ORIGINAL

RECEIVED

SEP 24 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

DOCKET FILE COPY ORIGINAL

In the Matter of	)	
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	
	)	
Forward-Looking Mechanism for High Support for Non-Rural LECs	)	CC Docket No. 97-160
	)	

COMMENTS OF AMERITECH REGARDING OUTSIDE PLANT ASPECTS OF COST MODEL

Michael S. Pabian
Counsel for Ameritech
Room 4H82
2000 West Ameritech Center Drive
Hoffman Estates, IL 60196-1025

Regulatory Specialists

Kent A. Currie
Milan V. Holy
Harry Albright

Dated: September 24, 1997

No. of Copies rec'd 0+9
List ABCDE

TABLE OF CONTENTS

A. PLANT MIX. 1

B. INSTALLATION AND CABLE COSTS. 4

C. DROPS. 7

D. STRUCTURE SHARING. 8

E. LOOP DESIGN. 10

(1) Fiber-Copper Cross-over Point. 11

(2) Loop Standards. 12

(3) Digital Loop Carriers. 13

F. WIRELESS THRESHOLD. 13

G. MISCELLANEOUS OUTSIDE PLANT INPUT VALUE ISSUES. 15

(1) Poles, Anchors, Guys, Aerial Cable, and Building Attachments. 15

(2) Network Interface Devices. 15

(3) Service Area Interfaces. 16

(4) Fill Factors and Utilizations. 16

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
	)	
Forward-Looking Mechanism for High Support for Non-Rural LECs	)	CC Docket No. 97-160

COMMENTS OF AMERITECH REGARDING
OUTSIDE PLANT ASPECTS OF COST MODEL

Ameritech[1] submits these comments on the outside plant aspects of a potential model for the calculation of forward-looking costs that are supported by the universal service mechanism in states that elect not to submit cost studies. [2]

A. PLANT MIX.

The Commission tentatively concluded that the mix of aerial, buried and underground cable should reflect both terrain factors and line density zones.[3] More specifically, the Commission has tentatively concluded that aerial cable should be assigned more frequently for all population density groups in wire

[1] Ameritech means: Illinois Bell Telephone Company, Indiana Bell Telephone Company, Incorporated, Michigan Bell Telephone Company, The Ohio Bell Telephone Company, and Wisconsin Bell, Inc.

[2] *In the Matter of Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs*, CC Docket Nos. 96-45, 97-160, Further Notice of Proposed Rulemaking, FCC 97-256 (released July 18, 1997) ("FNPRM") at ¶¶39-54.

[3] FNPRM at ¶58.

centers characterized by "hard rock" conditions compared with wire centers having other terrain conditions. Further, the Commission seeks comments on identifying terrain for which aerial plant is a more efficient choice, and on whether climatic conditions such as hurricanes will affect the decision to deploy aerial plant.

A basic premise for these conclusions is that "plant mix is determined by the geographic distribution of population as well as terrain and weather conditions."[4] While these factors may play a role in determining the appropriate plant mix for any geographic area, other factors may be more important.

First, the efficient network architecture for loop plant will impact the plant mix. Specifically, plant mix will be different for feeder plant as compared to distribution plant. Feeder plant connects the central office to a serving area interface (SAI) that supports a distribution area (DA), and distribution plant normally connects the SAI to a customer's drop.[5] This distinction between feeder and distribution plant is fundamental to an efficient network architecture based on SAC. Feeder plant is built to be growable, while distribution plant is built on ultimate requirements. Hence, buried cable is the least preferred cable type for feeder plant, because buried cable is the least flexible plant type to expand

[4]FNPRM at ¶56.

[5]The serving area concept (SAC) as implemented through carrier serving areas (CSAs) is the foundation of the forward-looking network architecture for loop plant currently used by Ameritech for providing the loop portion of supported services. See "Comments of Ameritech regarding Customer Location Aspects of Cost Model," at pp. 4-5.

efficiently after it has been installed. Underground plant is the most preferred type for feeder plant. On the other hand, the permanency of buried cable makes it attractive for distribution plant. However, more dense areas should generally have more underground distribution plant.

Second, while terrain conditions can impact the attractiveness of buried cable, other environmental conditions may also come into play. For example, rodents such as gophers and squirrels can damage cable. Hence, cable manufacturers provide sheaths with armor protection. Of course, cable with armor protection is more expensive than cable without such protection. Hence, underground and buried cable will be more attractive in areas that are infested with animals that tend to damage ordinary aerial cables. Similarly, underground and aerial cable will be more attractive in areas that are infested with animals that tend to damage ordinary buried cables.

Finally, local politics may favor one type of plant over another. In particular, aerial cable can be seen as an eye sore. Consequently, more recently placed plant will have a bias toward being buried cable rather than aerial cable. However, once an area has aerial cable, adding or replacing cable on poles tends to have no further political constraints. While political constraints may be difficult to model, the average age of structures in an area such as a DA is probably positively correlated with the relative share of aerial plant. Hence, further

distinctions in plant mix can be captured by using the average age of housing and business structures in a specific area.

Given the large variety of circumstances that impact the efficient plant mix, the fact that these circumstances have existed over long periods of time, and that telephone companies have adapted their plant mixes over time to accommodate such circumstances, the relative plant mix in any specific geographic area should be regarded as prima facie evidence as measuring the efficient plant mix. If an algorithm or other calculation is made to determine plant mixes, such a process should be compared with actual plant mixes to verify its accuracy and reasonableness.

B. INSTALLATION AND CABLE COSTS.

The Commission tentatively concluded that "the selected mechanism should specify costs for installation of aerial cable, buried cable, and underground cable that incorporate terrain factors and line density zones."[6] In addition, the Commission has tentatively adopted BCPM's additive approach for accounting for additional expenses caused by difficult terrain rather than Hatfield's multiplicative approach.[7] The Commission has also tentatively concluded that conduit installation costs should be specified on a per foot basis that vary on lines per square mile.[8] Furthermore, the Commission has tentatively concluded that

[6]FNPRM at ¶65.

[7]FNPRM at ¶66.

"materials and installation costs should be separately identified by both density zone and terrain type," and solicits any information or data on the cost of installing aerial, buried and underground, on the possible use national averages of contractors construction prices, on the verification of the installation costs for distribution plant, and on the appropriateness of incorporating labor rates in the selected mechanism[9] Finally, the Commission has tentatively concluded that feeder and distribution cable installation costs should not differ.[10]

This section of the FNPRM encompasses an extensive variety of conditions that impact the material costs for cables as well as their placement costs.

Specifically, BCPM and Hatfield have made assumptions about soil conditions and density to accommodate different costs of installing buried and underground cable. First, installation costs for cables vary by cable sizes, because bulkier cable tends to be more difficult with which to work. Consequently, Ameritech agrees that the selected mechanism for calculating the costs for installation of aerial, buried and underground cables should reflect differences in cable sizes which are driven by line density rather than household density. The difficulty of installing buried cable can also be impacted by manmade terrain, and, in particular, by the geography of business and housing units. Hence, there is merit to relating some installation costs to household density rather than line

---

[8]FNPRM at ¶67.

[9]FNPRM at ¶68.

[10]FNPRM at ¶69.

density. Nevertheless, Ameritech agrees that line density reasonably captures the appropriate density to use in this case.

Ameritech is sympathetic to Hatfield's multiplicative approach to account for additional expenses caused by difficult terrain. This approach reflects the general way used by Ameritech in its company-specific modeling of cable installation costs. Because Ameritech does not generally have severe terrain, the concerns expressed by state members of the Joint Board regarding the accuracy of the multiplicative approach in different areas are not worrisome for the areas in which Ameritech provides services, i.e., the multiplicative approach can provide accurate cost estimates when terrain conditions do not vary dramatically. Ameritech understands that the accuracy concerns expand when a model is to accommodate all terrains that appear in America. Consequently, Ameritech does not disagree with the use of BCPM's additive approach in a model that spans the entire country.

The chosen sheath size of any cable section should reflect the forward-looking requirements necessary to provide efficiently the supported services along that section. Hence, the material costs of copper cables and fiber cables or ribbons should vary by the number of pairs in a copper cable and by the number of strands in a fiber cable or ribbon. While there are a large variety of different cable sheaths, Ameritech has an engineering practice that determines the recommended forward-looking cable sheath. For example, the cable design code for the

recommended copper buried sheath is AN*W, where "A" represents a PIC water-resistant, PULP air-core, or PIC riser cable type, "N" represents a conductor insulation of DEPIC with 80ºC filling compound, "*" indicates the cable gauge, and "W" represents ASP (water resistant) sheathing. Consequently, the most accurate information should include all sheath sizes for the recommended cable design codes. Ameritech plans to provide such material cost information in its input value comments that will be filed on or before October 17th.

Finally, Ameritech agrees with the Commission's tentative conclusion that installation costs do not differ between feeder and distribution plant, i.e., the placement of a cable of specific type, size, and length has the same installation cost whether it appears in the feeder portion of the loop or in the distribution part.

C. DROPS.

The Commission seeks comments on the two competing proposals for developing drop lengths, namely, BCPM's estimation process and Hatfield's predetermined drop length assumptions.[11] The Commission has tentatively concluded that the forward-looking costs for drops, which include installation, terminal, splice, and pedestal costs, should be included in the selected mechanism and has invited comment on the accuracy of such costs under the proposed models.[12]

---

[11]FNPRM at ¶74.

[12]FNPRM at ¶75.

Ameritech is sympathetic to Hatfield's predetermined drop length assumption. Ameritech currently uses a predetermined drop length in its unbundled loop studies. Within this context Ameritech has tested the sensitivity of unbundled loop costs on the drop length, and determined that the cost differences were minor for geographic areas that were the combination of many wire centers. Again, Ameritech's experiences reflect the geography of its serving area.

D. STRUCTURE SHARING.

The Commission has tentatively concluded that the practice of sharing facilities such as poles, trenches, and conduits with other utilities should vary by installation activity and terrain, has tentatively adopted BCPM's categories for installation activities and terrain, and seeks cost information to corroborate a party's position.[13] Next, the Commission has tentatively concluded that no sharing with other utilities should be recognized for cable that is buried using a cable plow.[14] In addition, the Commission has tentatively concluded that Sprint's suggested value of 66% is an acceptable aggregate default value for the relative share of structure costs assigned to the telephone company, but also seeks comments to reflect sharing arrangements based on installation activity, terrain,

---

[13]FNPRM at ¶79.

[14]FNPRM at ¶80.

and line density zone.[15] Finally, the Commission seeks comment on "AT&T's contention that changes to the regulatory climate will increase the extent to which carriers are required or are willing to share structures."[16]

Ameritech is troubled by any sharing assumption that goes beyond the sharing that currently exists between ILECs, electric utilities and cable companies. First, the cost development for the supported services is predicated upon a single supplier of those supported services and the resulting economies of scale that will be achieved by this single supplier. Consequently, under the background conditions underlying the calculation of the costs for supported services, there are no other telephone companies with whom the ILEC may share its structure costs. The notion of sharing must then stem from the recognition that the ILEC may not need to build a complete network, but may rent pole or conduit space from other non-telephone utilities operating in the same area as the ILEC is providing service. In addition, the ILEC may rent pole or conduit space to others. If the selected mechanism only constructed structure costs that an ILEC would actually expect to build and own in a world with electric utilities and cable companies, then structure sharing could be measured by the ILEC's net receipts for structures, i.e., the difference between the rents received by the ILEC for space rented to other utilities and the space rents paid by the ILEC to others. Net

---

[15]FNPRM at ¶81.

[16]FNPRM at ¶82.

receipts can be positive or negative, and are generally substantial for Ameritech. This is the process that Ameritech would undertake in a company-specific analysis.

Unfortunately, because the BCPM and Hatfield models do not recognize at the beginning of their analyses the existence of these other utilities when constructing the forward-looking economic costs for supported services, this direct approach does not appear feasible in the current versions of these models given the Commission's current schedule. Rather, structure sharing is a tail-end adjustment. Nevertheless, the rent arrangements between ILECs and other utilities are real and will continue into the future. These rent arrangements must be included in the selected mechanism in order to reflect forward-looking structure sharing. Consequently, net receipts should be subtracted from structure costs that reflect the forward-looking least-cost network design for supported services that an ILEC would build and own. If rent revenues are included in the revenue benchmark used to determine the amount of support, then rent payments for structure should be added to the cost of supported services in order to eliminate any double counting.

E. LOOP DESIGN.

(1) Fiber-Copper Cross-over Point.

The Commission has tentatively concluded that the maximum fiber-copper cross-over point value should be set at 18,000 feet based on the comments of NCTA/ETI and the recommendation of the state portion of the Joint Board, has directed any parties disputing NCTA/ETI's analysis to submit detailed data to support their positions, has tentatively adopted BCPM's approach of installing optical fiber in the network to avoid loading coils, and seeks comment on the impact of digital loop carrier (DLC) costs on the efficient cross-over point.[17]

Ameritech disagrees with the tentative conclusion that the maximum fiber-copper cross-over point should be set at 18,000 feet. First, NCTA/ETI's analysis that relies upon recent versions of the BCPM and Hatfield models to establish the most efficient maximum cross-over point is methodologically flawed. These versions of the models are not sufficiently accurate nor company-specific enough to be used reliably for determining the maximum cross-over point. Second, Ameritech uses a more sophisticated cross-over engineering rule that has been used to develop TELRICs for unbundled loops.

Ameritech's rule has a maximum cross-over point of 12,000 feet above which fiber is exclusively used in the feeder plant, a minimum cross-over point of 9,000 feet below which copper is exclusively used in the feeder plant, and an

---

[17]FNPRM at ¶87.

intermediate range that uses fiber in the feeder plant wherever the requirements for voice-grade loops exceeds 600 loops for a specific cable route. The operations drivers for Ameritech's loop network architecture are (1) improved operations, (2) standard operating environment (SOE) systems that permit improved operational efficiencies, especially installation and repair, and that are supported by the evolving operational support system (OSS) infrastructure, (3) architectures that support improved administration of the grooming functions required by unbundling, (4) architectures that support improved switch port utilization, (5) limit dependency on the MDF and its labor intensive operations, and (6) mitigating natural aging effects of copper plant, cross boxes, connectors, etc.

(2) Loop Standards.

The Commission seeks comment on whether they should adopt any loop design standards or network performance standards in the forward-looking economic cost mechanism, and, if so, the identification of that standard, and in the case of performance standards its impact on the size of the fund.[18] Ameritech fails to see the usefulness of establishing any additional loop design standards or network performance standards in the forward-looking economic cost mechanism that is distinct or separate from the description of the supported services and the requirement that the forward-looking network design not inhibit the deployment of advanced telecommunications services.

---

[18]FNPRM at ¶89.

(3) Digital Loop Carriers.

The Commission seeks comment on the line size that triggers the use of a larger DLC, on the availability and applicability of DLCs that are smaller than those currently reflected in the BCPM and Hatfield models, on the impact of the fiber-copper cross-over point on the number and size of DLCs needed in an efficient network.[19]

The algorithm to determine the line size that triggers the use of a larger DLC is straightforward. First, determine the number of lines for which service is to be provided that will use a DLC. Next, adjust this quantity using a fill factor to determine the line capacity that the DLC must support. Finally, determine the smallest available DLC whose capacity can support the line requirements.

F. WIRELESS THRESHOLD.

The Commission seeks comments on whether the loop investment per customer should be capped, and "on the level of such a cap, if a cap is necessary to reflect the lower costs of wireless technology."[20] Also, the Commission concluded "that, to the extent practical, the selected mechanism should estimate the cost of providing the supported services using wireless technology in areas where wireless technology is likely to be the least-cost, most efficient technology," and seeks comment "on the feasibility of including an additional component in the

---

[19]FNPRM at ¶93.

[20]FNPRM at ¶98.

mechanism that would compare the cost of providing service via a wireless network with the cost of providing service via a wireline network and would choose the lowest-cost technology to calculate the costs of providing the support services."[21] Further, the Commission seeks comment on the feasibility of including a wireless platform within the selected mechanism in accordance with the Commission's schedule, and on whether a bidding process may be a better to recognize the differing costs between wireline and wireless technologies.[22] Because of the Commission's uncertainty that wireless technology can be accomplished within their schedule, they seek comment on whether basing support amounts only on the cost of wireline technology is consistent with section 254 and with the Commission's universal service goals.[23] Finally, the Commission seeks comment on whether other non-wireline technologies should be incorporate in the selected mechanism beyond those used in the cellular industry.[24]

Currently, Ameritech does not deploy wireless local loops. Ameritech's experiences in Hungary are consistent with the view that conditions do not currently exist for the deployment of wireless local loops. Ameritech has a technology trial underway to make new wireless technologies operationally and technically feasible.

---

[21]FNPRM at ¶99.

[22]FNPRM at ¶100.

[23]FNPRM at ¶101.

[24]FNPRM at ¶102.

G. MISCELLANEOUS OUTSIDE PLANT INPUT VALUE ISSUES.

(1) Poles, Anchors, Guys, Aerial Cable, and Building Attachments.

The Commission has tentatively concluded that the "selected mechanism should include feeder and distribution cable costs for copper and fiber."[25] In addition, the Commission seeks comments on the forward-looking prices of cable and whether buried and underground cable are less expensive than aerial cable.

Ameritech plans to provide such material cost information in its input value comments that will be filed on or before October 17th. The material cost of a cable of specific type, size, and length is the same whether it appears in the feeder portion of the loop or in the distribution part.

(2) Network Interface Devices.

The Commission tentatively concluded that the cost of protection blocks should be separated from the cost of the NID, and the costs of residential and business NIDs should be separately identified. Finally, the Commission seeks

---

[25]FNPRM at ¶113.

comments on the correct input values that should be used for NID and related costs.[26]

The NIDs used by Ameritech have the protection block included in the NID so that the cost of protection blocks and the costs of residential and business NIDs can and should not always be separately identified.

(3) Service Area Interfaces.

The Commission tentatively concluded that the cost of Service Area Interfaces (SAIs) should vary by cable sizes and should make an indoor/outdoor distinction. Because of the large disparities in the default SAI investments currently included in the two models, the Commission encourages parties to submit additional data on these costs.[27]

Ameritech agrees that SAIs vary by cable sizes. Also, the total installed investment for outdoor placements for SAIs is higher than the indoor equivalent. However, it is unclear to Ameritech the decision rule that is appropriate for the selected mechanism for making an indoor/outdoor distinction.

(4) Fill Factors and Utilizations.

Because of the similarities between the BCPM and Hatfield models, the Commission seeks comment on their accuracy and the reconciliation of any remaining differences. Again, the Commission encourages parties to submit

[26]FNPRM at ¶115.

[27]FNPRM at ¶117.

engineering data or other relevant documentation that supports specific fill factors.[28]

Fill factors are used to determine the minimum facility requirements based on the level of demand to use that facility. Consequently, distribution and feeder fill factors do not exhaust the list of factors that should be incorporated into the selected mechanism.

Respectfully submitted,

Michael S. Pabian

Michael S. Pabian
Counsel for Ameritech
Room 4H82
2000 West Ameritech Center Drive
Hoffman Estates, IL 60196-1025
(847) 248-6044

Regulatory Specialists

Kent A. Currie
Milan V. Holy
Harry Albright

Dated: September 24, 1997
[MSP0066.doc]

[28] FNPRM at ¶120.

CERTIFICATE OF SERVICE

I, Todd H. Bond, do hereby certify that a copy of the foregoing Comments of Ameritech Regarding Outside Plant Aspects of Cost Model has been served on all parties listed on the attached service list, via first class mail, postage prepaid, on this 24th day of September, 1997.

By: Todd H. Bond

Todd H. Bond

MICHAEL H OLENICK
GENERAL COUNSEL
FLORIDA DEPARTMENT OF EDUCATION
THE CAPITOL SUITE 1701
325 W GAINES STREET
TALLAHASSEE FL 32399-0400

SUSAN LEHMAN KEITEL
EXECUTIVE DIRECTOR
NEW YORK LIBRARY ASSOC
252 HUDSON AVE
ALBANY NY 12210-1802

JIM GAY
PRESIDENT
NATIONAL ASSOCIATION OF STATE
TELECOMMUNICATIONS DIRECTORS
IRON WORKS PIKE
P O BOX 11910
LEXINGTON KY 40578-1910

PAUL J BERMAN
ALANE C WEIXEL
ATTORNEYS FOR
FIDELITY TELEPHONE COMPANY
P O BOX 7566
1201 PENNSYLVANIA AVE
WASHINGTON DC 20044-7566

ALBERT H KRAMER
ROBERT F ALDRICH
ATTORNEYS FOR
AMERICAN PUBLIC COMMUNICATIONS
COUNCIL
2101 L STREET NW
WASHINGTON DC 20037-1526

JEROME K BLASK
DANIEL E SMITH
ATTORNEYS FOR
PRONET
1400 16TH STREET NW SUITE 500
WASHINGTON DC 20036

KATH L SHOBERT
DIRECTOR
FEDERAL AFFAIRS
GENERAL COMMUNICATIONS
SUITE 900
901 15TH STREET NW
WASHINGTON DC 20005

CAROLYN C HILL
ATTORNEY FOR
ALLTEL TELEPHONE SERVICES CORP
655 15TH STREET NW SUITE 220
WASHINGTON DC 20005

MICHAEL S WROBLEWSKI
ATTORNEY FOR
TELHAWAII INC
SUITE 1300
1001 PENNSYLVANIA AVENUE NW
WASHINGTON DC 20004

CHERYL A TRITT
CHARLES H KENNEDY
ATTORNEYS FOR SPRINT SPECTRUM
2000 PENNSYLVANIA AVE NW STE 5500
WASHINGTON DC 20006-1888

STEVE HAMLEN
PRESIDENT
UNITED UTILITIES INC
5450 A STREET
ANCHORAGE AK 99518-1291

RAUL R RODRIGUEZ
DAVID S KEIR
ATTORNEYS FOR
COLUMBIA COMMUNICATIONS CORP
2000 K STREET NW SUITE 600
WASHINGTON DC 20554

ELISABETH H ROSS
ATTORNEY FOR
THE VERMONT PUBLIC SERVICE BOARD
AND THE VERMONT DEPT OF PS
1155 CONNECTICUT AVE NW SUITE 1200
WASHINGTON DC 20036-4308

BENJAMIN H DICKENS JR
GERARD J DUFFY
COUNSEL FOR THE WESTERN ALLIANCE
2120 L STREET NW
WASHINGTON DC 20037

MARIANNE DEAGLE
ASSISTANT GENERAL COUNSEL
KANSAS CORPORATION COMMISSION
1500 SW ARROWHEAD ROAD
TOPEKA KS 66604-4027

DAVID HIGGINBOTHAM
PRESIDENT
TELETOUCH LICENSES INC
P O BOX 7370
TYLER TX 75711

KENNETH D SALOMON
J G HARRINGTON
ATTORNEYS FOR
IOWA TELEOMMUNICATIONS AND
TECHNOLOGY COMMISSION
1200 NEW HAMPSHIRE AVE NW STE 800
WASHINGTON DC 20036

DAVID W DANNER
SENIOR POLICY ADVISOR
WASHINGTON STATE DEPARTMENT OF
INFORMATION SERVICES
P O BOX 42445
OLYMPIA WA 98504-2445

FREDERICK M JOYCE
RONALD E QUIRK JR
ATTORNEYS FOR
OZARK TELECOM INC
1019 19TH STREET PH-2
WASHINGTON DC 20036

SANDRA ANN Y H WONG
ATTORNEY FOR
SANDWICH ISLES COMMUNICATIONS INC
PAUAHI TOWER SUITE 2750
1001 BISHOP STREET
HONOLULU HAWAII 96813

ROBERT M HALPERIN
ATTORNEY FOR
THE STATE OF ALASKA
1001 PENNSYLVANIA AVENUE NW
WASHINGTON DC 20004

MARGOT SMILEY HUMPHREY
ATTONREY FOR
THE RURAL TELEPHONE COALITION
1150 CONNECTICUT AVE NW SUITE 1000
WASHINGTON DC 20036

LISA M ZAINA
STUART POLIKOFF
OPASTCO
21 DUPONT CIRCLE NW SUITE 700
WASHINGTON DC 20036

DAVID COSSON
L MARIE GUILLORY
NCTA
2626 PENNSYLVANIA AVE NW
WASHINGTON DC 20037

HERBERT E. MARKS
JAMES M FINK
ATTORNEYS FOR
THE STATE OF HAWAII
1201 PENNSYLVANIA AVENUE NW
WASHINGTON DC 20044

SUE D BLUMENFELD MICHAEL G JONES
JENNIFER DESMOND MC CARTHY
ATTYS FOR LORAL SPACE &
COMMUNICATIONS
THREE LAFAYETTE CENTRE
1155 21ST STREET NW
WASHINGTON DC 20036

CHRISTOPHER W SAVAGE
ATTORNEY FOR
CENTENNIAL CELLULAR CORP
1919 PENNSYLVANIA AVE NW SUITE 200
WASHINGTON DC 20006

HENRY D LEVINE
LAURA F H MC DONALD
ATTORNEYS FOR
NYCHA MASTERCARD AND VISA
1300 CONNECTICUT AVENUE NW
WASHINGTON DC 20036

JAMES S BLASZAK
JANINE F GOODMAN
ATTORNEYS FOR
IBM
1300 CONNECTICUT AVE NW SUITE 500
WASHINGTON DC 20033-1703

ALAN R SHARK
PRESIDENT
AMERICAN MOBILE
TELECOMMUNICATIONS ASSOCIATION
1150 18TH STREET NW SUITE 250
WASHINGTON DC 20036

SAMUEL LOUDENSLAGER
ARKANSAS PUBLIC SERVICE COMMISSION
P O BOX 400
LITTLE ROCK AR 72203-0400

HEIKKI LEESMENT ESQ
DEPUTY RATEPAYER ADVOCATE
STATE OF NJ DIVISION OF THE
RATEPAYER ADVOCATE
31 CLINTO ST 11TH FLOOR
P O BOX 46005
NEWARK NJ 07101

PAUL B JONES
JANIS A STAHLHUT
DONALD SHEPHEARD
TIME WARNER COMMUNICATIONS
HOLDING INC
300 FIRST STAMFORD PLACE
STAMFORD CT 06902-6732

ANGELA J CAMPBELL ILENE R PENN
JOHN PODESTA
INSTITUTE FOR PUBLIC
REPRESENTATION
GEORGETOWN UNIVERSITY LAW CTR
600 NEW JERSEY AVE NW
WASHINGTON DC 20001

LINDA KENT
ASSOCIATE GENERAL COUNSEL
UNITED STATES TELEPHONE ASSOC
1401 H STREET NW SUITE 600
WASHINGTON DC 20005-2164

KATHERINE GRINCEWHICH
OFFICE OF THE GENERAL COUNSEL
UNITED STATES CATHOLIC CONFERENCE
3211 4TH STREET NE
WASHINGTON DC 20017-1194

KEVIN TAGLANG
BENTON FOUNDATION
1634 EYE STREET NW
WASHINGTON DC 20006

SAM COTTEN
ALASKA PUBLIC UTILITIES COMMISSION
1016 WEST SIXTH AVENUE SUITE 400
ANCHORAGE AK 99501

KENNETH BURCHETT
VICE PRESIDENT
GVNW INC/MANAGEMENT
P O BOX 230399
PORTLAND OR

DAVID L SHARP
CEO
PRESIDENT
VIRGIN ISLANDS TELEPHONE CORP
P O BOX 6100
ST THOMAS US VIRGIN ISLANDS 00801

MICHAEL F ALTSCHUL VICE PRESIDENT
GENERAL COUNSEL
RANDALL S COLEMAN VP REGULATORY
CELLULAR TELECOMMUNICATIONS
INDUSTRY ASSOCIATION
1250 CONNECTICUT AVE NW SUITE 200
WASHINGTON DC 20036

JAMES S BLASZAK
KEVIN S DI LALLO
ATTORNEYS FOR
AD HOC TELECOMMUNICATIONS USERS
COMMITTEE
1300 CONNECTICUT AVE NW SUITE 500
WASHINGTON DC 20036-1703

DAVID A IRWIN
ATTORNEY FOR
ITCS INC
1730 RHODE ISLAND AVENUE NW
WASHINGTON DC 20036

PETER A ROHRBACH
DAVID L SIERADZKI
ATTORNEYS FOR
GE AMERICAN COMMUNICATIONS INC
555 THIRTEENTH STREET NW
WASHINGTON DC 20004

LEONARD J KENNEDY
RICHARD S DENNING
COUNSEL FOR
NEXTEL COMMUNICATIONS INC
SUITE 800
1200 NEW HAMPSHIRE AVE NW
WASHINGTON DC 20036-6802

JOE D EDGE
RICHARD J ARSENAULT
ATTORNEYS FOR
PUERTO RICO TELEPHONE COMPANY
901 FIFTEENTH STREET NW
WASHINGTON DC 20005

JAMES VOLZ ESQ
PETER M BLUHM ESQ
VERMONT DEPARTMENT OF PUBLIC
SERVICE
DRAWER 20
MONTPELIER VT 05620-2601

RICHARD A ASKOFF
ATTORNEY FOR
NATIONAL EXCHANGE CARRIER ASSOC
100 SOUTH JEFFERSON ROAD
WHIPPANY NJ 07981

JAMES ROWE
ALASKA TELEPHONE ASSOCIATION
4341 B STREET SUITE 304
ANCHORAGE AK 99503

DR BARBARA O'CONNOR
CHAIRWOMAN
MARY GARDINER JONES PRESIDENT
ALLIANCE FOR PUBLIC TECHNOLOGY
901 15TH STREET NW SUITE 230
WASHINGTON DC 20005