ATTACHMENT D--PUBLIC VERSION

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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

Affidavit of Patrick A. Garzillo

1. My name is Patrick A. Garzillo. I am the Vice President – Service Costs for Bell Atlantic. My business address is 1095 Avenue of the Americas, New York, New York 10036. I have prepared this affidavit to respond to several of the proxy model inputs that are proposed in the Commission's Further Notice of Proposed Rulemaking, CC Docket Nos. 96-45, 97-160 (rel. May 28, 1999) ("Order"). My analysis shows that several of the proposed default inputs are inconsistent with, and seriously understate, Bell Atlantic's actual forward-looking costs.

2. I earned my Bachelor of Science degree in Electrical Engineering Technology from New York Institute of Technology in 1969. I received my Masters of Science degree in Management Science from Polytechnic University in 1975. In addition, I attended training programs and educational seminars within and outside the Company including Duke University's Fuqua School of Business, University of Pennsylvania's Wharton School of Business, and Columbia

3. University. I have 28 years of experience in the telecommunications industry. During this time I have held a variety of positions of increasing responsibility in Network Engineering, Service Costs, Carrier Access Services, Special Services Operations, Retail Marketing Product Management, and Wholesale Market Development for Competitive Local Exchange Carriers with Bell Atlantic, NYNEX and the New York Telephone Companies. My current responsibilities are the development, preparation and analysis of Service Cost studies for both retail and wholesale products and services, Separations, and Part 64/CAM for the fifteen regulatory jurisdictions throughout the Bell Atlantic region.

4. I have directed the preparation of the attached Bell Atlantic Input Recommendations. These recommendations are the result of internal cost studies and submissions to state regulatory bodies in ratemaking proceedings and in proceedings to develop rates for unbundled network elements. Although Bell Atlantic continues to oppose the use of a cost proxy model to determine high-cost support, or for any other purpose, the input values in the attached Input Recommendations represent our current view of forward-looking costs and operating parameters that should be included in any proxy model approach in lieu of the Commission's proposed default values.

Switching Investment.

5. As is discussed in the affidavit of Harold Ware and Christian Michael Dippon, the Commission's proposed input formula for switch investment fails to include the higher per-line costs for adding capacity to existing switches. In addition, my analysis shows that the Commission's formula significantly underestimates the initial cost of purchasing new switches. I

performed a validation study on the Commission's estimates of $447,000 + $83 per line for host and standalone switches and $186,400 + $83 per line for remotes by comparing these formulas to actual results from an independent data set. The basis of my comparison was the digital switch data contained in the 1998 Depreciation Rate Study for Bell Atlantic - New York. For comparison purposes, I removed from the data set all switches installed more than three years prior to the reporting date. I also excluded the 1995 5ESS installations at Pearl Street (a tandem switch) and at West 18th Street (a switch installed to handle high volume terminating customers), because neither is involved in providing Universal Service. For each remaining host and remote switch, I calculated the cost of the switch as would be predicted by the Commission's proposed formulas and compared those results to the actual booked cost reported for each switch. (See Chart 1). The aggregate results of this analysis show that the actual first-installed costs associated with these switches were over 40 percent higher than the costs predicted using the Commission's estimates. Not only does the model underestimate the costs of an initial switch installation, it also ignores the life cycle treatment of switching costs that include growth additions. The model's inadequacy relating to switch growth additions is discussed in the attached affidavit of Harold Ware and Christian Dippon.

6. Unlike the approach in the Commission's order, I did not make any adjustments to the 1995 – 1997 data to adjust investment levels to 1999 dollars. In 1994, Bell Atlantic-New York (then NYNEX) entered into long-term purchase agreements with its switching equipment vendors. Those agreements effectively froze prices on switching equipment through 1998 in exchange for time and volume commitments. Since the currently contracted discounts for new switch installations are the same as those that were in effect in the 1995 – 1997 time frame, these results are representative of what we would expect to pay on a forward-looking basis and that no further

adjustments are appropriate. Notwithstanding this, any adjustments that might be deemed appropriate would be far less than the over 40 percent differential produced by the Commission's formulas.

7. This analysis shows that the Commission's proposed switch investment formulas are in no way representative of the actual forward-looking costs Bell Atlantic would expect to incur in the placement of a new digital switching units. At most, the Commission's formulas would serve as an imperfect indicator of relative cost rankings across the different areas of the country. Since they are not reflective of actual forward-looking costs, they cannot be used to determine the size of the universal service fund or to perform any type of analysis of rate levels.

Switch Port Administrative Fill

8. In paragraph 184, the Commission tentatively adopts a switch port administrative fill factor of 94%. First of all, I disagree with HAI's definition of Switch Port Administrative Fill as "the percentage of lines in a switch that are assigned to subscribers compared to the total equipped lines in a switch." Telephone companies routinely reserve a certain amount of their equipped lines to enable the proper performance of troubleshooting, maintenance and load balancing activities required to maintain and deliver an acceptable grade of service to their customers. This is what Bell Atlantic refers to as "Administrative Spare." Engineering standards/practice is to set aside 5% of equipped capacity for this purpose, meaning that only 95% of any switch's equipped lines are available for customer assignments. Any spare capacity for line growth must be added on top of the 5% administrative spare. Since Bell Atlantic is currently experiencing line growth in the area of 3.5 - 4% per year, it is easy to see that a switch designed to a 94% fill factor at cutover would exhaust in less than two months after it was put into service. Since our switches

are engineered for additions on a three year growth cycle, the maximum fill we would engineer to at cutover is 83% (5% administrative spare plus growth capacity for 3 years @ 4% per year). The HAI-assumed fill of 94 percent implies a static view of the world. It assumes that everything is optimized and costs are minimized to meet demand for a snapshot in time. Such a model produces an inflexible, unrealistic business situation in which a telephone company would be unable to meet demands for new service or maintenance unless it made new plant additions immediately and incurred extraordinary costs. There is no reasonable basis for using such an extreme fill assumption in determining the costs of providing service.

9. The switch costs used in the Commission model are based on switches installed in the early to mid-1990s. This implicitly sets the model's engineering criteria for line-to-trunk ratios at the values required by traffic in the early 1990s (generally about 6:1). With the increases in usage currently being driven by Internet traffic, a trunking ratio of 6:1 is not sufficient to provide the quality of service demanded by our customers or by regulators. The switch models provided to, and accepted by, the New York Public Service Commission in the company's unbundled network element filings contained trunk ratios that were in the area of 4:1. This reflected forward-looking design criteria and is more reasonable in light of current traffic patterns. A change in the trunking ratio from 6:1 to 4:1 equates to a 50 percent increase in trunk-related costs. Rather than freeze the cost of trunking based on per-Internet traffic patterns, I feel that the model proposed by the Commission should contain a mechanism that adjusts the cost of switching investment to reflect the increased cost of trunk ports associated with forward-looking demand. Finally, the Commission's proposed input value of $100 per port for trunk investment (Order, ¶ 187) is too low. In its proceeding on unbundled network elements, the New York Public Service Commission determined the forward-looking investment for a tandem trunk port

to be $182.91. ***See*** New York Public Service Commission, Opinion 97-2 Setting Rates for First Group of Network Elements, Case No. 95-C-0657 (issued April 1, 1997). Since the trunk port input value is being used to determine tandem switch investment, I would propose this value be substituted for the HAI default value (Order, ¶ 191).

10. The Commission proposed adjustments to the rural utilities service data to reflect the additional cost of Main Distributing Frame equipment (Order, ¶ 158), Central Office Power Equipment, (Order, ¶ 159) and terminating a remote on a host switch (Order, ¶ 160). While these adjustments were only applied to RUS cost data, I feel it is worth noting that all of the costs mentioned in these paragraphs are significantly less than those experienced by Bell Atlantic.

Outside Plant Values

11. The Bell Atlantic input recommendations shown in the attached charts for fiber cable, drop terminal, and feeder distribution interfaces (attached Charts 2-4) are based on data developed using the Engineering and Construction Records Information System (ECRIS) database. ECRIS is an operations management and control system designed to automate pricing, scheduling, tracking, performance, and construction management activities. The costs developed within the ECRIS system are based on standard time increments developed from actual performance and hourly labor costs in the respective construction areas. Work hours and associated labor cost are defined for engineering, line, and splice, by field reporting code and by plant item. Also, material price is defined by field reporting code and plant item. Information from ECRIS is specific to the geographic areas being studied and recognizes the differences in costs associated

with building plant in these areas. This information is more appropriate for cost analysis than data derived at a global level.

12. The Bell Atlantic recommendations for Serving Area Interface costs (attached Chart 4) are based on averages developed using information from the ECRIS database. These averages include right-of-way costs. Right-of-way costs were not included in the FCC's development of serving area interface costs (see Order, ¶ 136).

13. The Bell Atlantic input recommendations for Feeder and Distribution fill factors are ___ and ___ respectively (attached Chart 5). The Feeder fill factor is based on the following assumptions; (1) an objective fill of 85% at the time of relief; (2) a five year cycle between feeder relief projects; (3) a ___ annual growth rate; and (4) use of standard cable sizes. The ___ fill represents a mid-point in the five year cycle. The Distribution fill factors are based on a design criterion of __ pairs per living unit and an assumption of 1.2 lines (i.e., second lines in 20% of the households) per living unit.

14. The Bell Atlantic input recommendations for structure placement costs for normal, soft rock and hard rock terrain (attached Charts 6-8) are based on the Commission methodology that appears in Appendix D of the Order, with Bell Atlantic values substituted where appropriate. The Pole and Buried Cable placement values are based on construction activity in the areas under study and recognize the differences in costs associated with building in these areas.

15. The Bell Atlantic input recommendations for manhole costs (attached Charts 9-10) include: engineering, rights-of-way, contract work inspection, traffic control, excavation, placement,

backfill, and final resurfacing. Manholes must be sized to accommodate ultimate main, branch, and subsidiary duct requirements. Generally, manhole spacing increases as line density decreases. Manhole spacing must consider the following: location of intersecting main, subsidiary, and branch conduit; location of carrier equipment; cable reel lengths; pulling tension; physical obstructions to manholes; safe manhole environment. The Bell Atlantic recommendation for manhole spacing by density zone is based on doubling the average subsidiary conduit length. It is assumed that, on average, subsidiary conduit length would not exceed one-half of the manhole-to-manhole span length.

16. Structure sharing percentages (attached Chart 11) were developed for both poles and conduit systems based on 1996 Company data. The pole sharing percentages, which range from 38.14% for New Jersey and 54.31% for the District of Columbia, are based on pole ownership figures. These percentages also reflect revenues received and rental fees paid to other utilities for the use of their poles. The conduit sharing percentages are based on the duct miles owned by Bell Atlantic and reflect the conduit rental fees received by the company for the use of our conduit systems. The conduit sharing percentages range on the order of 71.94% for the District of Columbia and 99.41% for BA – Delaware.

17. The Bell Atlantic recommendations for digital loop carrier ("DLC") equipment (attached Chart 12) are based on an analysis of three DLC system line sizes (672, 1344, 2016) which reflect the latest vendor contracts. ***See*** Chart 12. The Digital Loop Carrier system that was used was Alcatel's Litespan 2000. Litespan uses single-mode fiber and SONET as the transmission medium between terminals. Dual mode and multiple remote configurations were used to build the model. Dual mode means that the central office terminal ("COT") can support an east and

west fiber route. This increases the capacity and reduces the costs. Since multiple remote technology was used, up to five remote terminals ("RTs") can be fed by one COT. The electronic investments were developed by taking the investment for each piece of equipment needed for the COT and RT, multiplying it by the quantity required for an entire system of that size, and adding installation to obtain a total investment. In order to produce inputs consistent with the FCC format, the appropriate plug-in investment was identified and divided by the number of lines the system could serve to provide the investment per line component. Each system was built for maximum capacity. The investments developed reflect the whole system and include cabinets, conduit and controlled environmental vaults.

18. The April 20 and June 1 versions of the FCC unit cost of 24 gauge underground cable are understated for cables in the 1200 pair to 2400 pair range when compared to Bell Atlantic data developed from the ECRIS data base. These cables are common in the copper sub-feeder and as backbone cables in the distribution cable networks. Use of the FCC values will understate the copper sub-feeder and distribution cable network investments.

I hereby swear, under penalty of perjury of the laws of the United States, that the foregoing is true and correct to the best of my knowledge and belief.

_____
Patrick A. Garzillo

Subscribed and sworn before me this ___ day of July, 1999.

My Commission expires _____.

_____
Notary Public

Chart 1

COMPARISON OF FCC SWITCH COSTS TO BA-NY ACTUALS

[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

95 Through 98 Switch Installations

	BA Booked Cost	FCC Predicted Cost	$ Difference	% Difference
Hosts	$ _____	$ _____	$ _____	___
Remotes	$ _____	$ _____	$ _____	___
Total	$ _____	$ _____	$ _____	___

Chart 2

Fiber Cable (Unit) Costs
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Size	Underground	Buried	Aerial
288	_____	_____	_____
144	_____	_____	_____
96	_____	_____	_____
72	_____	_____	_____
60	_____	_____	_____
48	_____	_____	_____
36	_____	_____	_____
24	_____	_____	_____
18	_____	_____	_____
12	_____	_____	_____
1	_____	_____	_____

Chart 3

Drop Terminal Costs
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Size	Underground	Buried	Aerial
1	_____	_____	_____
6	_____	_____	_____
12	_____	_____	_____
25	_____	_____	_____

Chart 4

Feeder Distribution Interface Costs
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Lines	Outdoor	Indoor
1	_____	_____
50	_____	_____
100	_____	_____
200	_____	_____
400	_____	_____
600	_____	_____
900	_____	_____
1200	_____	_____
1800	_____	_____
2400	_____	_____
3600	_____	_____
5400	_____	_____
7200	_____	_____

Chart 5

Fill Factors
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Density Zones (Lines per Square Mile)	Feeder	Distribution
0 – 5	_____	_____
5 – 100	_____	_____
100 – 200	_____	_____
200 – 650	_____	_____
650 – 850	_____	_____
850 – 2550	_____	_____
2550 – 5000	_____	_____
5000 – 10000	_____	_____
10000 +	_____	_____

Chart 6

Structure Placement Costs (per foot)
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Normal Terrain Costs – Feeder and Distribution

Density Zone (Lines per Square Mile)	Buried	Aerial
0 – 5	_____	_____
5 – 100	_____	_____
100 – 200	_____	_____
200 – 650	_____	_____
650 – 850	_____	_____
850 – 2550	_____	_____
2550 – 5000	_____	_____
5000 – 10000	_____	_____
10000 +	_____	_____

Chart 7

Structure Placement Costs (per foot)
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Soft Rock Terrain Costs – Feeder and Distribution

Density Zone (Lines per Square Mile)	Buried	Aerial
0 – 5	_____	_____
5 – 100	_____	_____
100 – 200	_____	_____
200 – 650	_____	_____
650 – 850	_____	_____
850 – 2550	_____	_____
2550 – 5000	_____	_____
5000 – 10000	_____	_____
10000 +	_____	_____

Chart 8

Structure Placement Costs (per foot)
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Hard Rock Terrain Costs – Feeder and Distribution

Density Zone (Lines per Square Mile)	Buried	Aerial
0 – 5	_____	_____
5 – 100	_____	_____
100 – 200	_____	_____
200 – 650	_____	_____
650 – 850	_____	_____
850 – 2550	_____	_____
2550 – 5000	_____	_____
5000 – 10000	_____	_____
10000 +	_____	_____

Chart 9

Manhole Cost

[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Duct Capacity	Normal Terrain	Soft Rock Terrain	Hard Rock Terrain
2	_____	_____	_____
4	_____	_____	_____
9	_____	_____	_____
99	_____	_____	_____

Chart 10

Manhole Spacing

[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Density Zone (Lines per Square Mile)	Spacing (in feet)
0 – 5	_____
5 – 100	_____
100 – 200	_____
200 – 650	_____
650 – 850	_____
850 – 2550	_____
2550 – 5000	_____
5000 – 10000	_____
10000 +	_____

Chart 11

Structure Sharing
(percentage of structure used by telephone company)
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Density Zone (Lines per Square Mile)	Underground	Aerial
0 – 5	_____	_____
5 – 100	_____	_____
100 – 200	_____	_____
200 – 650	_____	_____
650 – 850	_____	_____
850 – 2550	_____	_____
2550 – 5000	_____	_____
5000 – 10000	_____	_____
10000 +	_____	_____

Chart 12

Digital Loop Carrier Equipment Costs
[BELL ATLANTIC CONFIDENTIAL INFORMATION--REDACTED]

Item	Description	Cost
a2016	Fixed cost of a 2016 line fiber terminal	_____
b2016	Variable cost of a 2016 line fiber terminal	_____
a1344	Fixed cost of a 1344 line fiber terminal	_____
b1344	Variable cost of a 1344 line fiber terminal	_____
a672	Fixed cost of a 672 line fiber terminal	_____
b672	Variable cost of a 672 line fiber terminal	_____
site_prep_cost	Site preparation cost (including pad)	_____