congress envisioned a slower transition to competition in rural areas.

Regrettably, the Joint Board has failed to address the question whether the funding for federal programs for high-cost support -- as well as low-income support -- will be based on both the *intrastate* and *interstate* revenues of carriers that provide interstate telecommunications services, or only on their *interstate* revenues. This necessarily draws into question the ability of the federal fund to support the difference between cost (proxy or embedded) and a reasonable benchmark; an interstate-only approach inevitably leads to a much higher benchmark.

In my view, the federal program must be based on both intra- and interstate revenues and provide the full measure of support needed to meet the benchmark. The alternative is to risk that consumers, small businesses, and carriers in high-cost states will be left without the support Congress intended. This cannot be squared with Congress's decision to write a clear commitment of universal service into federal law.

In addition, I can see no reason why interstate revenues alone should be the source of all new explicit subsidies, given that a portion of today's implicit subsidies comes from local business service, vertical services, and intrastate access. And the principle of competitive neutrality should steer us away from an approach that would disproportionately burden any category of carrier (as, for example, would occur with wireless companies under an interstate-only approach).

Schools and libraries

The boldest, most visionary section of the legislation requires us to promote the connection of schools and libraries to the Information Superhighway. As Congress saw clearly, the Industrial Age is giving way to the Information Age. To prepare our nation for life in the 21st Century, communications and information tools must be readily available to all American students and communities.

There is a substantial danger that disparities in access to these tools will widen the economic and cultural divide between the rich and the poor. I am delighted that the Joint Board has recommended that we address this issue through aggressive discounts that enable poorer schools and those in rural areas to obtain the services they need.

Learning occurs in the classroom, not the principal's office. I share President Clinton's hope for a "day when computers are as much a part of the classroom as blackboards and we put the future at the fingertips of every American child."

So, too, does the Congress.

That's why the legislation explicitly promotes the connection not just of "schools," but of "classrooms." And we are on firm legal and policy ground in recommending universal service support for internal connections, whether or not they are "telecommunications services." A contrary construction, which would permit support of wireless connections but