

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

CC Docket No. 89-624

In the Matter of

Represcribing the Authorized  
Rate of Return for Interstate  
Services of Local Exchange  
Carriers

ORDER

Adopted: September 19, 1990; Released: December 7, 1990

By the Commission:

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I. INTRODUCTION

1. By this Order we prescribe for the interstate access services of local exchange carriers an authorized, overall rate of return on investment of 11.25%. Since January 1, 1987, local exchange carriers (LECs) have been authorized to earn a 12% rate of return. The new prescription will take effect January 1, 1991, and will remain in effect until it is replaced or superseded. All LECs, including those subject to price cap regulation, will be required to file revised access service tariffs reflecting this represcription.

2. The Rule Making record in this proceeding is extensive. Of 40 parties who filed Notices of Appearance, 31 have submitted one or more pleadings. The seven Regional Holding Companies (RHCs) and the United States Telephone Association (USTA) filed Initial Submissions on February 16, 1990. Nineteen parties filed Responsive Submissions March 27, 1990; the RHCs, USTA, and four other parties filed Rebuttals April 17, 1990.<sup>1</sup> Proposed Findings, filed July 2, 1990, were offered by 18 parties, and Reply Findings were filed on July 16, 1990, by 13 parties.<sup>2</sup> In addition to these pleadings, the record includes carrier responses to a Common Carrier Bureau (Bureau) data request; six monthly updates to those responses; a massive amount of material submitted in response to three discovery requests; several written *ex parte* presentations; and notices describing numerous oral *ex parte* presentations.<sup>3</sup>

3. Part 65 of the Commission's Rules establishes procedures and data requirements for LEC rate of return represcription proceedings. The rules provide a frame-

work for determining a single, or unitary, rate of return for the entire LEC industry based on data supplied by the Regional Bell Holding Companies (RHCs). Each RHC is required to file an initial rate of return submission containing three kinds of evidence of its cost of capital for interstate access service: (1) state public utility commission determinations of the cost of capital for the RHC's intrastate operations; (2) weighted average cost of capital calculations for the RHC, with the cost of equity components estimated using each of several "historical" discounted cash flow (DCF) formulas and (3) weighted average cost of capital calculations for firms having risk characteristics comparable to those of interstate access service ("comparable firms"), with the cost of equity components calculated using the "historical" DCF formulas. The rules also allow RHCs and other parties to submit other relevant evidence; in addition, the Common Carrier Bureau may require parties to submit any data or studies needed for a full and fair record.

4. In previous proceedings the Commission had concluded that the methods specified in Part 65 for choosing comparable firms and for calculating the weighted average costs of capital of such firms were not likely to produce useful estimates of the interstate access cost of capital, and that a "classic" DCF formula would in many circumstances produce more accurate results for both RHCs and comparable firms than the "historical" versions of the formula.<sup>1</sup> Therefore, at the time that we initiated this docket, we took the following two steps to assure creation of a full, fair, and useful record: First, we waived the rules governing the required comparable firms showing and invited parties to propose alternative comparable firms studies. Second, acting through the Bureau, we required the RHCs to submit with their initial rate of return submissions a series of "classic" DCF cost of equity calculations for the RHCs, for the Standard & Poors Industrials firms (the S&P 400), and for a large group of electric utilities. These data were to be updated monthly during the pendency of the proceeding.

5. The RHCs submitted all of the required evidence with their initial submissions. However, they, along with the other LEC parties to the proceeding, took the position that none of the required evidence should be relied on in reaching a decision in this represcription proceeding. They argued that state cost of capital determinations are irrelevant; that our DCF formulas are all incorrect; that the DCF method cannot be used to determine the cost of equity of the RHCs; and that the RHCs are not proper surrogates for the interstate access business. They also contended that the cost of debt and capital structure components of the RHC weighted average cost of capital calculations should not be used in determining an overall cost of capital for the LEC industry. Instead, they proposed that we use the cost of debt and capital structure of the Bell Operating Companies (BOCs). They offered a variety of alternative studies of the interstate access cost of equity. Their cost of equity estimates ranged from 14.75% to 18.25%. Their final recommendations for the overall unitary rate of return ranged from 12.25%-14.3%.

6. Non-LEC parties supported use of the required evidentiary submissions as the bases for our decision. They generally took the position that the average of the weighted average costs of capital of the RHCs, calculated using the classic DCF formula, should be considered to be the highest reasonable estimate of the cost of capital for

interstate access service. Most of these parties recommended cost of equity findings in the range 11.1%-12.5% and overall unitary rates of return between 10.25%-10.6%.

7. In this Order we analyze the cost of debt and capital structure issues separately from the cost of equity issues. From these analyses we determine an embedded cost of debt, a debt/equity ratio, and a range of reasonable estimates of the cost of equity. We combine these components to determine a range of reasonable estimates of the overall weighted average cost of capital for interstate access service. After identifying this "zone of reasonableness," we then decide, based on policy considerations, where within that zone to prescribe the unitary rate of return.

8. *Cost of debt and capital structure.* We find that the capital structure of the BOCs should not be used in determining the overall interstate access cost of capital because the capital structure of those entities is subject to manipulation by the holding companies. We therefore adopt for this represcription proceeding the approach, embodied in the Part 65 rules, of using the composite cost of debt and capital structure of the RHCs in calculating the overall unitary rate of return. We find that the embedded cost of debt is 8.8% and the capital structure is 44.2% debt:55.8% equity.

9. *Cost of equity.* We examine the LECs' objections to the Part 65 cost of equity methodologies and conclude that we must reject their core contention that DCF estimates of the RHC cost of equity cannot be used as estimates of the cost of capital for interstate access service. We accord the most weight to a series of monthly classic DCF estimates of the RHCs' costs of equity for the period January 1990-July 1990. We examine the range and variability of those estimates, both among companies and across time, and conclude that a fair estimate of the industry-wide cost of equity is somewhat above the average of the RHC estimates. We also conclude that (1) our DCF formula might somewhat understate the RHC cost of equity due to the influence of investor expectations about cellular telephone, but (2) the RHC cost of equity is probably higher than the cost of equity for interstate access service due to the participation of RHCs in riskier nonregulated activities. Taking all these factors into consideration, we conclude that the range of reasonable estimates of the LEC interstate access cost of equity is 12.5%-13.5%.

10. This finding of a range of reasonable estimates based on the DCF-estimated costs of equity of the RHCs is corroborated by the cost of equity findings contained in recent rate of return determinations by state public utility commissions. It is also corroborated by a series of equity market benchmarks derived from the DCF estimates for the S&P Industrials and for electric utilities.

11. We examine each of the comparable firms studies offered by the LECs and conclude that no weight can be given to these studies. We also accord no weight to RHC cost of equity estimates made using the capital assets pricing model (CAPM), although we do not in principle reject that methodology. We reject the contention that increases in certain interest rates since the time of our last represcription proceeding require that we increase the authorized rate of return.

12. *Overall cost of capital.* Based on our cost of debt, cost of equity, and capital structure findings, we calculate a range of reasonable estimates of the interstate access cost of capital of 10.85%-11.4%.

13. *Prescription of the unitary rate of return.* After finding the "zone of reasonableness," we address the arguments of the parties concerning the relationship between the prescribed rate of return and such factors as telecommunications infrastructure development, and competition and bypass. We conclude that, because of our concerns about infrastructure development, we should exercise our judgment to select a unitary rate of return that is toward the upper end of the zone of reasonableness. Accordingly, we prescribe an authorized rate of return for the interstate services of local exchange carriers of 11.25%.

## II. BACKGROUND

14. Prior to the divestiture of AT&T,<sup>5</sup> our practice was to prescribe a single rate of return for AT&T's interstate services.<sup>6</sup> AT&T in turn used the prescribed rate of return in calculating the compensation that the Bell Operating Companies (BOCs) and independent telephone companies received for use of their facilities in originating and terminating interstate calls. Represcription proceedings were held at irregular intervals, using traditional, trial-type hearing procedures.

15. With the AT&T divestiture and the Commission's adoption of the access charge system,<sup>7</sup> it became necessary for the Commission to develop a more streamlined represcription process that would allow the Commission to prescribe separate rates of return for AT&T and for the interstate access services of local exchange carriers.<sup>8</sup> In a multi-phased Rule Making proceeding,<sup>9</sup> the Commission adopted the current rules and procedures for represcribing, monitoring, and enforcing authorized interstate rates of return. These rules are found in Part 65 of the Commission's rules.<sup>10</sup>

16. Part 65 contains procedural rules for rate of return prescription proceedings and also prescription methodology rules. It also contains rules for monitoring and enforcing the interstate access rate of return. The Part 65 procedural rules provide for: a two-year represcription cycle;<sup>11</sup> mandatory initial data submissions by the RHCs; multiple opportunities for interested parties to participate through written submissions;<sup>12</sup> discovery in limited situations;<sup>13</sup> and additional evidentiary procedures, such as oral cross-examination of witnesses before an administrative law judge<sup>14</sup> and oral argument before the Commission in special cases.<sup>15</sup>

17. The prescription methodology rules<sup>16</sup> establish three basic methods to develop estimates of the actual cost of capital of the LECs in the provision of interstate access service. The first calculates a simple average of overall rates of return authorized by the state commissions in each state where the Bell Operating Company is the principal carrier.<sup>17</sup> The second develops a composite weighted average cost of capital for Bell Regional Holding Companies (RHCs).<sup>18</sup> The third calculates average costs of capital for groups of firms comparable in risk to an interstate access provider.<sup>19</sup>

18. The Part 65 rules determine the cost of equity component of the cost of capital for the RHCs and the comparable firms groups by using the discounted cash flow (DCF) methodology.<sup>20</sup> Part 65 requires the use of two distinct growth factors in the DCF formula, producing two costs of equity for the RHCs and the comparable firms. In the *84-800 Phase II Recon. Order*, the Commission added an additional DCF methodology, the "classic"

DCF, which uses more recent data than that specified by Part 65.<sup>21</sup> Part 65 also provides a method for calculating the average embedded cost of debt and average capital structure for the RHCs.

19. The monitoring and enforcement rules specify a fixed increment which, when added to the authorized rate of return, establishes a maximum allowable rate of return.<sup>22</sup> A monitoring period of two years is established for determining compliance with the maximum allowable rate of return.<sup>23</sup>

20. The rules also established an automatic refund mechanism which required an overearning carrier to refund the excess revenues, with interest, when that carrier's earnings exceed the maximum allowable rate of return for the earnings review period.<sup>24</sup> The automatic refund mechanism was overturned and remanded to this Commission by the United States Court of Appeals for the District of Columbia Circuit.<sup>25</sup> The court held the refund rule unreasonable based solely on a contradiction the court perceived between the refund mechanism and rate of return prescription it purports to enforce.<sup>26</sup> The court held that, because it found the refund rule could cause a carrier to earn less than the authorized rate of return, the refund rule was inconsistent with the view that the rate of return represents a minimum and maximum allowable return, a view the court attributed to the Commission.<sup>27</sup> The court, at the same time, affirmed its holding in *New England Telephone*,<sup>28</sup> which upheld this Commission's statutory authority to order refunds when a carrier has violated an outstanding rate of return prescription.

21. The *1986 Represcription Proceeding* was the first prescription proceeding conducted under the Part 65 rules. Although the Commission considered all of the evidence resulting from use of its Part 65 rules, the Commission accorded the most weight to the "classic" DCF methodology as applied to RHC data and the resulting cost of capital from use of that DCF methodology.<sup>29</sup> Based on both the quantitative analyses and other, qualitative factors, the Commission set the rate of return for interstate access at 12%.

22. The Commission subsequently proposed to amend the Part 65 prescription rules to refine certain methodologies.<sup>30</sup> We specifically noted, however, that "[t]he initial use of these procedures proved to be feasible and produced reasonable results."<sup>31</sup> Moreover, we found that "the initial utilization of the new rate of return represcription rules was successful."<sup>32</sup> The major methodological change proposed was the replacement of the comparable firms screening technique contained in §65.400 with a "cluster analysis" procedure.<sup>33</sup> Comment was also sought on carrier groupings, addition of a Capital Assets Pricing Model (CAPM), specifications to the Part 65 methodologies, refinements of the Part 65 DCF specifications, accounting methods for determining divisional cost of capital, and several procedural matters. We have not, as of this date, issued a final decision in CC Docket 87-463.

23. The Commission's rules originally contemplated a represcription every two years, with a new proceeding to begin in January of 1988.<sup>34</sup> In the *Deferral Order*, the Commission extended the 1986 rate of return prescription through 1989 in order to allow more study of the comments in Docket 87-463.<sup>35</sup>

24. After the *Deferral Order*, the filing date for the rate of return represcription proceeding was twice deferred.<sup>36</sup> In recognition of the delayed filing date and the fact that a represcription proceeding pursuant to Part 65 requires a

period of six months, the Bureau sought comment on the extension or revision of the current rate of return prescription.<sup>37</sup> At the same time the Bureau sought updated financial and economic data on which an interim rate of return could be based.

25. On December 21, 1989, this Commission adopted an interim prescription of 12% until a rate of return represcription proceeding could be completed pursuant to Part 65.<sup>38</sup>

26. This Commission initiated the present proceeding in the *Interim Prescription Order*. Although we recognized that the *Docket 87-463 Notice* refinements to Part 65 had not been completed, we found that "none of the changes proposed in the Notice, apart from the possible development of a new preferred comparable firms methodology, would have a material impact on the end result."<sup>39</sup> Moreover, we rejected suggestions by the parties that Part 65 was so flawed that we would need to complete Docket 87-463 prior to conducting a represcription proceeding. We stated: "[w]hen we began that Rule Making, it was with the explicit recognition that, while some refinements might be desirable, the Part 65 procedures had worked quite well."<sup>40</sup> Further delay of a full represcription, we found "for the sole purpose of considering the possible refinements described in the Notice of Proposed Rule Making in CC Docket 87-463 would not serve the public interest."<sup>41</sup> For purposes of the instant proceeding, we waived the comparable firms study required under Part 65 and authorized the Bureau to require submission of additional information as needed.<sup>42</sup>

27. In the four years since the 1986 Represcription Proceeding, we have proposed and adopted a price caps incentive regulation system for AT&T.<sup>43</sup> Under that plan we no longer prescribe an authorized rate of return for AT&T. We also began the process of developing a price caps plan for the LECs. In March, 1990, the Commission expanded the instant represcription proceeding to include the possible prescription of an automatic stabilizer and a sharing device as regulatory backstops to the LEC price caps plan.<sup>44</sup>

### III. THE COST OF CAPITAL FOR LEC INTERSTATE ACCESS SERVICE

#### A. Capital Structure and the Embedded Cost of Debt.

##### 1. Calculations for RHCs using Part 65 method.

28. Part 65 of the Commission's Rules requires the RHCs to calculate and submit the percentages of debt and equity in their capital structures and their embedded cost of debt.<sup>45</sup> The average of the RHCs' submissions produces a capital structure with 44.2% debt and 55.8% equity, and an embedded cost of debt of 8.8%. The data supporting these calculations is summarized in Appendix C.

##### 2. Positions of the parties.

29. The LECs contend that only the capital structure and cost of debt of regulated telephone companies is relevant. They argue that the Part 65 focus on the total company capital structure includes capital associated with the RHCs' nonregulated businesses. The LECs found the average capital structure for the RHCs' telephone operat-

ing companies to be 40.5% debt and 59.5% equity, and the embedded cost of debt to be 8.8%.<sup>46</sup> The data supporting the LEC calculations is summarized in Appendix C.

30. The Maryland PC counters that the capital structure and cost of debt of an operating company are totally under the control of the parent RHC and can be manipulated to give the appearance that the regulated operation has a more costly capital structure (less debt and more equity) than that of the overall RHC. Maryland PC argues that Bell Atlantic, for example, has structured its operations to make it appear that its high risk nonregulated operations have a 87% debt and 13% equity capital structure and its low risk regulated operations have a 39% debt and 61% equity capital structure.<sup>47</sup> Bell Atlantic attributes the disparity between its overall capital structure (50% debt and 50% equity) and its regulated operating companies (39% debt and 61% equity) to its leveraged employee stock ownership plan (ESOPs) and to unique capital structure requirements of each of its nonregulated subsidiaries.<sup>48</sup>

#### 3. Discussion/Conclusion.

31. As Maryland PC points out, the capital structures of utilities that are owned by holding companies can be controlled by the parent company. For this reason, regulatory commissions have often been cautious about using, for purposes of calculating a weighted average cost of capital, the debt/equity ratio of a subsidiary.<sup>49</sup> Traditional solutions to this problem include using the capital structure of the holding company in place of that of the subsidiary, and using a hypothetical capital structure. Part 65 combines these approaches by using a composite of the actual capital structures of the RHCs to compute a weighted average cost of capital for the interstate access operations of all LECs.

32. The LECs argue that the RHC capital structures should not be used because some RHC debt is related to nonregulated activities that have different capital needs than regulated telephone service. We acknowledge that some RHC debt supports nonregulated activities. However, RHC capital structures also include holding company debt that supports regulated operations and that would be excluded from our determinations if we adopted a capital structure based on BOC data alone.

33. An examination of financial statements at both the RHC and BOC level shows that two of the RHCs, Bell Atlantic and US West, account for most of the difference between the RHC and BOC industry wide debt/equity ratio. Bell Atlantic's holding company ratio is 49.7% debt and 50.3% equity,<sup>50</sup> while its operating company ratio is 40.0% debt and 60.0% equity.<sup>51</sup> Over ten percent of the holding company's long-term debt is attributable to two leveraged employee stock ownership plans (ESOPs).<sup>52</sup> US West's holding company ratio is 52.5% debt and 47.5% equity,<sup>53</sup> while its operating company ratio is 40.9% debt and 59.1% equity.<sup>54</sup> As with Bell Atlantic, the difference is largely attributable to the leveraging of an ESOP on the holding company's books.<sup>55</sup> These ESOPs benefit all RHC employees, including regulated telephone company employees that make up over 90% of the total RHC workforce. The LECs' methodology inappropriately would exclude all of this debt from the capital structure used in determining the weighted average cost of capital for the interstate access industry.

34. Neither our method of determining a capital structure, nor the method advocated by the LECs, produces an absolutely precise representation of the actual proportions of debt and equity that currently support regulated interstate access services. In light of the evidence cited in the previous paragraph, we believe that both our method and the LEC method are acceptable methods that produce, at this time, debt/equity ratios well within the limits traditionally considered acceptable for regulated telephone operations. However, adoption of the BOC capital structure for purposes of determining the unitary rate of return in this proceeding would provide an undesirable incentive for the RHCs to manipulate the capital structures of their operating company subsidiaries in the future in order to produce a higher proportion of equity and thus a higher overall cost of capital for regulated operations. For these reasons, we conclude that the Part 65 methodology is appropriate to establish the proportions of capital structure and embedded cost of debt. The debt/equity ratio, therefore, in this proceeding is established at 44.2% debt and 55.8% equity and the embedded cost of debt is 8.8%.

## B. Cost of Equity: The Record.

### 1. Summary of required showings and submissions.

#### a. DCF Calculations for RHCs - Part 65 "historical."

35. The DCF formula for the cost of equity capital states generally that

$$K_e = D/P + G, \text{ where}$$

$K_e$  = cost of equity

D = annual dividend on a share of common stock

P = price of a share of common stock

D/P = dividend yield on a share of common stock

G = long-term growth rate of dividends

36. Part 65 requires each of the RHCs to submit estimates of its cost of equity calculated using two special "historical" versions of this formula. Using the first formula,  $K_{e1}$  is to be calculated as  $D/P + G_1$ ; where D is the average annual dividend during the two calendar years that precede the rescription filing, P is the average daily price of the RHC's common stock during each trading day during the two calendar years that precede the rescription filing, and  $G_1$  is the annual rate of growth in dividends derived from the slope of the ordinary least squares linear trend line of quarterly dividends that were declared during the two calendar years that precede the rescription period. Using the second formula,  $K_{e2}$  is to be calculated as  $D/P + G_2$ ; where D and P have the same definitions as above, and  $G_2$  is the simple average of the Institutional Brokers Estimate System (IBES) median long term growth rate estimates of earnings during the two calendar years that precede the rescription filing.<sup>56</sup>

37. The average of the "historical" DCF estimates of the cost of equity ( $K_e$ ) and weighted average cost of capital (WACC) of the RHCs are as follows:

	$K_{e1}$	$K_{e2}$	WACC1	WACC2
Ameritech	13.98%	11.55%	11.49%	10.07%
Bell Atl	11.21%	11.96%	9.91%	10.29%
BellSouth	12.70%	12.22%	11.24%	10.95%

NYNEX	13.55%	12.15%	11.34%	10.56%
PacTel	10.25%	12.71%	9.89%	11.34%
SWB	9.27%	11.87%	9.18%	10.69%
US West	10.97%	11.85%	9.88%	10.30%
Average	11.70%	12.04%	10.42%	10.60%

#### b. DCF Calculations for RHCs - "classic" DCF

38. The January 5, 1990 Order required that the RHCs file estimates of their costs of equity using the "classic" DCF formula adopted in the *Phase II Reconsideration*. Under the "classic" formula, D is the expected annual dividend for the next year; P is the current share price; D/P is the current yield; and G is the currently-expected long-term growth rate, represented in our formula by the current IBES median long-term growth estimate.

39. The RHC estimates from the period January, 1990 to July, 1990 are as follows:

	Jan	Feb	Mar	
Ameritech	11.53%	11.83%	11.49%	
Bell Atl	12.14%	13.06%	12.55%	
BellSouth	11.81%	12.30%	12.17%	
NYNEX	11.25%	11.96%	11.75%	
Pactel	12.07%	12.76%	12.65%	
Southwestern	11.66%	12.04%	11.84%	
US West	11.53%	11.93%	11.76%	
Average	11.71%	12.27%	12.03%	
	Apr	May	Jun	Jul
Ameritech	11.41%	11.52%	11.87%	12.19%
Bell Atl	12.43%	12.67%	12.87%	13.13%
BellSouth	12.07%	12.01%	12.09%	12.29%
NYNEX	12.72%	13.61%	13.02%	13.54%
Pactel	12.74%	12.66%	12.68%	12.92%
Southwestern	11.76%	11.87%	12.12%	12.40%
US West	11.63%	11.66%	11.61%	11.71%
Average	12.11%	12.28%	12.32%	12.60%

#### c. State cost of capital determinations.

40. The LECs submitted, as required by Part 65, all of the state cost of capital determinations applicable to their operating companies. In some cases they also submitted adjustments required to conform the state determinations to this Commission's rate of return policies. The averages of the state authorized overall rates of return are as follows:<sup>57</sup>

Without adjustments:	11.39%
Adjusted:	11.66%

#### d. Comparable firms

41. Section 65.400 of the Rules describes information filing requirements and screening methodologies for the selection of sets of firms that have risk characteristics that are comparable to interstate access service.<sup>58</sup> The requirements of §65.400 have been waived for purposes of this rescription proceeding.<sup>59</sup> Expert witness statements offering alternative comparable firms analyses, and other studies of the interstate access cost of equity were submitted by the parties and are described in III. B.10-13 below. The following table summarizes the results of these studies:

	Recommended Cost of Equity
Phillips (Ameritech)	15.50%
Linke (Ameritech)	15.50-15.70%
Vander Weide (Bell Atlantic)	15.00%
Carleton (BellSouth)	14.80%
Carleton (NYNEX)	14.85%
Cogswell (NYNEX)	14.75-16.00%
Avera & Fairchild (Southwestern)	14.25-15.50%
Siegel (US West)	15.90%
Clinger (Florida Citizens)	10.50-12.20%
Copeland (Colorado CC)	12.50%
Miller (Consumer Coalition)	11.50-11.90%
Winter (GSA)	11.70%
Johnson (Indiana/Ohio CC)	11.20-12.70%
Kahal (Pennsylvania OCA)	11.00-12.00%
Klein (Tennessee PSC)	12.80%

**e. Equity market benchmarks**

42. Section 65.102(a) of the Rules provides that the Chief, Common Carrier Bureau, "may require from carriers providing interstate services, and from other participants submitting rate of return submissions, data or studies that are reasonably calculated to lead to a full and fair record"<sup>60</sup> in a rescription proceeding conducted under Part 65. Pursuant to this section, and to the direction of the Commission,<sup>61</sup> the Bureau has required carriers subject to the mandatory filing requirements of §65.201 to submit cost of equity data from 1980 to the present for the companies in the Standard and Poor's list of 400 Industrial Companies (S&P 400) and for a group of large electric utility companies, and from 1984 to the present for the RHCs.<sup>62</sup> These data were to be updated monthly until the issuance of a Sunshine Notice listing this docket on the agenda for a Commission meeting.

43. The data request required submission of two exhibits. Exhibit B was to contain all of the underlying data needed to make DCF cost of equity calculations for all of the companies covered by the request. Exhibit A was to organize these data as follows: The S&P 400 group and the electric group were to be screened to remove (1) companies that did not pay quarterly dividends; (2) companies that did not have at least 5 analyst estimates of long-term growth reported by IBES; (3) companies with long-term growth estimates greater than 15%; and (4) companies with DCF estimates lower than the interest rate on 10-year treasury bills. The companies were then to be ranked in descending order by DCF estimate, with the median DCF estimate calculated for each quartile. A simple average estimate was to be calculated for each of the three groups. The results of this data request are summarized, in graphic and tabular forms, in Appendix E.

**f. Telecommunications plant investments and sources and uses of funds.**

44. The Bureau *Data Request* also required carriers subject to the mandatory filing requirements of §65.201 to submit for each operating company specified historical and projected data concerning deployment of various categories of switching equipment; deployment of various

categories of transmission facilities; construction programs; and sources and uses of funds. Tables summarizing these data are contained in Appendix F to this Order.

**2. The Parties' Recommended Returns on Equity ROE and Recommended Overall Rate of Return (ROR).**

45. The following table summarizes the final recommendations of those parties that filed proposed findings addressing cost of capital issues:

	ROE	ROR
Ameritech	15.50%	13.00%
Bell Atlantic	15.00%	12.40%
BellSouth	14.80%	12.50%
NYNEX	14.3-15.4%	12.25-13%
Pactel	16.20%	13.20%
Southwestern Bell	15.00%	12.50%
US West	15.90%	12.90%
USTA	14.75-18.25%	12.3-14.3%
GTE		13.00%
Rochester		12.30%
ARINC		< 12.00%
Consumer Coalition	11.5-11.9%	10.60%
GSA	11.70%	10.49%

**3. Objections to Historical DCF**

**a. Issue**

46. Part 65 of the Commission's rules sets forth two versions of the DCF method, both of which use 2-year historical averages for the stock price, dividend, and growth elements of the DCF formula.<sup>63</sup> The LECs object to the historical nature of the Part 65 DCF method.

**b. Positions**

47. The LECs object to the Part 65 DCF method on the bases that it uses stale data which yield a downward biased cost of equity<sup>64</sup> and is inconsistent with the expectational nature of the true "classic" DCF.<sup>65</sup> The LECs also contend that the Part 65 DCF method was ignored by the Commission in the *1986 Rescription Proceeding*<sup>66</sup> and was to be refined in the CC Docket 87-463 proceeding.<sup>67</sup> No party to this proceeding advocates use of the Part 65 DCF method.

**c. Discussion**

48. We agree with the LECs' criticisms of the Part 65 use of historical data. The Part 65 formulas were an attempt to maximize the certainty with which the inputs to the DCF formula could be determined. Experience with the formula in two rescription proceedings demonstrates, however, that this approach has not produced reliable results.<sup>68</sup> Averaging the inputs to the DCF formula over such an extensive period yields estimates of the cost of equity capital that neither fully reflect current market requirements nor reveal the historical trend in market requirements. We now believe that the "classic" DCF formula using expectational data is more in accord with underlying theory. We shall therefore accord no weight to the DCF estimates produced in accordance with the Part 65 "historical" DCF formulas.

#### 4. Objections to state cost of capital determinations.

##### a. Issue

49. Part 65 requires RHCs to submit as evidence in rate of return represcription proceedings state cost of capital determinations applicable to their operating companies. LECs object to use of state-determined costs of capital in the prescription of a unitary rate of return for interstate access services.

##### b. Positions

50. The LECs take the position that state rate of return prescriptions should be given no weight. They argue that the state prescriptions provide no useful information because they are not based upon the most recently available data, because not all differences in ratemaking methods are known or can be adjusted to make the prescriptions comparable and because interstate access and state regulated services have different risks. The LECs observe that the adoption of regulatory reform in many states further complicates the interpretation of state prescriptions. Finally, the LECs argue that there is an improper circularity of logic if a commission considers what other commissions have prescribed.<sup>69</sup> The Tennessee PSC argues that the older state prescriptions overstate the current cost of capital.<sup>70</sup>

51. The Consumer Coalition maintains that the state rate of return determinations provide a "reality check" on the cost of equity estimates submitted by the parties and that the more recent orders could at least serve as an overview of what other commissions are finding as to LEC capital costs.<sup>71</sup>

##### c. Discussion

52. We are well aware of the infirmities, both potential and real, of the state cost of capital determinations on the record. The arguments raised by the parties against any use of state determinations have been considered and rejected in previous proceedings.<sup>72</sup> The fact that different methodologies are employed by some states does not render them worthless for our purposes. We recognize these differences by allowing the LECs to adjust the state authorized rates of return for compatibility with this Commission's methods. The LECs' concern over the circularity of giving any weight to the decisions of other regulatory commissions is misplaced in a proceeding that has as substantial a record as this one. Similarly, we believe that the LECs overstate the dangers of misinterpretation in considering the rates of return prescribed by states that have also adopted incentive regulatory plans. We have reviewed the texts of the state rate cases in which such plans were adopted, and it appears that most states have made conventional cost of equity determinations immediately prior to, or in conjunction with, the adoption of incentive regulation plans.

53. In any case, we agree that a simple average of state cost of capital determinations, some of which are the same as the ones submitted over four years ago to the record of our last represcription proceeding, is not entitled to great weight as an estimate of the current cost of capital. We find, however, that the most recent state decisions should be given weight as a check on the reasonableness of the current cost of equity figures reached by all the parties, and as an indicator of trends. We also find that the state cost of equity determinations are more

useful than the overall costs of capital because the cost of equity determinations of different commissions can be compared without the necessity of making adjustments for differing rate base and capital structure methodologies. For those ten state decisions occurring during 1989 and 1990, the average state determined estimated cost of equity is 12.94%.<sup>73</sup>

#### 5. Objections to Use of Equity Market Benchmark Data

##### a. Issue

54. The LECs contend that, in reaching conclusions in this represcription proceeding, the Commission should disregard the equity market data submitted in response to the *Data Request Order*.

##### b. Positions

55. USTA, Pactel, and Southwestern object to the screens used in the *Data Request Order* to eliminate companies for which the DCF results could be presumed unreliable. These parties argue that the data is improperly skewed downward because companies with growth rates in excess of 15% were, without any articulated reason, excluded from the quartile rankings of the S&P 400. USTA also claims that companies whose estimated costs of equity do not exceed their own debt costs should have been excluded from consideration.<sup>74</sup> The LECs also contend that the data was improperly averaged, and that "to provide any meaning in the process" the DCF results must be weighted by the firms' market values.<sup>75</sup>

56. The LECs also raise, with reference to the data request, their objections to any consideration of electric utility companies as possible surrogates for the LEC interstate access business. Finally, they argue that the equity market data submitted in response to the *Data Request Order* cannot be used in this represcription proceeding because the LECs have not had sufficient opportunity to comment upon its contents or the manner in which it will be used.

##### c. Discussion

57. In the *Interim Prescription Proceeding* the LEC industry argued that the costs of equity for the S&P 400 firms constituted an appropriate benchmark against which the Commission could assess other estimates of the cost of equity.<sup>76</sup> Other parties argued that we should also give consideration to information about the costs of equity of electric utilities. The Commission did not reach conclusions on these issues in the *Interim Prescription Order*,<sup>77</sup> and the parties, as expected, have renewed their contentions in the instant proceeding. A major purpose of the data request was to assure that all participants in the instant represcription proceeding, including this Commission and its staff, would have access to the underlying data necessary to evaluate these proposed benchmarks.<sup>78</sup>

58. The Bureau's apparent purpose in screening out from Exhibit A the DCF estimates for companies with growth estimates above 15%, and for companies with DCF estimates below the risk-free interest rate, was to remove from consideration any estimates that were improbably high or improbably low. Upon inspection of the underlying data contained in Exhibit B, we agree with the LECs that the removal of companies with high growth rates produces a significant and inappropriate downward bias to the Exhibit A data. We also find that it might have

been more appropriate to have used the average single A corporate bond rating, rather than the risk-free rate, as a screen for improbably low estimates. We have, accordingly, removed the upper screen from the data, and reset the lower screen. We have recalculated the quartiles, median estimates, and overall averages for the S&P 400 data in Exhibit A. The results of these recalculations are reflected in the charts in Appendix E.

59. We disagree with the LEC contention that the S&P data is meaningless unless market weighting is applied to the data. Market-weighting might be desirable if we were attempting to calculate a cost of equity estimate for an S&P 400 "market basket" portfolio of stocks or if we were interested in determining the historical earned return on equity of such a portfolio. However, we do not intend to use the S&P data for these purposes. Rather, we view the S&P 400, or, more properly, the subset of the S&P 400 for which sufficient data is available to make DCF calculations, as simply a large group of publicly-traded companies that is roughly representative of the universe of nonregulated firms. By ranking these firms in order of their DCF estimates, we can get a sense of what the investor required returns are for firms with average, below-average, and above average costs of capital. Viewed in this way, each firm's DCF estimate is of equal value as a test of the cost of equity, and there is no reason to afford greater weight to the estimates of the companies with the largest market values.<sup>79</sup>

60. We reject the contention that we cannot use the data submitted in response to the *Data Request Order* because parties have had insufficient opportunity to comment upon it. First, these data were first submitted with the initial submissions on February 16, 1990. All parties have thus had ample opportunity to comment upon the data, both in the initial round of comments and in their proposed findings. Second, the parties have in fact commented upon the data submission, and we have responded herein to their criticisms.

## 6. "Classic" DCF Specification Issues

### a. Stock price

#### i. Issue

61. One of the components in the DCF formula is the price of the company's stock, which is divided into the expected dividend to produce the stock's yield. Although the "classic" formula requires a current stock price, it is usually desirable to average the price over some relatively short period of time, thus avoiding reliance on a single day's stock price. In the *1986 Represcription Order*, the Commission made "classic" DCF estimates that computed the stock price over two different periods: a 90-day average and the 10 days preceding and 10 days following the release of the pertinent IBES forecast.<sup>80</sup> The carriers' submissions in response to the *Data Request Order* provide the average of monthly highs and lows for both the quarterly estimates for the 1980-1988 period, and for the monthly estimates beginning January 1989.

#### ii. Positions

62. The parties used varying time periods in their DCF studies filed herein. In his DCF analysis, Consumer Coalition witness Miller relied on the average monthly stock prices for the fourth quarter 1989 and a March 9, 1990

"spot" stock price.<sup>81</sup> Vander Weide recommends averaging over a three-month period because investment analysts usually change their forecasts on a quarterly basis.<sup>82</sup>

#### iii. Discussion

63. We have before us in this proceeding monthly DCF estimates for the RHCs for seven consecutive recent months. The stock price used for each monthly estimate is the average of the monthly high and low stock prices. We find that these monthly periods are sufficiently long to eliminate the possibility that a particular price may be an aberration, but recent enough to assure that data from past periods do not obscure trends. We therefore adopt for purposes of this represcription the approach taken by the carriers in response to the *Data Request Order*.

### b. Expected dividend

#### i. Issue

64. The other component of yield in DCF analysis is the annual dividend. The "classic" DCF formula requires use of an expected dividend because investors base their decisions in part on what they expect the dividend will be during the coming year, not simply on what the dividend is at the time the stock is purchased. In the *1986 Prescription Order*, the Commission made "classic" DCF estimates using two different methods of computing the expected dividend: (a) the current annualized dividend grown by the IBES growth rate; (b) the current annualized dividend grown by one-half the growth rate, to account for the fact that there are timing differences among the companies as to their dividend increases.<sup>83</sup> The *Data Request Order* herein required the carriers to compute the expected dividend by growing the annual dividend by one-half the growth rate. LECs argue that the full growth rate should be used.

#### ii. Positions

65. The Consumer Coalition urged the use of the annual dividend grown by one-half the growth rate.<sup>84</sup> Its witness Miller states that this method is more accurate than growing the dividend by the full growth rate, which he estimates adds 15 to 20 basis points to the cost of equity. The BOCs' witnesses in some cases, however, used the full growth model.<sup>85</sup> USTA criticized the one-half growth model because, in its view, that model assumes that the growth in the first annual period is one-half the expected long term growth.<sup>86</sup>

#### iii. Discussion

66. If we were to determine the dividend yield at a point during the year just before the carriers were to announce a dividend increase, it might be accurate to grow the dividend rate by the full year's expected growth. That is not the case here, however, because the BOCs' dividends have been increased during the past six months and the stock prices we use are based on those higher dividends. Growing the rate by the full amount now would overstate estimated annual growth. We believe that growing the dividend by one-half of the annual growth rate more accurately reflects what investors expect to be paid in the coming year. The BOCs' preferred method, full growth applied to a dividend that was increased within the past six months, would provide a windfall to investors due to dividend timing.

### c. Expected growth

#### i. Issue

67. The expected growth element is always the most debatable part of the DCF formula. Ideally, the "G" in the DCF formula represents the growth in dividends, earnings, and stock price that investors expect to experience if they hold a stock indefinitely. Since we cannot directly observe the collective expectations of investors, however, the growth element must be estimated. There are many possible ways to estimate growth, including extrapolation from historical growth trends and fundamental analysis of a company's prospects. In recent years many rate of return expert witnesses have come to use the analysts' consensus long-term growth estimates published by Institutional Brokers Estimate Service (IBES) as a reasonable approximation of the growth expected by investors. The Commission adopted the IBES growth estimates for use in the "classic" DCF formula in its 1986 prescription.

#### ii. Positions

68. The LECs generally accept IBES growth estimates for use in DCF calculations for comparable firms groups and for broadly-representative groups such as the S&P 400.<sup>87</sup> They contend, however, that the IBES estimate produces downwardly-biased results when the formula is applied to the RHCs. Non-LEC parties generally accept use of IBES, although some offer cost of equity analyses using other growth estimates.<sup>88</sup>

#### iii. Discussion

69. We continue to view the IBES growth estimates as appropriate inputs into the DCF formula. The LEC view that IBES produces incorrect results when applied to the RHCs is addressed in section III. C.8, below.

### d. Quarterly Compounding

#### i. Issue

70. The issue has arisen in previous Commission rate of return proceedings whether the quarterly dividend should be compounded (thereby yielding a higher annualized dividend component) to account for the fact that dividends are paid quarterly rather than annually. The Commission most recently addressed this matter in the *Phase II Reconsideration Order*, and determined that compounding the quarterly dividend should not be incorporated in the DCF formula. The Commission noted the carriers' arguments favoring compounding -- that they should be allowed to use an annual dividend higher than the sum of the quarterly payments because they do not have use of the dividends over the entire year.<sup>89</sup> The Commission found three reasons why compounding is not necessary in our rate of return proceedings: (a) compounding is reflected in the revenue requirement due to the Commission's use of a mid-year rate base; (b) the adjustment adds a complexity that is not offset by increased accuracy; and (c) it is not clear that the investment community uses a quarterly-compounding growth model and that such a model affects the market price.<sup>90</sup> In the 1986 *Prescription Order*, the Commission noted these shortcomings in the carriers' arguments for compounding and declined to make a specific adjustment to reflect dividend timing; rather, the Commission stated that it

would take such matters into account by adjusting upward the quantitative result produced by the DCF formula.<sup>91</sup> The *Data Request Order* in this proceeding did not contemplate quarterly compounding of the dividend.

#### ii. Positions

71. The carriers generally advocate the quarterly-compounding adjustment.<sup>92</sup> Briefly stated, proponents of compounding assert that the DCF formula must recognize the time value of dividend payments, and it is clear that the required equity return would be higher if the company paid a single, annual dividend at the end of the year.<sup>93</sup> The Consumer Coalition and state representatives generally oppose compounding.<sup>94</sup> They argue that quarterly payment of dividends in fact overstates, rather than understates, a carrier's revenue requirement,<sup>95</sup> that compounding fails to reflect that the carrier receives its return dollars continuously rather than with a one-year lag,<sup>96</sup> and that carriers earn the benefits of compounding when they, as the BOCs, retain earnings.<sup>97</sup>

#### iii. Discussion

72. The parties favoring compounding do not directly counter the considerations noted above that led the Commission to reject that model after full consideration of the issue in CC Docket 84-800. Although we acknowledge that the experts are divided as to the technical effect of using an annual model, we remain convinced that the dividend yield component of the DCF is not understated because the quarterly dividends are not compounded. As we noted in the *Phase II Reconsideration Order*, a key consideration in deciding to adjust the dividend to account for the timing of payments is whether the investment community uses that model in a way that affects the BOCs' market prices. There is no such evidence in this record. The rate of return that we prescribe herein is higher than a simple quantification of the DCF formula, to reflect (as we did in the 1986 *Prescription Order*) that there are a number of factors that cannot be quantified. That decision, coupled with our use of a mid-year rate base, assures that investors do not receive an unduly low stream of revenues because of timing differences. Moreover, as witness Carleton notes, the difference in computations is minor -- too minor, in our view, to attempt to codify a theoretical, complex adjustment that is disputed by the experts.

### e. Flotation

#### i. Issue

73. When a company issues stock, it incurs out-of-pocket expenses associated with getting the stock into the hands of investors. The company may also experience another, indirect cost -- a temporary reduction in the market value of the stock due to the issuance of additional shares. These are described collectively as flotation costs. In the *Phase II Order*, the Commission considered whether and to what extent to include an allowance for flotation costs in determining the cost of equity. After reviewing many comments on the issue, the Commission concluded that a one-time upwards adjustment of ten basis points on the cost of equity was warranted.<sup>98</sup> The Commission affirmed this decision on reconsideration.<sup>99</sup>

## ii. Positions

74. The LECs advocate that the DCF calculation include an allowance for flotation: implementation of their recommendations would add increments of 30-60 basis points to the cost of equity. The BOCs assert that the allowance is necessary even though the carrier may not plan to issue any stock during the year that the rate of return is to be effective.<sup>100</sup> Several BOCs estimate a flotation cost of 5% based on their experience in raising equity capital.<sup>101</sup> The Consumer Coalition and state representatives generally oppose including a flotation allowance in the DCF computation. They assert, for example, that the carriers have not demonstrated that flotation costs were actually incurred but not recovered or that equity issues are planned.<sup>102</sup> The Consumer Coalition states that utility investors know that equity issuance costs are not amortized and that this factor is reflected in the stock prices. Therefore, in their view, any adjustment for flotation would provide stockholders with a windfall.<sup>103</sup>

## iii. Discussion

75. The carriers' arguments in favor of an adjustment for flotation costs are essentially those that we considered and rejected in CC Docket 84-800. Accordingly, we will not include an adjustment for flotation in our DCF computation. It is undisputed that the RHCs are not issuing stock at this time, and there is no evidence (other than theoretical computations such as that of Ameritech witness Linke) that past costs remain unrecovered. Therefore, the carriers are not able to satisfy the requirement in the *Phase II Reconsideration Order* that they demonstrate the need to recover actual costs, not simply rely on general assertions.<sup>104</sup> Moreover, it does not appear that our treatment of flotation costs has adversely affected the carriers stock prices -- indeed, their market to book ratios are nearly 2:1. Thus, there is no credible evidence that our procedure is driving the LECs' market value to below book value. If the carriers are genuinely concerned because they do not recover the costs of issuing stock in the same way that they recover the costs of issuing debt, their recourse is to seek a change in our prescribed accounting system.

## 7. Objections to Use of RHCs as Surrogates

### a. Issue

76. In order to prescribe an interstate access rate of return, we must estimate the cost of equity for LEC-provided interstate access. Because it is not actually possible to buy stock in the LECs' interstate access operations, surrogate firms must be chosen to represent the interstate access business in any cost of equity analysis.<sup>105</sup> The surrogate firms should have risk characteristics similar to those of interstate access. In the Docket 84-800 Rule Making the Commission adopted the Regional Bell Holding Companies (RHCs) as a surrogate group of firms for the interstate access industry.<sup>106</sup> The Commission stated that the RHCs would be good surrogates because they were "relatively 'pure play' (*i.e.*, over 90% of their revenues are derived from regulated telephone activities), their stock is widely held and actively traded, and a substantial number of financial analysts track their performance."<sup>107</sup> In the instant proceeding the parties debate whether, in light of RHC diversification into nonregulated activities, an RHC's cost of equity, which reflects inves-

tors' perception of the risks of all of the RHC's lines of business, is still a reasonable approximation of the cost of equity of interstate access services.

### b. Positions

77. The LECs present several arguments against the use of the RHCs as surrogates for the interstate access industry. The LECs conclude that any application of the DCF formula to RHC data would result in a downward bias of LEC cost of capital.<sup>108</sup> First, the LECs contend that the RHCs are no longer "pure play" telephone companies because of their diversification into lines of business with different risks from the provision of interstate access; they are therefore, no longer suitable surrogates.<sup>109</sup> Bell Atlantic claims that the Commission, in CC Docket 87-463, recognized that the RHCs were no longer appropriate surrogates when the Commission stated that the Part 65 rules needed to focus on the cost of capital of regulated operations, rather than on cost of capital of the whole company.<sup>110</sup>

78. Second, Bell Atlantic, through its expert, Dr. James H. Vander Weide, specifically argues that RHC diversification creates a "portfolio effect", thereby making the risk of the RHC lower than its LECs.<sup>111</sup> Vander Weide reached his conclusion by examining the correlation coefficients of investor returns achieved on publicly-traded companies similar to those included in the Bell Atlantic portfolio.<sup>112</sup> He characterizes the correlation between the three telephone companies and the nonregulated companies as low, even negative in some cases, indicating that a large degree of diversification potential exists in Bell Atlantic's portfolio; *i.e.*, Bell Atlantic's diversification creates a "portfolio effect".<sup>113</sup> Vander Weide then compares the operating income variability for Bell Atlantic and its LECs to show the impact of the "portfolio effect" on the riskiness of Bell Atlantic. The results of his comparison indicate that the weighted average of the operating income variabilities of the LECs were greater than the operating income variability of the Bell Atlantic RHC.<sup>114</sup>

79. Third, the LECs argue that the DCF formula should not be applied to RHC data because the growth rates and business risks of the RHCs' diverse entities violate critical assumptions of the DCF model.<sup>115</sup> Finally, a few LECs maintain that use of the RHCs as surrogates is inappropriate because a portion of their activities is regulated, and thus, use of RHC data would create circularity into the regulatory process.<sup>116</sup>

80. Non-LEC parties maintain that investors perceive local exchange service as the RHCs primary business, and therefore, RHCs remain excellent surrogates for determining the cost of capital for interstate access service.<sup>117</sup> These parties also contend that RHC business risk is greater than that of its telephone operating companies because of RHC diversification into unregulated businesses.<sup>118</sup> In response to the LEC argument that diversification, due to different growth rates among business lines, makes it impossible to apply the DCF formula to RHC data, Consumer Coalition states that the LECs' argument fails to account for the LECs' use of DCF to other firms which also have different lines of business with varying growth rates.<sup>119</sup>

81. The non-LEC parties also criticize Bell Atlantic's "portfolio effect" argument. Maryland PC states that the income variability of Bell Atlantic's telephone subsidiaries during the period analyzed by Vander Weide is due solely to the rate reductions made to reflect the lowering of federal income tax rates.<sup>120</sup> Consumer Coalition's expert,

Ralph E. Miller, objects to Vander Weide's analysis on several grounds. Miller argues that, absent a perfect correlation between Bell Atlantic's subsidiaries, summing any measure of the subsidiaries business operations, as Vander Weide did in reaching the Bell Atlantic operating income variability, is likely to produce a lower variability than the average of the separate variabilities.<sup>121</sup> He contends that this effect proves nothing about Bell Atlantic's nonregulated subsidiaries. Moreover, Miller asserts that operating income variability is not an appropriate risk measure, and that a more valid measure of investment risk would reflect the variability of returns rather than the variability of the absolute level of income.<sup>122</sup> Miller also argues that some of the risk criteria used by Vander Weide in his comparable firms analysis for USTA show RHC nonregulated activities increasing investment risk.<sup>123</sup> He contends that the high sales growth rates and betas associated with cellular are exactly what Vander Weide's USTA analysis would interpret as high risk. He notes that the real estate and leasing activities of the RHCs are more highly leveraged than the BOCs and thus add to the overall debt risks of the RHCs.<sup>124</sup> Consumer Coalition also finds support for its position from NYNEX's witness, Carleton:

Under contemporary financial principles and evidence, investors in shares of diversified unregulated companies realize neither risk diversification benefits nor costs from corporate diversification because investors can do the portfolio risk diversification for themselves.<sup>125</sup>

In rebuttal, Vander Weide states that Miller's perfect correlation criticism is invalid because the operating income variability of the combined Bell Atlantic LECs still exhibits much higher variability than that of Bell Atlantic as a whole.<sup>126</sup> Bell Atlantic also argues that the correlation analysis of the three telephone companies with the selected nonregulated businesses proves the "portfolio effect" exists.<sup>127</sup>

82. Non-LEC parties also argue that, even if the "portfolio effect" exists, the benefits from such diversification should not all flow to the nonregulated companies; some benefit should pass to the ratepayers.<sup>128</sup> In rebuttal, the LECs contend that any benefits from the "portfolio effect", *i.e.*, lower business risk, should not flow through to the interstate access ratepayers because the Commission has stated that the cost of capital for telephone service should be based on telephone service alone.<sup>129</sup>

### c. Discussion

83. Although we recognize that the RHCs are more diverse today than they were at the time of the 1986 *Rescription Proceeding*, the primary business of the RHCs is still regulated telephone service. Over 80% of total RHC revenues still come from regulated operations. We find that the increase in RHC diversification, in and of itself, is not *prima facie* evidence that RHCs are no longer acceptable surrogates for the interstate access business. We also note that Bell Atlantic misinterprets the Commission's position in the 87-463 *Notice* on the continued appropriateness of RHCs as surrogates. In the 87-463 *Notice*, the Commission did not find the RHCs inappropriate surrogates, rather comment was sought on the pos-

sibility of adopting specific techniques for estimating cost of equity for a single line of business within a company.<sup>130</sup>

84. We find it obvious that most competitive, nonregulated businesses are riskier than the regulated interstate access business. It seems counterintuitive to suggest, as Bell Atlantic does, that diversification into riskier businesses could actually reduce the business risk of an RHC so that it is lower than the business risk of the regulated telephone business. We agree with a 1988 Standard & Poors credit rating report, portions of which the LECs cite in the record and rely on to support their positions on other issues, stating that diversification almost certainly involves moving into areas with higher business risk than the core telephone business, and portfolio effects "may limit the rise in overall business risks, but won't eliminate it."<sup>131</sup>

85. We do not find Dr. Vander Weide's operating income variability study persuasive on the issue of the existence of a portfolio effect because we do not accept his premise that any line of business Bell Atlantic pursues, so long as it does not exactly match the operating income pattern of Bell Atlantic's regulated activities, will reduce the company's risk and cost of capital. We observe that there is little evidence that conglomerates enjoy lower costs of capital than other, less diversified companies. We find that Bell Atlantic has not demonstrated the existence of a portfolio effect that would cause RHC risk to be lower than LEC interstate access risk. Consequently, we find that the "portfolio effect" does not preclude the use of the RHCs as surrogates for determining the cost of capital for the interstate access business.

86. However, the record does show that the RHCs are also involved in activities which are perceived as riskier than their regulated telephone business. We therefore find that we should give some weight in our decision to the possibility that a cost of equity estimate for an RHC as a whole company might somewhat overstate the cost of equity for interstate access service alone.<sup>132</sup>

87. The LECs' position that, due to the uniqueness of the RHCs, the DCF formula cannot be applied to RHC data, is addressed fully in the next section of this order, below.

## 8. The "Cellular Argument"

### a. Issue

88. As we have previously noted, the "growth" element of the DCF always represents an estimate of an ultimately unknowable quantity, namely, the rate at which investors expect the yield of the stock to grow over the long term. The Commission's DCF formula uses the IBES long-term (five year) analysts' consensus growth forecast. In this proceeding the LECs contend that DCF estimates for RHCs using the IBES growth forecast are meaningless because of the impact of investor interest in the very long term growth prospects of cellular telephone service.

### b. Positions

89. The LECs claim that a DCF analysis using RHC data understates the RHCs' cost of equity because the growth rates available for use in the formula fail to reflect the growth that investors are actually expecting RHCs to achieve by virtue of their cellular communications operations. They contend that investors' expectations are fully

reflected in the market prices of RHC stocks, which causes the dividend yields of those stocks to be much lower than they would be in the absence of cellular. They argue that, when these lower yields are used in the DCF formula along with growth estimates that do not reflect the growth that investors were expecting when they paid the higher prices for the stock, the resulting cost of equity is so downwardly-biased as to be meaningless.<sup>133</sup>

90. In support of their position, LECs cite a number of stock analysts' reports attributing 20-25% or more of the value of each RHC's stock to cellular operations. They then argue that, because cellular is relatively new, because cellular revenues are currently small compared with RHC total revenues, and because cellular will require large amounts of new investment over the next several years, investors do not expect a significant cellular contribution to RHC earnings per share (EPS) in the 1990-94 period. The high market valuation of the RHCs' cellular operations must, therefore, be attributable to expected growth beyond the five-year horizon.<sup>134</sup>

91. Expert witness Carleton also argues that the presence within each RHC of a cellular division that is expected to grow at a faster rate than regulated operations violates "as a matter of arithmetic, a critical assumption of the constant growth DCF model (that the firm's overall expected growth rate be constant.)"<sup>135</sup>

92. Pactel offered as evidence of the magnitude of the cellular effect a DCF calculation adjusted to remove cellular impacts. Pactel multiplied the number of in pops its MSAs by a per pop value of \$215. This figure amounted to about 50% of the market value of Pactel's stock. Pactel then reduced the current price of its stock by 50% and used the adjusted "non-cellular" price to calculate a new yield figure. This yield (9.7%) was then combined with IBES growth figure from 1986 (before any major speculation about the future of cellular) to produce a DCF estimate of Pactel's cost of equity of 16.7%.<sup>136</sup> Another calculation using a slightly different set of assumptions yielded a cost of equity of 15.7%.

93. Consumer Coalition does not dispute that cellular properties represent a substantial fraction of RHC share prices; that cellular contributed little or nothing to the current earnings of the RHCs in 1989; or that cellular earnings are expected to grow rapidly in the future, and to have a higher growth rate than regulated operations.<sup>137</sup> Consumer Coalition does challenge the assertion that the 5-year IBES forecasts fail to reflect the rapid expected growth of cellular because that growth is going to occur beyond the 5-year time frame.<sup>138</sup>

94. Consumer Coalition's expert witness Miller examined the analysts' reports cited in the LEC Initial Submissions. Miller states that a number of these analysts actually do predict significant cellular contribution to EPS and EPS growth before 1994, and that some of the analysts also predict that cellular growth will be slower beyond 1995.<sup>139</sup> For example, Miller quotes a 1989 Smith Barney research report as stating, "In the early 1990s, however, earned ROEs could rise to the upper teens as cellular profitability explodes and restraints on telephone returns are eased."<sup>140</sup> A 1989 First Boston report on BellSouth is also quoted stating, "We have been assuming that BellSouth's consolidated earnings growth in a three to five year time frame would be about 9%, including two percentage points of growth from cellular."<sup>141</sup> Consumer

Coalition argues that this evidence of analysts' predictions undercuts the LECs' assertions about investor expectations.

95. Miller also offers an adjusted DCF estimate for the RHCs as evidence that the cellular effect cannot be as large as the LECs claim. He adjusted the stock price of each RHC downward by the percentage of cellular value attributed by analysts to each company. Using the IBES growth estimates, he then calculated DCF estimates for each RHC. He produced an average cost of equity for all RHCs of 13.5%, which was 150 basis points higher than the 12% average produced with unadjusted stock prices. Miller considered the 13.5% to overstate RHC non-cellular cost of equity because he did not subtract from the growth estimate any of the growth that he contends investors are expecting from cellular in the next five years.

96. In response to Carleton's contention that rapid and nonconstant cellular growth rates necessarily violate the constant-growth assumption of the DCF formula, Consumer Coalition presents a numerical example for a hypothetical RHC showing that constant overall company growth can be consistent with very different growth rates in two different divisions of the company.<sup>142</sup>

97. BellSouth argues that Consumer Coalition's hypothetical is flawed because it depends on an "invalid assumption: i.e., that the growth rate in cellular earnings is declining towards the growth rate in total earnings per share."<sup>143</sup> BellSouth argues that analyses of RHC stocks by *Value Line* support the opposite conclusion, that is, that the cellular earnings growth rate will be increasing throughout the 1990s. As an example, BellSouth quotes the following from *Value Line's* January 19, 1990 report on BellSouth:

Since the company's cellular operations are unlikely to generate sufficient cash flow to justify the current valuation until the second half of the nineties, appreciation potential is subpar within our time horizon.<sup>144</sup>

### c. Discussion

98. We are not convinced that the impact of cellular has so distorted our DCF cost of equity estimates for the RHCs that we must simply disregard those estimates as meaningless. We have examined the analysts' reports cited by the parties. We find that, while analysts differ in their assessments of cellular, a number of them do, as Miller indicates, predict significant growth during the 1990-94 period in cellular revenues, cellular earnings per share, and cellular contributions to growth in earnings per share.<sup>145</sup> Contrary to assertions of BellSouth, the *Value Line* analyses that it quotes do not even express opinions about the rate at which RHC cellular earnings are expected to grow. In this regard, we also note that a more recent *Value Line* analysis has this to say about BellSouth:

Over the next 3 to 5 years, the company's cellular operations should make increased contributions to profits . . . As the number of customers rises, margins should expand. Moreover, operations generate substantial cash that we expect to be utilized to enhance operating performance, including additional overseas ventures.<sup>146</sup>

We conclude from the evidence that the IBES estimates, which represent a consensus of the opinions of analysts who follow RHC stocks, most likely do incorporate at least some element of expected growth from cellular.

99. We reject Carleton's contention that the DCF formula requires that all divisions of a company be expected to grow at the same constant rate. First, as the example provided by Consumer Coalition demonstrates, it is entirely possible for a total company to grow at a constant rate even if it has a division that is growing rapidly and at a changing rate.<sup>147</sup> Second, if this contention were true, then DCF could probably not be applied to many of the S&P 500 firms (as Carleton himself applies it) or to the firms in the USTA comparable firms group.

100. We believe it is possible, however, that RHC stock prices, and particularly the historically high prices that obtained at the end of 1989 and the very beginning of 1990, could reflect investor growth expectations somewhat in excess of the IBES median estimates.<sup>148</sup> It does not follow, however, that we must discard the DCF results for the RHCs. As both Pactel and Consumer Coalition have suggested, it should be possible to adjust the formula inputs to remove the effects of cellular.

101. Pactel's recalculations of its own DCF estimate are implausible. According to Pactel's assumptions about its stock price and percentage of cellular valuation, Pactel's stock would, in the absence of cellular, have been trading at the end of 1989 at a price below the level at which it traded during the third quarter of 1986. This we find highly unlikely, given that the entire stock market rose greatly between 1986 and 1989. Pactel's calculation also implies an equally unlikely non-cellular yield in excess of the current yields on long-term treasury bonds.

102. Miller's adjusted stock prices produce more credible implied non-cellular yields in the range of 6.3%-7.2%. Yields in this range were typical for RHCs at the time of our last prescription, before any cellular effects could have been felt. Miller's adjusted RHC average DCF cost of equity was 150 basis point higher than an unadjusted average starting with the same stock price and using the same dividend and growth estimate. We agree with Miller that his adjusted estimate needs to be reduced somewhat to account for cellular growth that is reflected in the IBES estimate. Based on consideration of all of the analysts' reports contained in the record of this proceeding, we believe it is reasonable to assume that at least 50-75 basis points of the expected growth reflected in the IBES estimates is due to expectations of cellular contributions to growth in the next 5 years. Reducing Miller's adjusted, non-cellular DCF estimates to remove 50-75 basis points of growth attributable to cellular produces non-cellular DCF estimates that are 75-100 basis points higher than his unadjusted estimates. We conclude that the cellular effect described by the RHCs may cause the DCF estimates for the RHCs to be understated by 75-100 basis points at the very most.<sup>149</sup>

## 9. The Ameritech Legal Objections to DCF

### a. Issue

103. The DCF formula assumes that the current market price of a firm's stock equals the present value of the cash flows that investors expect from that stock. The DCF formula discounts to the present value these cash flows to determine the investor's required return or the cost of

equity. The cost of equity is then used in determining the rate of return. The authorized rate of return must: (1) "be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital,"<sup>150</sup> and (2) be set so that "the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."<sup>151</sup> Ameritech objects to the Commission's reliance on the use of the DCF formula in determining the cost of equity for interstate access service, asserting, *inter alia*, that such use violates both the capital attraction and comparable earnings standards.

### b. Positions

104. Ameritech presents five arguments questioning the legality of our use of the DCF formula in determining the interstate access rate of return. First, Ameritech argues that exclusive reliance on the DCF formula fails to satisfy the *Bluefield-Hope* comparable earnings standard because the DCF-derived result does not provide any information about earnings of comparable risk firms.<sup>152</sup> Second, Ameritech asserts that the Commission's application of the DCF result violates the Court of Appeals decision in *Farmers Union*, which holds that "[the] method of selecting the appropriate rate of return [must be] reasonably related to the method of calculating the rate base."<sup>153</sup> Our procedures violate this principle, according to Ameritech, because they apply a market-required DCF return to a net original cost rate base.<sup>154</sup> Ameritech maintains that to satisfy *Farmers Union*, the market-required return must be translated into a return on book equity or book-required return.<sup>155</sup>

105. Third, Ameritech argues that application of a DCF-derived return to a net original cost rate base violates the capital attraction standard because: (a) the RHC stock prices currently exceed book value by eighty percent; (b) application of the DCF-derived return to a net original cost rate base produces a market price equal to book value; and (c) if the RHC stock price is driven down to book value, there will be a "\$78 billion reduction in RHC shareholder value."<sup>156</sup> Moreover, Ameritech argues that the DCF-derived return applied to an original cost rate base is contradictory because investor-expected growth rates of six to seven percent translate into realized growth rates of three percent with RHCs' current 1.8:1 market-to-book ratios.<sup>157</sup> Ameritech also maintains that use of a DCF-derived return with an original cost rate base fails the comparable earnings standard because "comparable risk companies earn far more than the market-required return applied to the book value of their stock."<sup>158</sup> According to Ameritech, comparable risk firms realized returns of 15.5% to 18% on book equity.<sup>159</sup> In Ameritech's view, it also must be allowed to earn such returns if it is to be able to compete for capital with these firms.

106. Fourth, Ameritech points to a number of academic studies challenging the validity of the efficient market hypothesis, a very basic and important underlying premise of the DCF formula.<sup>160</sup> Ameritech contends that this Commission need not resolve the debate surrounding the efficient market hypothesis. It believes, however, that the existence of the debate suggests that this Commission not rely solely on the DCF method for determining the rate of return.<sup>161</sup> Fifth, Ameritech argues that the Commission must adjust the rate of return to account for the disallowance of prudently invested capital from the rate base.<sup>162</sup>

107. Ameritech suggests that this Commission may avoid the legal deficiencies inherent in the use of the DCF formula by reliance on Ameritech's comparable earnings analysis for determining the rate of return for interstate access.<sup>163</sup> Ameritech also suggests that this Commission could avoid legal difficulties with the DCF formula by translating the DCF market-required returns into book required returns.<sup>164</sup>

108. The Consumer Coalition opposes Ameritech's position. The Consumer Coalition disagrees that the DCF formula fails to satisfy *Bluefield/Hope* just because the formula does not provide information about other companies' earnings. It states that the *Bluefield/Hope* standards do not "enshrine any particular approach to cost of equity issues."<sup>165</sup> The Consumer Coalition states that the Supreme Court explicitly held that "other standards [besides the comparable earnings standard] might properly have been employed."<sup>166</sup> Moreover, Consumer Coalition argues, the comparable earnings standard is satisfied when an agency reviews cost of equity information about the companies under their regulation. Consumer Coalition states that the Federal Energy Regulatory Commission (FERC) has repeatedly held that use of the regulated firm's data in the DCF formula is consistent with the comparable earnings standard.<sup>167</sup>

109. Consumer Coalition disagrees that the DCF procedure is faulty because it applies a market return to book data, noting the other RHCs who used the DCF method found no problem with the method.<sup>168</sup> Consumer Coalition contends that Ameritech's real criticism is directed at "any use of the cost of equity capital to set an allowed rate of return."<sup>169</sup> Consumer Coalition explains that a stock price excessively above book value indicates that investors expect the company to earn returns greater than its cost of equity; therefore any regulatory policy which attempts to align allowed returns with cost of equity will have the effect of deflating expectations for returns above the cost of equity.<sup>170</sup> Moreover, Consumer Coalition states that it is "absurd" for Ameritech to state that regulatory authorities must allow returns higher than the required cost of equity just because investors expect the regulated firm to achieve such returns.<sup>171</sup>

110. Consumer Coalition also claims that other factors, besides interstate access, may have contributed to the RHCs' market price exceeding its book value. Consumer Coalition argues that "the return on interstate access services cannot be set for the purpose of maintaining that overall market/book ratio, as Ameritech advocates,"<sup>172</sup> and that Ameritech's argument that expected growth will not be realized with a DCF-derived return ignores expected growth from unregulated earnings.

111. In rejecting Ameritech's solution to its market-to-book argument, Consumer Coalition states that adjusting the DCF-derived return to reflect book-required returns would revive the "fair value" concept rejected in *Hope*.<sup>173</sup> Moreover, Consumer Coalition claims that FERC has addressed this very question, and has rejected the use of book value for market prices in the dividend yield term of the DCF formula.<sup>174</sup>

112. Finally, Consumer Coalition states that the efficient market hypothesis is "alive and well".<sup>175</sup> Consumer Coalition acknowledges that some recent academic studies have questioned the hypothesis, but notes that both NYNEX and USTA endorse the efficient market hypothesis. Consumer Coalition says that even Ameritech concedes that these studies need further analysis.<sup>176</sup>

### c. Discussion

113. Ameritech's argument that reliance on the DCF formula fails to satisfy the *Bluefield/Hope* comparable earnings standard because it does not provide information about earnings of comparable risk firms is without merit. Ameritech's argument is that a comparable earnings analysis must be used to satisfy the *Bluefield/Hope* standards. This Commission has long rejected that reading of the case law.<sup>177</sup> *Hope* itself states that we are "not bound to the use of any single formula" in determining the rate of return.<sup>178</sup> Our interpretation of the methodological latitude afforded by *Bluefield/Hope* is concurred in by other federal and state regulatory agencies that regularly make use of capital determinations using methods other than comparable earnings analysis.<sup>179</sup>

114. Ameritech's assertion that the DCF methodology violates the *Farmers Union* holding is baseless. The court's objection in that case to FERC's combination of its rate base and rate of return methodology was not based on application of a market-required return to a book value rate base, or *vice-versa*. The *Farmers Union* court objected to FERC's method of determining the cost of equity in computing the oil pipeline industry's overall cost of capital. In determining the weighted average cost of capital for the oil pipeline industry, FERC used book equity returns for several unregulated industries as measures of the cost of equity, and then applied those returns to what FERC purported to be the "equity component" of the rate base.<sup>180</sup> The rate base used by FERC was a "valuation rate base" which included appreciation, not an original cost rate base.<sup>181</sup> However, the "equity component" of that rate base included all the appreciation: none was attributed to the debt component of the rate base.<sup>182</sup> It was this inconsistency, and the result that it produced, that the court found to be unreasonable.<sup>183</sup> Thus, *Farmers Union* is inapposite to the issues raised by Ameritech in the instant proceeding.

115. Ameritech's third argument amounts to a suggestion that we are obligated to prescribe a rate of return that will ensure continuation of the carriers' current market-to-book ratios. We reject this suggestion for several reasons. First, the Commission has previously rejected the position that our obligation in rate of return proceedings is to ensure a particular market to book ratio.<sup>184</sup> Ameritech cites no court or regulatory agency decision in support of the obligation that it attributes to this Commission. Indeed, given the variety of factors that investors consider in establishing the price of stock, it is doubtful that we could implement any rate of return regulatory scheme that accomplished Ameritech's goal that is consistent with the requirement that rates be just and reasonable. Moreover, market-to-book ratios greater than one have been viewed traditionally as possible indicators that the company's return is greater than its required return. The high market-to-book ratios that the RHCs enjoy today are probably related to their nonregulated activities and tell us little about the required return on interstate access services.

116. Ameritech places great reliance on its perception that unless this Commission applies the market-derived rate of return to its equity base, stockholders will see a massive decline in the value of their stock.<sup>185</sup> It is true that prescription of a rate of return based on market data could lead to a decrease in the value of the stock if investors had been expecting continuation of a previously-authorized higher rate of return. On the other hand, a

reduced rate of return might have no impact on stock price if, as often happens, the reduction had already been anticipated and discounted by the market. In any case, the requirement that we balance ratepayer and investor interests does not allow us to insulate investors from a diminution in the value of their stock (if in fact we could do so). In any event, if we prescribed a rate of return above that which market data showed to be reasonable, investors would increase their expectations as to the carrier's rate of return, market value would increase, and the carrier would seek a higher rate of return authorization so that these higher expectations are not thwarted.<sup>186</sup> We would be remiss in our responsibilities to balance ratepayers' and investors' interests if we implemented procedures that effectively insulated a carrier from experiencing a decrease in its authorized rate of return.<sup>187</sup> Thus, our current market-based rate of return procedures meet the *Bluefield / Hope* criteria notwithstanding that their application herein may adversely impact carriers' high market-to-book stock ratios.

117. Moreover, Ameritech's desire that we prevent the market price from declining towards the book value would require that we validate the current market valuation of the RHCs. This argument essentially states that investors are entitled to earn their expected return on all shareholder investment in the company's stock rather than earning a return on capital invested in the regulated company. We agree with Consumer Coalition that Ameritech's position attempts to revive the "fair value" principle of ratemaking discredited by *Hope*.<sup>188</sup> The Commission long ago rejected the "fair value" principle for determining rate base,<sup>189</sup> and we have likewise declined to regulate carriers on a "balance sheet" method.<sup>190</sup> In short, our ratemaking procedures are based on traditional regulatory practices, have been recognized by investors as the established methods, and provide a full opportunity for carriers to earn a rate of return that meets the *Bluefield/Hope* standards.

118. We accord little weight to Ameritech's attack on the efficient market hypothesis. Although Ameritech cites various scholarly articles in support of its position, its own expert, Dr. Charles Phillips, states that "[t]hese studies are relatively recent and their central thesis must be subjected to further analysis and testing."<sup>191</sup> We note that no other party questions the fundamental soundness of market-based approaches to determining the cost of capital. Ameritech offers no data that discourage us from placing primary reliance on such methodologies in this proceeding.<sup>192</sup>

119. Ameritech's argument that we must adjust the rate of return to account for rate base "disallowances" of prudently invested capital is presented only in general terms. Notably, Ameritech neither identifies any disallowance that must be compensated for in the rate of return calculation nor estimates the aggregate size of these disallowances.

120. Moreover, contrary to Ameritech's position, we are not required to allow a return on all prudently invested capital. See *Duquesne Light Co. v. Barasch*, 109 S.Ct. 609 (1989). Rather, we must assure only that the "end result" of our ratemaking decisions is not confiscatory.<sup>193</sup> *Id.*, 109 S.Ct. at 618-19. Nothing in the Constitution or in the Communications Act requires the agency to adjust the prescribed rate of return to take into account the agency's policies regarding rate base disallowances. Rather, the methodologies we employ to determine the appropriate

rate of return already take into account the FCC's approach to such disallowances. Investors are presumably aware of our ratemaking procedures, including our treatment of plant that is not automatically included in the rate base, and take these procedures into account in establishing the price of the stock.<sup>194</sup> The risk of disallowance, including the disallowance of prudent investment, is one of many factors that investors consider in evaluating the riskiness of investment in a regulated enterprise. Thus, the rate of return prescription itself already takes into account the fact that the FCC generally disallows prudent investments that are not "used and useful" in providing service.

## 10. Other DCF Calculations for RHCs

### a. Southwestern Bell Multi-Growth Model

#### i. Description

121. SWB's witnesses, Avera-Fairchild, criticize the classic DCF model for having only a single growth estimate. They argue that a more general DCF model, with several growth terms, would more accurately estimate SWB's cost of equity capital. In their DCF multi-stage growth model of SWB, they assume that earnings per share grow at an 8.5% to 9% rate until SWB's return on equity has risen from its 1989 level of 12.64% to 15.5%. Once a 15.5% return on equity is achieved (five years), the growth in earnings per share then drops to a constant 5.12% and the return on equity is 15.5% for the rest of the model. SWB's price per share is assumed to grow 16.75% per year for the first five years, and 9% a year thereafter. Dividends are assumed to be two-thirds of earnings. The 1989 dividend is \$2.60 and the 2009 dividend is projected to be \$7.89. The 1989 share price is \$57.12 and the 2009 projected price is \$453.28. Avera-Fairchild take the dividends expected between 1990 and 2009, plus the expected SWB stock price in 2009 and solve for the rate of return that makes the present value of these cash flows equal to SWB's current stock price. SWB concludes that its cost of equity capital is between 14.5% and 15.5%.<sup>195</sup>

#### ii. Positions of the Parties

122. Texas OPUC's witness, Szerszen, contends that stock price growth must ultimately be linked to earnings and dividend growth, and that it is inconsistent with fundamental financial principles to project a stock price growing twice as fast as earnings (10.88% versus 5.81%) for the next twenty years. The Consumer Coalition's witness, Miller, observes that Avera-Fairchild's projections require that SWB's stock sell for 30 times earnings in 2009. Szerszen argues that it is unreasonable to project the price of a stock on the basis of the 14.43% difference in the 1984-89 growth rate of US Treasury bond prices and SWB's stock price, and a projection of future US Treasury bond price increases.<sup>196</sup>

123. SWB responds that the multi-stage growth DCF model is more flexible than the single-stage growth DCF and that Avera-Fairchild's assumptions are based on reasonable projections of SWB's current performance.<sup>197</sup>

#### iii. Discussion

124. The validity of a cost of equity estimate made with any form of DCF model rests upon the validity of its inputs. We agree with Szerszen and Miller that assumptions underlying the SWB multi-stage growth DCF es-

time are implausible. We particularly do not believe that SWB's share price will grow twice as fast as its earnings for twenty years, or that SWB's shares will trade at 30 times earnings at the end of that period. Accordingly, we cannot assign significant weight to SWB's cost of equity estimate.

#### b. Non-LEC Studies

##### i. Description

125. Copeland (Colorado Consumer Counsel) estimated the cost of equity capital for the RHCs using a single growth rate DCF formula. He estimated the average RHC expected dividend yield as 4.9%, and the average long term growth rate, using both IBES and Value Line estimates) of 7.1%. He found that the average RHC cost of equity capital was 12.0%. He gave less weight to his CAPM estimate for the RHCs of 13% and concluded that the appropriate return on equity is not above 12.5%.<sup>198</sup>

126. Clinger (Florida Citizens) estimated the cost of equity capital for an Index of Telephone Holding Companies using a DCF formula that divided the growth component into a medium term and long term component. Based upon financial data from Value Line's Investment Survey, he estimated the medium term growth rate was between 8.0% and 8.7% and the long term growth rate was between 5.3% and 6.8%. He used the current dividend yield without adjustment for growth as his estimate of the expected dividend yield. His cost of equity estimates for the Index of Telephone Holding Companies ranged from 10.5% (Sept., 1989) to 12.2% (March, 1990).<sup>199</sup>

127. Johnson's (Indiana/Ohio CC) DCF estimate bases the expected dividend yield on Ameritech's current (unadjusted for growth) dividend yield and the long term growth rate on his own review of Ameritech's historic growth rate and investor expectations. He concludes that Ameritech's cost of equity, including a flotation cost allowance, is in the range of 11.2% to 12.7%.<sup>200</sup>

128. Kahal (Pennsylvania OCA) estimates the cost of equity capital for the seven RHCs using a single growth rate DCF formula. He relied on several sources for long term growth rates besides IBES. He concludes that the cost of equity capital for the RHCs is in the range 11.0% to 12.0%.<sup>201</sup>

129. Klein (Tennessee PSC) used a single growth rate DCF formula to estimate RHC cost of equity capital. He relied upon Value Line projections of dividends and the dividend growth rates. He concludes that the RHCs have a cost of equity capital in the range from 12.15% to 12.3%.<sup>202</sup>

130. Marcus and Miller (Consumer Coalition) used a single growth DCF formula and found the average cost of equity for the RHCs is 11.74% (4th Qtr, 1989) and 11.92% (March 9, 1990).<sup>203</sup>

##### ii. Positions of the Parties

131. The LECs generally object to the use of the RHCs as surrogates for interstate access and the classic DCF formulation of the DCF model. (See Objections to Use of RHCs as Surrogates, and DCF Specification Issues, above) Siegel (US West) argues that Copeland's cost of equity estimate is unreasonably low compared to current corporate bond yields. BellSouth argues that Clinger assumes the RHC long term growth rate is lower than the short

term growth rate while Value Line, a data source Clinger relied upon, forecasts improving long term prospects. Carleton (BellSouth) argues that Clinger's two stage growth model is unjustified because he has not established that investors expect a downward shift in telephone earnings growth rates in the long term.<sup>204</sup>

##### iii. Discussion

132. We discuss elsewhere LEC objections to the use of the RHCs as surrogates for interstate access and to the classic DCF formula. The DCF analyses described above represent a number of variations on the classic DCF formula and yield cost of equity estimates in the range of, or somewhat lower than, the classic formula. None appear to offer a significant advantage over the classic formulation.

#### 11. Risk Premium Analyses

##### a. Description of Method

133. The general methodology used by all risk premium analyses is to estimate the cost of equity capital as the current bond yield plus a historically determined equity risk premium. A bond's yield is simply the discount (interest) rate that makes the present value of its contractual cash flow equal to its market price. Since the cash flows are fixed, if the bond goes up in price, the yield must go down. An increase in the price of a stock, however, may leave the stock's expected return unchanged if the price rose to adjust for higher anticipated profits rather than lower investor perceived risk. Risk premium analyses solve this problem by comparing the past returns (capital gains, dividends and interest, divided by the market price) on stocks and bonds. The historic premium in return on stocks over bonds is assumed to be a stable and accurate forecast of investor's expectations about the future premium.

134. The capital asset pricing model (CAPM) is a risk premium methodology which uses a risk premium based upon the difference in returns on a nearly risk free bond and the overall stock market. To estimate the cost of equity for a particular company, it uses the variance of the company's stock price relative to the market as a whole (beta) to adjust the premium. The CAPM formula relating risk and return is:

$$\text{COE} = \text{RF} + (\text{beta} * \text{RP}), \text{ where,}$$

COE is the cost of equity estimate,

RF is the current yield on very low risk debt.

RP is the analyst's estimate of the difference in return between the return on low risk debt and stocks, and

Beta is an estimate of the difference in risk of the stock for which the cost of equity estimate is being made and the overall risk of stock market investments.

##### b. CAPM Studies

135. Five CAPM analyses (4 by LECs and 1 by an opposing party) and one traditional risk premium analysis have been submitted in this proceeding. Taking the CAPM analyses first, the LECs' studies generally used risk

premiums of 7% for their cost of equity estimates: Siegel (US West) uses a risk premium of 7.5%, Linke (Ameritech), 7.4% to 7.6%; USTA, 6.9%; and Avera and Fairchild (Southwestern Bell), 5.6% to 7.4%. Klein (Tennessee PSC), used a risk premium of 6.0% to 6.5%. The range of betas is also small: Siegel finds an average Beta of 1.0 for his group of 33 comparable firms; Linke, finds an average beta of 0.91 for his 500 mimicking portfolios analysis (see below, Other Cost of Equity Showing); USTA's cluster group has an average beta of 1.13; Avera-Fairchild uses a beta of 0.95 for Southwestern Bell; and Klein uses an average RHC beta of 0.92. Based upon these risk premiums and betas, and using current bond yields, Siegel found a cost of equity capital of 15.93%; Linke, 15.5%-15.7%; USTA, 15.73%; Avera-Fairchild, 13.69%-15.4%; and Klein, 13.27%-13.98%.<sup>205</sup>

### c. Positions of Parties

136. Miller (Consumer Coalition) argues that the risk premiums assumed by the above studies are far higher than used by analysts elsewhere. He contends that the Wall Street analyst reports, relied upon by the RHCs to support their positions on other issues, use much smaller risk premiums, ranging from 2.0% to 5.4%. Furthermore, Miller notes, the Ibbotson Yearbook, the source the LECs cite for their risk premiums, shows risk premiums varying widely with the historical period chosen: 3.42% for 1980-89, 2.31% for 1970-79, 7.99% for 1960-69, 19.38% for 1950-59, and 3.47% for 1937-49. He argues that the LECs' 1926-89 average premium is no more defensible an estimate of investor's 1990 risk premium expectations than the 1980-89 average risk premium. He contends that the Federal Energy Regulatory Commission (FERC) has repeatedly considered and rejected historical risk premiums as overstating the actual risk premium:

. . . (T)he use of an equity risk premium which is based upon an extended historical period, as is the case with the Ibbotson-Sinquefield study, can not be accepted at face value. [FERC Generic Determination of Rate of Return on Common Equity for Public Utilities, 50 Fed. Reg. at 21821]

There are good reasons to question the stability of long-run risk premiums, especially as applied to recent years. . . . (R)isk premiums . . . calculated over a sixty year historical period . . . are suspect . . . (and) probably somewhat overstated . . . [FERC Generic, 53 Fed. Reg. at 3355].<sup>206</sup>

137. The LECs respond that risk premiums should be the average of the longest period possible (1926-89) and that risk premiums based upon more recent periods do not explicitly incorporate events such as the Great Depression.<sup>207</sup>

138. Miller also questions the LEC choice of *Value Line* betas for the RHCs. He contends that the average RHC beta estimate from other Wall Street sources are significantly lower: 0.81 (IBES), 0.80 (Duff & Phelps), 0.76 (Merrill Lynch), 0.71 (First Boston, citing Barra), and 0.71 (Morgan Stanley). NYNEX argues that *Value Line's* beta estimates are superior because they are formulated with 5 years of weekly data while Merrill Lynch uses five years of monthly data and IBES uses 25 weeks of weekly data. Siegel states that he used S&P betas for his com-

parable firms analysis because S&P uses the classic formulation for the implementation of the CAPM. He argues against the Barra method of calculating a forecast beta because of its complexity.<sup>208</sup>

### d. Discussion

139. We continue to believe that the CAPM approach has the potential to provide estimates of the cost of equity capital with the same reliability as the DCF approach. The fault with the CAPM estimates submitted in this proceeding lies with their unrealistically high betas and risk premiums. *ValueLine* betas are betas which have been adjusted so as to raise the level of betas less than one and lower the level of betas greater than one. While such adjusted betas undoubtedly have their uses, we do not believe use of an adjusted beta is consistent with the theory of CAPM. We agree with Consumer Coalition that the LECs' risk premiums appear to be much higher than those used by many of the analysts whose reports appear in the Rule Making record herein. The inflated risk premiums produced by studies covering extended historical periods have been a major barrier to the acceptance of CAPM by regulators. Indeed, we know of no state or federal regulatory commission that has prescribed a return on equity based primarily on a CAPM estimate incorporating such risk premiums. We conclude that these CAPM estimates are likely to overstate the cost of equity capital, and that no weight should be given to them.

## 12. Comparable Firms Studies

### a. S & P 500 and S & P 400

#### i. Description

140. Several LECs and USTA propose the use of either the Standard & Poor's 500 or S&P 400 Industrials as a comparable firm grouping. The S&P 400 consists of approximately 400 of the largest industrial companies. Its composition changes over time due to mergers, leveraged buyouts, and failures. Currently the S&P 400 has 388 companies. The S&P 500 includes the S&P 400 plus the S&P 40 Utilities (which includes the RHCs), the S&P 40 financial companies, and the S&P 20 transportation companies.

141. BellSouth's and NYNEX's expert, Carleton, averaged (weighted by market value) the DCF equity estimates of all the companies in the S&P 500 for which estimates could be made for the months between September 1989 through January 1990. The average ranged from 14.6% to 15.0%. His recommendation is the average of this range: 14.8%.<sup>209</sup>

142. Bell Atlantic's expert, Vander Weide, compares the investment return (capital gains and dividends) from a portfolio of S&P 500 stocks, bought in proportion to their market value, to the return (capital gains and interest) from buying A-rated utility bonds. He averages the difference in the returns over the period 1937 to 1989 and finds that the S&P 500 return exceeded the return on A-rated utility bonds by 6%. Adding this 6% to the interest-only return on A-rated utility bonds, he determines that the current cost of equity capital for the S&P 500 is 15.44%. He concludes that this result supports the reasonableness of the 14.92% (DCF) result of the USTA cluster analysis.<sup>210</sup>

143. USTA, with the support of all the LECs, proposed to use the average (weighted by market value) of the cost of equity estimates of the companies in the S&P 400 as an alternative benchmark to its cluster analysis group. Based upon the S&P 400 it found cost of equity estimates of 15.51% using a DCF formula, 15.31% using the CAPM method, and 15.96% using historical earned returns.<sup>211</sup>

#### ii. Positions of the Parties

144. BellSouth and NYNEX support their use of the S&P 500 with the assertion that the risks of interstate access are at least as large as that of the average unregulated company and that the S&P 500 is representative of the stock market as a whole. Bell Atlantic asserts that because the S&P 500 is a group of large industrial firms, it is an excellent benchmark for determining the interstate access cost of equity and can be used to verify the reasonableness of the results of the USTA cluster analysis. USTA argues that the S&P 400 is a proxy for the competitive marketplace.<sup>212</sup>

145. The Consumer Coalition contends the LEC and USTA position that the S&P 500 and S&P 400 represent the stock market as a whole says nothing useful about the cost of equity for interstate access. The witnesses for Florida Citizens, West Virginia CA, and GSA all argue that interstate access is far less risky than the stock market as a whole. Clinger (GSA) asserts that the LECs' AAA and AA credit ratings (Moodys) indicate that they are less risky than 90% of industrial firms. He argues that, given the LECs are less risky than the RHCs, then the RHCs' *Value Line* Safety Ratings show that the LECs are less risky than 91% of the firms followed by *Value Line*.<sup>213</sup>

#### b. Phillips (Ameritech)

##### i. Description

146. Ameritech's witness, Phillips, uses four independent telephone companies as the starting point of his analysis: ALLTel, Cincinnati Bell, Rochester Telephone and SNET. He states that investor perceptions of risk can be identified and isolated by three criteria: *Value Line* beta (a proprietary measure of stock price variability), *Value Line* safety rating (a proprietary statistic that reflects a large number of factors, including financial condition, leverage, business risk, size, management competence, price stability, accounting methods, and fixed charge coverage), and S&P bond grade (a proprietary rating of the default risk). After identifying the criteria range of the four independent telephone companies, he selected 17 companies which fall within the same range. Phillips based his cost of equity estimate on the average earned return on equity of the 17 companies over the period 1984-89. He concludes that the target cost of equity should be set at 18%, and that the lowest reasonable cost of equity is 15.5%.<sup>214</sup>

##### ii. Positions of the Parties

147. The Indiana/Ohio CC witness, Johnson, contends that the Phillips' criteria selects for high profitability as much as for low risk. He argues that risky, but highly profitable, companies can have high bond ratings. Johnson cites as evidence of this high risk/high profit problem the fact that Phillips selected companies such as General Dynamics, a defense contractor with earned returns varying from - 4.8% to 32.9%, Merck & Co, a drug manufac-

turer with earned returns ranging from a low of 19.8% in 1984 to 48.5% in 1988 and 46.9% in 1989, and IBM, a computer manufacturer, with earned returns from 9.6% to 26.5%.<sup>215</sup>

148. Phillips argues that his criteria are widely used by the investment community and by the other parties to this proceeding.<sup>216</sup>

#### c. Siegel (US West)

##### i. Description

149. US West's expert, Siegel, selects the operating companies of the RHCs and GTE to represent the LEC industry. He notes that these companies are the largest of the 1400 companies in the industry, but argues that accurate data is not readily available for the others. He analyzed the ratio of cash flow to assets, ratio of assets to sales and total assets of the operating companies. Siegel then attempted to select a group of nonregulated companies that fell within the operating companies' range for the three variables. His initial analysis found no companies within the range of all three criteria. He changed the ranges of the first two criteria. The range for cash flow was expanded from a range of 11.7%-19.9% to 12%-22%. The range for assets to sales was expanded from 1.78-2.45 to 1.3-4.0. He found 33 companies that satisfied his criteria. To develop a cost of equity estimate, Siegel applied the CAPM method to the average (market value weighted) beta for his group. Using a beta of 1 and a risk premium of 7.5%, he concludes that the cost of equity capital is 15.9%.<sup>217</sup>

##### ii. Positions of the Parties

150. The Consumer Coalition asserts that two of Siegel's criteria (cash flow ratio and total assets) were also used by USTA and that the criticisms directed at their usage by USTA also apply here. (See USTA Cluster Analysis, Positions of the Parties, below.) The Consumer Coalition's witness, Miller, argues that profits are a component of cash flow and that, given the high cash flow ratios of the BOCs, Siegel's use of this ratio as a criteria selects highly profitable companies rather than low risk companies. US West denies this is the case and argues that the cash flow ratio was used in conjunction with other criteria.<sup>218</sup>

151. The Consumer Coalition also contends that the wide range of the betas for the companies in Siegel's group (.15 to 1.59) indicates that Siegel's criteria have not identified a group of similar risk companies. Miller, using Siegel's CAPM formula and discarding the highest and lowest betas, finds the cost of equity estimates for Siegel's comparable firms group ranges from 13.46% to 19.46%. He argues that either Siegel's group does not consist of risk comparable companies or that the CAPM formula gives widely differing results for supposedly comparable companies. Siegel responds that he used the average (weighted by net assets) beta, not the individual company betas, to estimate the cost of equity capital. He argues that he deliberately avoided using beta as a criteria to prevent a foregone conclusion in the final results, and that his group of comparable firms represent a well diversified portfolio of companies with similar operating characteristics to the BOCs (as measured by his criteria).<sup>219</sup>

#### d. USTA Cluster Analysis

### i. Description

152. USTA used a weighted average composite of the operating companies of the RHCs (BOCs) as the starting point of its analysis. Five criteria were used to select a group of comparable firms: operating income variability, sales growth, debt ratio, firm size, and the ratio of cash flow to assets. Using a cluster analysis procedure to order companies by the criteria, USTA selected the 20 companies that were closest to the average of the BOCs. The cost of equity capital for each company was estimated using DCF and CAPM methodologies, and the simple average of earned returns on equity for the previous four years. The average (unweighted) estimate for the twenty companies was 14.75% (DCF), 15.73% (CAPM), 18.25% (1985-88 earned returns), and 19.65% (1986-89 earned returns). USTA's recommendation is that the cost of equity capital be set within the range 14.75% to 18.25%.<sup>220</sup>

### ii. Positions of the Parties

153. GSA's witness, Winter, characterizes USTA's cluster analysis as being a mechanistic, computerized search through a list of several hundred firms based upon a few user specified criteria. For the results of such a search to be valid, he argues, the selection criteria's relative risk rankings for the LECs and the selected firms must be consistent with the market's perceptions. He notes that, while only one of the cluster companies has a AAA bond rating and more than half have ratings of A or lower, nine of the twenty-one BOCs are rated AAA and ten more are rated AA. The *Value Line* (adjusted) betas of the cluster group range from .95 to 1.40 and average 1.13, while the average for the RHCs is only .92. He states that although all the BOCs have Value Line Safety ratings of one, only five of the twenty cluster companies have ratings of 1, and ten have ratings of 3. Maryland PC and Pennsylvania OCA's witness, Kahal, raised similar criticisms.<sup>221</sup>

154. The Consumer Coalition's witness, Miller, also finds that the risk characteristics of the USTA cluster group does not match those of USTA's BOC target group. He notes that, measured by each of USTA's criteria, the cluster group moves only a fraction of the way from the average for the population of 628 firms from which USTA drew its sample towards the BOCs. Taking all the criteria together, the cluster group is less than two-thirds of the way between the BOCs and the total population.<sup>222</sup>

155. Miller argues that the wide range of DCF cost of equity estimates (11.3% to 18.07%) indicates that USTA's cluster analysis has not succeeded in identifying similar risk firms. He observes that virtually the same proportion of the cluster group (6 of 20) and the total population (200 out of 628) fall within 1% of the cluster mean of 14.75%. Comparing the cluster group to a group of electric utilities, he finds that, without any selection or screening, half of the DCF estimates for all 111 electric utility companies listed by Compustat fall within a 143 basis point range (9.97% to 10.4%), while USTA's cluster group needs a 290 basis point range (13.52% to 16.42%) to contain 10 of 20 companies. Compared to the RHCs, the range of DCF estimates for the seven RHCs is 1.01% (11.28% to 12.29%) versus 6.77% for the USTA cluster group. He argues that the electric utility and RHC groups demonstrate that there is a strong central tendency, or clustering, of estimates for groups that have similar risks, but that USTA's cluster companies do not exhibit it.

156. Miller also criticizes USTA's criteria. He contends that prospective variability is what drives investment risk, but that only one of USTA's criteria, operating income variability, directly attempts to measure variability. Furthermore, he argues, USTA's method of measuring operating income variability is suspect. USTA uses deviations from a linear growth trend, instead of a more standard measure such as the variability in the realized percentage rate of return. He contends that USTA was measuring the non-linearity of income and not the unpredictability that concerns investors. USTA's cash flow to assets criterion, he argues, is more a selector of highly profitable rather than low risk companies, and USTA's firm size (total assets) criteria is simply an artifact of the way in which the BOCs were incorporated. The Consumer Coalition asserts that Bell Atlantic's Response to Discovery did not cite a single investment advisory report which has employed or discussed the USTA risk criteria.<sup>223</sup>

157. Miller argues that USTA's criteria are only weakly related to investor required returns. Using USTA's total population of companies, he compared each of USTA's criteria with USTA's DCF estimate of the cost of equity capital. He finds that sales growth and firm size have a significant correlation with the cost of equity, operating income correlation is only marginally so, and the cash flow and debt ratio correlation are insignificant. Moreover, three of the criteria (operating income variability, cash flow, and debt) have correlation relationships that are the opposite of what USTA's expert, Vander Weide, assumed, e.g. a higher cash flow to assets ratio is associated with a higher DCF cost of equity, but USTA's analysis depends upon a high cash flow ratio selecting a safe company with an appropriately low cost of equity. The strongest correlation is between sales growth and the DCF, but Miller questions whether differences in sales growth rates as low as the BOCs' translate into meaningful differences in company risks.<sup>224</sup>

158. Vander Weide responds that the USTA cluster group, measured by USTA's five criteria, is closer to the BOCs than to the population mean. He argues that Miller's criteria by criteria examination is misleading because "[i]t is a mathematical certainty that the cluster analysis will identify the twenty firms which are most similar to the target based upon the combination of the five indicia, not the indicia taken individually." He asserts that Miller's correlation analysis did not take into account the non-linear nature of the relationship between the criteria and the cost of equity capital. He cites as examples that many firms use low debt ratios to offset high operating risk and that high sales growth rates may be risky for firms in the early stages of their life cycle, but low or negative sales growth rates can be risky too. He argues that Miller only claims rather than proves that the cash flow criteria can select for high profits as much as for low risk. He contends that the criteria are basic measures of risk that no financial analyst would ignore.<sup>225</sup>

159. Vander Weide asserts that Miller, Winter, and Kahal are incorrect to examine the individual companies in the USTA cluster group. He argues that the firm-specific anomalies average out over the twenty firms. Furthermore, he observes, the standard deviation of the DCF estimates for the cluster is half that of the entire population (2% versus 4%). Vander Weide argues that the RHC-

USTA cluster company comparisons of Winter, Kahal, and Maryland PC are meaningless because the BOCs were the target of the USTA cluster analysis.<sup>226</sup>

160. A number of other parties raised objections to the USTA cluster analysis. Tennessee PSC's witness, Klein, argues that financial theory does not support simply adding together criteria with interrelationships that are complex and that change as the values of the criteria change. Vander Weide responds that the criteria can be added together because they were carefully selected so as not to overlap. Klein also leveled the general criticism that, while regulated companies endure, the nonregulated companies appearing to be comparable today may not meet the comparability criteria a few months from now. Vander Weide asserts that the turnover in comparable firms is the result of the normal workings of the marketplace. Maryland PC states that the operating income variability criteria produces erroneous results for at least Bell Atlantic. Maryland states that the income variability of Bell Atlantic's telephone subsidiaries during the period used by USTA is due solely to the rate reductions made to reflect the lowering of federal income tax rates.<sup>227</sup>

#### e. Discussion

161. The criticisms of the comparable firms analyses have focused upon the selection criteria and upon the selected firms.<sup>228</sup> The ideal selection criteria logically and unambiguously mirror investors' perceptions of the risk of stock ownership in any company. Among the criticisms that can be made of a criterion are that it is more reflective of bondholder than stockholder risk perceptions, that its interpretation depends upon the particular circumstances surrounding each company, and that it selects more for high profitability rather than low risk. The ideal comparable firms group should form a cohesive group with a consistent level of risk closely matching that of the target group. The Commission's experience with comparable firms analysis in the *1986 Represcription Proceeding* was that even carefully specified lists of selection criteria can result in groups of firms that have very dissimilar cost of equity capital estimates.

162. The comparable firms analyses which chose the S&P 400 and S&P 500 offer only the general rationale that interstate access service is at least as risky as the entire stock market. A number of parties contend that interstate access is less risky than the market, and argue that choosing the whole stock market as a comparable firms group is not a revealing analysis. We simply do not believe that interstate access, which is a regulated monopoly business, is as risky as the average publicly-traded firm. We therefore give no weight to analyses that suggest that the average or median cost of equity for the S&P 400 or 500 should be adopted as the interstate access return on equity. On the other hand, we do accept that the range of companies in groups such as the S&P 400 covers the broad dimensions of investor perceptions of the trade-off between risk and return. As discussed in Part III.B.4, above, we give significant weight to the S&P 400 as a source of benchmarks for investor required returns.

163. The parties have criticized Phillips' selection criteria as biased towards choosing high profit and high risk companies. There is no question that a number of the companies Phillips selected have earned extremely high returns: Coca-Cola's 1989 earned return on equity was 37.6% and its 1984-89 average was 28.7%. Merck's 1989 earned return was 46.9% and its average was 33.5%. The

range of the earned returns for some of Phillips' companies also appears to be inconsistent with the return range the LECs have experienced: -4.8% to 32.9% for General Dynamics, and 0.0% to 38.0% for Colgate-Palmolive. We also note that Phillips' average cost of equity estimate of 18% is at the upper end of the range of recommendations made by other parties and that it is barely exceeded by the 18.5% median cost of equity estimate for the top quartile of the S&P 400 (DCF, July 1990). We conclude that it is unlikely that the cost of equity capital for interstate access is this high and that no weight should be given Phillip's recommended cost of equity.<sup>229</sup>

164. Siegel's comparable firms analysis has also been criticized. Various parties contend that his cash flow selection criterion is biased towards highly profitable companies, that his firm size criterion gives significance to the irrelevant history of how the LECs chose to divide up their operations into subsidiaries, and that the extremely large range of betas for the selected companies indicates that he has not identified companies with similar risks. Siegel denies that the cash flow criteria is biased and responds to the beta analysis by arguing that he only used the group average beta in making his cost of equity estimate. We do not believe that averaging nullifies the criticism. We note that only 42 of the S&P 400 have betas higher or lower than the .63 to 1.47 range for Siegel's group (discarding the highest and lowest betas in his group). Taking an average of such a widely dispersed group of companies, even a weighted average, predictably produces a number very close to the average of the S&P 400 itself. The beta of his group is one and the beta for the whole stock market, since it is defined as the variance relative to the whole market, is also one. We conclude that the results of Siegel's analysis amount to little more than an estimate of the average cost of equity for the stock market taken as a whole. Accordingly, we assign it no weight.<sup>230</sup>

165. USTA's cluster analysis comes under similar criticism. A number of parties argue that USTA's selection criteria have ambiguous or weak relationships to risk, and that some select for high profits as much as low risk. They also contend that the companies in USTA's cluster group are so diverse in risk and return that they are neither comparable to each other nor to the BOCs. Bell Atlantic's witness, Vander Weide, responds that the criticisms of individual criteria and companies are irrelevant because USTA used the average of its criteria to select companies, and the average of the companies as its estimate of the cost of equity. Vander Weide contends that the five criteria, taken together, are an excellent indication of risk. He also argues that the companies in a comparable firms analysis only have to be on average comparable to the target group. Tennessee PSC's witness, Klein, responds that nothing in financial theory supports adding together such complex indicia.

166. We are hard pressed to accept Vander Weide's contentions that weaknesses observed in the piece parts of an analysis do not weaken the credibility of the result. USTA has not demonstrated that its criteria accurately portray all the relevant dimensions of risk. We agree with the Consumer Coalition, several states, and GSA that the companies in USTA's cluster group appear to have diverse risks and costs of equity, and that few seem comparable to the BOCs in either respect. Furthermore, we note the comparison between USTA's average cost of

equity estimates (14.75% to 19.65%) and the median DCF estimates (December, 1989) for the top two quartiles of the S&P 400 (15.8% and 18.2%). USTA's analysis does not constitute a persuasive case that the cost of equity to support the LECs' interstate access activities is perceived by investors as being far riskier than the bulk of the business activities conducted by the S&P 400. We assign no weight to USTA's recommendations for the cost of equity capital.<sup>231</sup>

### 13. Other Cost of Equity Showings

#### a. Description

167. Four showings use historical earned returns as estimates of the cost of equity. Phillips (Ameritech) and USTA adopt an average of 1984-88 earned returns. Phillips notes that this period was unrepresentative because it did not contain an economic recession. He compares the earned returns for the periods 1981-83 and 1984-88 and found them similar. Johnson (Indiana/Ohio CC) compares the earned returns over the period 1979-88 of non-regulated companies (the S&P 400, the Federal Trade Commission's "All Manufacturers", and the industries monitored by Business Week), the telephone industry (AT&T, the independent telephone industry, and the RHCs), and energy utilities (Moody's 24 electric utilities and gas distribution group). Winter (GSA) finds that the average earned return of the large corporations covered by Business Week for the period 1985-89 (12.2%), is the maximum cost of equity capital for the RHCs.<sup>232</sup>

#### b. Positions of the Parties

168. Clinger (Florida's Citizens) rejects earned returns because they only indirectly represent investor expectations (which define the cost of capital) and then only over extended periods of time. Johnson (Indiana/Ohio) argues that the period 1984-88 focuses on the highest returns earned during the expansionary phase of this business cycle. He suggests that the returns from this period overstate the long run sustainable returns earned by unregulated firms over the full course of the business cycle. PacTel characterizes historic earned returns as objective measures and useful bench marks.<sup>233</sup>

#### c. Discussion

169. We do not believe that an average of the past earned returns of groups of nonregulated companies is an acceptable method of developing a forward looking estimate of the cost of equity capital required by investors in interstate regulated telephone service. Market expectations often diverge significantly from historic trends. This is especially true at the present time, when we have just passed through a period of exceptionally high corporate earnings. We give no weight to cost of capital estimates based upon past earned returns.

### 14. Interest Rates

#### a. Issue

170. In 1986, the time of our first represcription, interest rates were in the range of 5.9% on one year treasury notes and 7.3% on thirty year treasury bonds. Interest rates as of June, 1990 were in the range of 8.0% on one year treasury notes and 8.4% on thirty year treasury

bonds. The parties debate whether this increase in interest rates since 1986 mandates an increase in our prescribed rate of return.

#### b. Positions

171. The LECs claim that the Commission recognized a relationship between interest rates and the cost of equity capital in the 1986 *Represcription Proceeding* and in extensions of the 12% rate of return prescribed therein.<sup>234</sup> They argue that the increase in interest rates since 1986 requires a higher rate of return.<sup>235</sup>

172. Consumer Coalition argues that the Commission's 1986 *Represcription Proceeding* rejected the view that the cost of equity moves in lockstep with interest rates.<sup>236</sup> Moreover, Consumer Coalition contends, the Commission's focus in that proceeding was on financial conditions in the two years preceding March, 1986, when interest rates were far higher than they were in 1986 or are now.<sup>237</sup>

#### c. Discussion

173. We believe that the Consumer Coalition has correctly characterized the Commission's position in the 1986 *Represcription Order*. A graph depicting average interest rates for the period Jan. 1984-July 1990 for (1) 10 year Treasury bonds and (2) Aa Utility bonds appears in Appendix H.<sup>238</sup> This graph demonstrates that the 1986 prescription took place at the very end of a two-year decline in interest rates, during which interest rates went from record high levels to the lowest levels of the decade. Since 1986, a very different picture has emerged: rates rose in 1987, but have remained comparatively stable ever since. Our 1986 prescription was explicitly not based upon a risk premium method, and thus was not in any way calculated using the 7% Treasury bond rates or the 9% Utility bond rates that prevailed that year.<sup>239</sup> There is thus no basis for the LEC position that we must maintain the risk premiums that would be derived from a comparison of 1986 interest rates with the 14.2% return on equity implicit in our 12% prescription.

### C. Cost of Equity: Conclusions

174. In the Docket 84-800 Rule Making the Commission adopted DCF as its primary rate of return methodology. It determined that, in future LEC represcription proceedings, the DCF method should be used to estimate costs of equity for (1) the Regional Holding Companies and (2) other groups of comparable firms. The Commission also decided to use, as an additional estimate of the interstate access cost of capital, the average of the overall rates of return prescribed for BOCs by state regulatory commissions.

175. The current authorized rate of return of 12% allows a return on equity of 14.5%, using the current average embedded cost of debt and capital structure. For the most recent seven months for which we have data, January-July 1990, the average "classic" DCF estimates of the RHCs' cost of equity range from 11.7% to 12.6%. These estimates would produce a weighted average cost of capital in the range of 10.4% to 10.9%. The simple average of state overall rate of return prescriptions, adjusted for comparability with interstate practices, was 11.7%.

176. In the face of these numbers, the LECs have urged strenuously that we reject both the DCF estimates for the RHCs and the state cost of capital information, and instead base our prescription on the LEC - sponsored comparable firms analyses or on a CAPM estimate for the RHCs. These LEC analyses produce cost of equity estimates in the range 14.75% -18.25%, which translate to weighted average costs of capital in the range 12.25% - 14.3%. Non-LEC parties have generally supported reliance on our established methodologies, and have advocated rates of return in the range 10.2% - 10.8%.

177. In Part III. B., above, we have considered carefully the record created by the parties on the cost of equity issues. We have determined that our established methodologies have not been impeached, but that some adjustments are warranted for purposes of this prescription proceeding.

178. We have found that the RHCs are still an appropriate surrogate for LEC interstate access service, and that "classic" DCF estimates for the RHCs should be given the greatest weight in our decision. We have rejected contentions that the "cellular effect" has created conditions which render meaningless any use of our single-growth DCF estimates for the RHCs. We have, however, determined that we should give some weight to the possibility that the median IBES growth forecasts used in our formula might produce DCF estimates that are understated by 75-100 basis points; but, we must also consider that an accurate estimate of RHC capital costs may somewhat overstate the cost of capital for interstate access.

179. We have accepted in principle the LEC suggestion that analysis of the costs of equity of the S&P 400 firms can provide a benchmark against which other cost of equity estimates can be evaluated, but we have rejected the contention that the average or median cost of equity of the S&P 400 is a reasonable estimate of the cost of equity for interstate access. We have decided to consider the equity market benchmarks produced in response to the Bureau's *Data Request Order* as a corroborating means of identifying the area within which other cost of equity can be considered reasonable.

180. We have accepted the LEC argument that the simple average of state cost of capital determinations is not entitled to significant weight as an estimate of the current cost of equity, but have rejected the view that information about state decisions should be wholly disregarded. We have found that the more recent state decisions, in particular, are of value as a reasonableness check on other estimates and as an indicator of trends.

181. We have examined each of the LECs' comparable firms analyses and have found that they are entitled to little weight in our decision because those analyses have not identified groups of firms comparable in risk to interstate access service. We have also found that the CAPM analyses in the record can be accorded little weight in this prescription proceeding. We have rejected the contention that increases in certain interest rates since the time of our last prescription proceeding require that we increase the authorized rate of return.

182. Looking at our equity market benchmarks, we see that DCF estimates for the RHCs for the period 1984-1987 were well below the median of the estimates for the entire S&P 400, and were in fact consistently midway between the midpoint estimates for the first (lowest) and second quartiles of the S&P group. Our 1986 prescription, which the Commission said at the time was

at the upper end of the then-current zone of reasonableness, was also well below the median of the S&P 400, and was near the midpoint of the second quartile. That was a period during which little other than regulated telephone operations could have been reflected in the RHC estimates. Since we have seen no convincing evidence that the riskiness of regulated monopoly telephone operations has increased radically relative to the riskiness of nonregulated firms subject to full competition,<sup>240</sup> we believe that the cost of equity for interstate access should still be well below the median for the S&P 400, above the midpoint of the lowest quartile of the S&P 400, and at or below the midpoint of the second quartile. In the 7 most recent months for which we have collected data, January-July 1990, the average of the medians of the S&P 400 was 14.9%, the midpoint of the second quartile was 14.1, and the midpoint of the first quartile was 12.4%.

183. If, in the past year or two, the DCF-indicated average RHC cost of equity had risen a great deal relative to the S&P 400 benchmarks, we might have concluded that diversification into riskier nonregulated activities had so transformed the RHCs that they could no longer serve as adequate surrogates for LEC interstate access service. Instead, we see that the average RHC cost of equity has fallen against the S&P 400 group. This observation tends to confirm our earlier conclusion that the application of our simple DCF formula to the RHCs may, at this time, somewhat understate RHC costs of equity. We note that adjusting our DCF calculations for the most recent months upward by 75-100 basis points, as suggested by our analysis of the cellular effect, would again place the RHCs between the first and second quartile of the S&P 400.

184. The equity market benchmark data also demonstrates that, during most of the period 1984-1987, the estimated average RHC cost of equity was higher than the estimated median cost of equity for large electric companies. This observation confirms that, even before the recent trend towards diversification, telephone holding companies were perceived by investors as somewhat riskier than the average electric utility. We should, therefore, suspect that current estimates of the interstate access cost of equity that fall at or below the median cost of equity for electric utilities are probably too low. For January-July 1990 the average of the median costs of equity for the electric utilities in our group, calculated using our DCF formula, was 11.2%.<sup>241</sup>

185. We have developed these equity market benchmarks in an attempt to refine the suggestions of the parties that either the average cost of equity for the S&P 400 or the average cost of equity for the electric utility industry might serve as an appropriate indicator of the cost of equity for interstate access service. We find that these benchmarks establish the range 12%-14% as a first approximation, or rough estimate, of the area within which a range of reasonable estimates of the interstate access cost of equity will lie.<sup>242</sup>

186. Examination of the most recent state cost of equity determinations supports the reasonableness of that approximation. The ten determinations made in 1989 and 1990 span a range from 11.8%-14%, with eight of the ten in the range 12.6%-13.4%.

187. Turning now to the DCF estimates for the RHCs, we find that the monthly averages for the period January-July, 1990 are 11.71%, 12.27%, 12.03%, 12.11%, 12.29%, 12.32%, and 12.60%. We also find that, in each month

during the period, estimates for individual RHCs have varied over a considerable range, and that in the most recent three months the spreads between the companies with the lowest and the highest estimates have been 209, 141, and 184 basis points. These spreads among the RHCs suggest that a return on equity that would assure all LECs adequate access to capital would lie above the simple average of the RHC estimates, so that an estimate based on unadjusted RHC data alone would lie in the range 12.6%-13.0%. It is this estimate to which we attach the greatest weight in this proceeding.

188. Taking into account our (1) upward adjustment for the possibility that IBES growth estimates may understate investor expectations for cellular earnings, see para. 102, *supra*, and (2) downward adjustment for the possibility that RHC total company costs of equity are higher than the cost of equity for interstate access service alone, see para. 86, *supra*, we find that the cost of equity "zone of reasonableness," that is, the range of reasonable estimates of the interstate access cost of equity, is 12.5%-13.5%.

#### D. Weighted Average Cost of Capital: Conclusions

189. In section A, above, we found that the average embedded cost of debt for the RHCs is 8.8%, and that the average capital structure of the RHCs is 44.2% debt/55.8% equity. Combining these findings with our finding in section C, above, that the interstate access cost of equity lies in the range 12.5%-13.5%, produces an overall cost of capital "zone of reasonableness" of 10.85%-11.4%.

### IV. PRESCRIPTION OF THE ALLOWED RATE OF RETURN

#### A. Factors to be Considered

190. In the preceding part of this Order we identified the range of reasonable estimates of the cost of capital for interstate access service. We now turn to the task of prescribing an authorized rate of return within that range. The parties suggest two factors that we should consider in reaching our decision: the condition and future of the telecommunications infrastructure; and the state of competition in the interstate access market.

#### 1. Infrastructure

##### a. Issue

191. The present condition and future development of this country's telecommunications infrastructure has become a focus of concern for regulators, policy makers, and members of industry interested in improving our competitiveness in international markets.<sup>243</sup> The parties raise the issue of what, if any, role our rate of return prescription should play in encouraging infrastructure investment.

##### b. Positions

192. NYNEX argues that major increases in infrastructure investment are necessary to stimulate the economy and maintain U.S. global competitiveness.<sup>244</sup> NYNEX states that the U.S. is falling behind its competitor nations in the deployment of modern telecommunications technologies; that the U.S. is investing more slowly in its public network infrastructure than many other modern

countries; and that there is currently more capital being invested in private networks as opposed to the public network.

193. NYNEX argues, through its expert, William Davidson, that widespread availability of low cost, advanced telecommunications services will stimulate improvements in economic performance,<sup>245</sup> but that lack of infrastructure may doom small business and residential users to "second class services."<sup>246</sup> Davidson also contends that the U.S. must aggressively invest in infrastructure to maintain its position in the international telecommunications services market.<sup>247</sup> He offers Singapore as a prime example of the beneficial results of aggressive infrastructure investment; Singapore's international traffic grew at a compound rate of more than 50% per year in this decade.<sup>248</sup> In support of NYNEX's position that the U.S. is falling behind in the deployment of telecommunications technologies, Davidson states over 80% of the central offices in the French public network utilize digital switches, compared with 40% in the U.S.<sup>249</sup> Davidson also estimates that the U.S. is investing approximately \$190 per subscriber line per year, compared to approximately \$250 per subscriber line per year for the United Kingdom and Canada.<sup>250</sup> Finally, Davidson contends that there is currently more capital being invested in private networks than in the public network.<sup>251</sup> He contends that the result of such a shift to alternative networks is a reduction in revenues which could severely impact the LECs' ability to fund any network modernization.<sup>252</sup>

194. In response to the Davidson testimony, Ad Hoc offers a report by Economics and Technology, Inc. (ETI), that directly challenges NYNEX's assumptions and conclusions.<sup>253</sup> ETI claims that the U.S. is still superior to its major competitor nations.<sup>254</sup> ETI states that the U.S., relative to its competitor nations, has the highest level of penetration of telephone lines, the second greatest volume of usage per access line,<sup>255</sup> and the most usage per capita.<sup>256</sup> ETI also maintains that the U.S. is neither lagging behind other nations in deployment of modern telecommunications technologies, nor in investment in its public network. ETI submits that the U.S. leads France in the percentage of lines served by computer-controlled switches, and that the digital switch argument presented by Davidson is therefore misleading.<sup>257</sup> ETI estimates that the U.S. spent in excess of \$300 per access line in 1988.<sup>258</sup> In ETI's view, if competitor nations were outspending the U.S. on telecommunications infrastructure, it would be because they were trying to catch up to us.<sup>259</sup> Finally, the ETI study maintains that the "private network" threat perceived by NYNEX is no threat because most private networks are constructed of public network elements.<sup>260</sup>

195. In rebuttal, NYNEX alleges that the study presented by Ad Hoc contains several flaws. According to NYNEX's Davidson, the ETI study relied on stale data and was not forward-looking.<sup>261</sup> NYNEX also contends that the U.S. is no longer the leader in penetration levels,<sup>262</sup> that much of the current investment by foreign nations is not "catch up",<sup>263</sup> and that the U.S. is behind in deployment of modern technologies.<sup>264</sup> Moreover, NYNEX maintains that Ad Hoc mischaracterizes the extent of foreign investment in equipment investment, and fails to account for the differences in the accounting treatment of certain costs which would increase foreign investment.<sup>265</sup>

196. The Consumer Interest Research Institute (CIRI) and the World Institute on Disability, Inc. (WID) also contend that modernization of the telephone infrastructure is necessary. CIRI/WID argues that the survival of our prosperous nation depends on an informed citizenry.<sup>260</sup> An informed citizenry is possible only through a policy encouraging access to information by all. CIRI/WID argues that access to information must be brought to the general public through the public telephone network because of the level of penetration of the telephone.<sup>267</sup> Therefore, modernization of the public network infrastructure is necessary. To conclude otherwise, CIRI/WID states, would bar access to the "information age" by certain sectors of the population, particularly the elderly and disabled.<sup>268</sup>

197. All the LECs contend that in the future infrastructure investment will be riskier than in the past. They attribute the increased risk in part to the necessity of justifying infrastructure investments based on future revenues that are uncertain because of the vagaries of customer demand and competition.<sup>269</sup> NYNEX also states that the new services made available by infrastructure investment will succeed, in many situations, only if such services are widely available, which requires large-scale, rather than incremental, investments.<sup>270</sup> Several LECs link the alleged riskiness of infrastructure investment to the authorized rate of return as follows: companies invest in a project as long as the return on the investment in the project equals or exceeds the cost of capital for the project. Traditional rate of return regulation, by limiting return on all activities to the company's overall cost of capital, discourages investment in anything that is above-average in risk and capital cost. Infrastructure development requires investment in new technology that is more risky than average. Therefore, the opportunity to earn above the cost of capital is the starting point for infrastructure development.<sup>271</sup> Other LECs contend that, because the higher risk of infrastructure investment is incorporated in the investors' perception of the company's business risk, investors will not purchase telephone stocks and bonds unless the LEC rate of return is increased to cover the infrastructure risk.<sup>272</sup> NYNEX notes, however, that the increased risk can be accommodated through a rate of return set at the upper end of the zone of reasonableness: the infrastructure risk does not require a rate of return outside this zone.<sup>273</sup>

198. Consumer Coalition states that the LECs offer no explanation why infrastructure investment would ever be risky under rate of return.<sup>274</sup> Consumer Coalition contends that there is no evidence that future network investment will be so different in type or amount from investment already made that its recovery through normal cost accounting will not occur.<sup>275</sup> Ad Hoc states that the BOCs belie their contention that investors perceive infrastructure investment as risky by emphasizing such investment in RHC annual reports.<sup>276</sup> Therefore, non-LEC parties argue, infrastructure investment does not require an upward adjustment in the rate of return.

199. Non-LEC parties offer two additional arguments against an upward adjustment in the rate of return based on infrastructure investment. First, Ad Hoc contends that discretionary investment, like infrastructure upgrading, is not driven by the rate of return.<sup>277</sup> Ad Hoc argues that this is demonstrated by the fact that the RHCs have different levels of infrastructure investment, but have the same rate of return. Moreover, Ad Hoc claims, an upward

adjustment of the rate of return does not guarantee increased infrastructure investment. Consumer Coalition argues that an increase in rate of return to encourage infrastructure investment may drive demand for services down, forcing earnings to decrease, thereby resulting in lower infrastructure investment.<sup>278</sup> Consequently, no upward adjustment should be made for infrastructure investment.

### c. Discussion

200. The Communications Act establishes as a core purpose of this agency "to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges."<sup>279</sup> Thus we must take care that our policies and rules be both designed and implemented so as to foster responsible, cost-effective development and modernization of the telecommunications infrastructure.

201. The authorized rate of return plays an essential, but limited role in infrastructure development. A rate of return set below the cost of capital would limit carriers' access to capital markets and thereby discourage new investment in telecommunications plant. It does not follow, however, that an authorized rate of return above the cost of capital would promote economically efficient infrastructure investment. Indeed, allowing carriers to target rates for monopoly service so as to earn returns above their cost of capital might send distorted signals, thereby promoting uneconomic allocation of resources. Such a high rate of return might provide carriers with additional profits to invest or to distribute to shareholders,<sup>280</sup> but it would not guarantee that those profits were invested in the domestic public telecommunications network.

202. Under traditional rate of return regulation, a regulatory agency that wanted to assure that earnings authorized for infrastructure purposes were in fact invested in the infrastructure would have to (1) establish specific investment objectives for each carrier under its jurisdiction and (2) obtain an enforceable commitment from each carrier that the goals will be met. The record of this prescription proceeding would not suffice as a basis for such a regulatory program. Furthermore, since virtually all telecommunications plant is jointly used in intrastate and interstate operations, it is not clear that we could impose investment requirements without coming into conflict with the programs already underway in a number of states.

203. Information submitted by carriers in this docket does, however, raise questions about whether modernization of the network is taking place as quickly as we would like. There is no evidence that lack of access to capital is currently a problem; indeed, internally generated funds have exceeded telephone plant construction for the past several years. Nonetheless, our concern about the possibility of a lag in the deployment of advanced technologies counsels that we should exercise our judgment to select a rate of return in the upper part of the range of reasonable cost of capital estimates.

## 2. Competition/Bypass

### a. Issue

204. In the 1986 *Represcription Proceeding* the Commission found that overall company risks due to competition were reflected in the results of market-based cost of capital methodologies such as DCF. It also found that these risks were less for intrastate operations than for interstate operations, and that that disparity was not fully offset by the presence of riskier nonregulated activities. The Commission therefore concluded that an upward adjustment to the DCF estimates of RHC costs of capital was needed to reflect the risks posed by competition in the interstate access market.<sup>281</sup> In the instant proceeding the parties debate the existence and scope of competition and the manner in which risks due to competition should be reflected in our decision.

#### b. Positions

205. The LECs argue they face increasing competition from a growing number of alternative access providers,<sup>282</sup> as well as from interexchange carriers. They point to recent tariff offerings by interexchange carriers which purportedly encourage large users to leave the public network and use alternative access services as proof that LECs face significant competition.<sup>283</sup> NYNEX states that its telephone operating companies in 1989 lost over \$400 million in revenues to bypass.<sup>284</sup> Moreover, NYNEX states that, according to its own reports filed in CC Docket 87-339,<sup>285</sup> bypass is growing by 40% each year.<sup>286</sup>

206. In support of its position that LECs face increased competition, Bell Atlantic's expert, Professor Jerry Hausman finds that alternative access providers (AAPs) currently compete in 17 metropolitan areas, and are expected to grow to 28 within two years;<sup>287</sup> that multiple AAPs exist in metropolitan areas;<sup>288</sup> and that AAPs are able to provide networks in multiple cities while a LECs typically offers such a service only within its regional holding company area.<sup>289</sup> Hausman states that high sunk costs combined with low average variable and incremental costs for adding new customers to networks creates incentives for the AAPs to remain in business and offer competitive prices. Hausman also finds that the LECs face increased competition from the interexchange carriers because these carriers are offering incentives to large business customers which seek to shift customers from switched access, provided by the LECs, to special access, provided by LECs, the interexchange carrier, or an AAP.<sup>290</sup> These examples, Hausman concludes, demonstrate that the LECs face real and increasing competitive risks.<sup>291</sup>

207. The LECs contend that investors are aware of this competition and bypass and consider LECs riskier investments, thereby increasing LEC cost of capital. They cite in this regard recent changes in the credit rating criteria applied to telephone companies by bond rating agencies.<sup>292</sup> The LECs suggest that this increased risk is only partially reflected in quantitative cost of capital analyses.<sup>293</sup> Therefore, this Commission should select an authorized rate of return in the upper portion of the "zone of reasonableness."<sup>294</sup>

208. Non-LEC parties contend that the LECs retain a monopoly share of the exchange access market and do not face competition except in the geographically-limited high capacity "niche" markets.<sup>295</sup> Ad Hoc states that this Commission has recently found, not only that competition is insignificant in the high capacity access market,<sup>296</sup> but that the LECs were pricing such services so far above cost that the Commission was forced to act to control such

practices.<sup>297</sup> Ad Hoc also maintains that the most direct measure of business risk is a regulated company's ability to achieve or exceed its prescribed earnings level. Using this measure, Ad Hoc concludes that the BOCs face no significant business risks because the majority earned at or above the authorized rate of return in 1988 and 1989.<sup>298</sup> Finally, Consumer Coalition rejects the LECs' bond rating argument, stating that bond rating agencies are concerned with increased business risk only to the extent it is not accommodated by reduced financial risk, and that such agencies are more concerned with increased risk from diversification than with risks from competition in the interstate access market.<sup>299</sup>

209. Non-LEC parties also argue that the LECs face no serious threat of bypass.<sup>300</sup> Ad Hoc states that the private networks of today do not pose a bypass threat since these networks are constructed of public network elements.<sup>301</sup> In answer to NYNEX's claim of over a \$400 million loss in revenues to bypass, Consumer Coalition states that "[a]lthough documenting bypass in areas such as Manhattan and Boston should be easier than in other RHC territories, NYNEX has documented only \$23 million of its estimated losses due to bypass."<sup>302</sup> Finally, non-LEC parties maintain that the DCF formula, since it is a market-based cost of equity formula, takes into account investor perceptions of competition and bypass,<sup>303</sup> and therefore, there is no need for an upward adjustment in setting the authorized rate of return.

#### c. Discussion

210. It is apparent that the source and nature of the competitive risks facing LECs have changed somewhat since our last *represcription* proceeding. On the one hand, the very real risks of uneconomic service bypass that once existed have now largely dissipated, due primarily to the implementation of the Subscriber Line Charge program.<sup>304</sup> On the other hand, new facilities-based competition has emerged in the high capacity special access market. The appearance of this kind of competition may be new and somewhat disconcerting to members of an industry in which no competition at all existed a few years ago, but it hardly changes the fact that, in most areas and for most services, the LECs remain regulated monopoly providers of an essential public utility service. As such, they face far less business risk from competition than most nonregulated companies. For our purposes in this proceeding, however, the most important consideration is that both the levels of bypass claimed by the carriers<sup>305</sup> and the existence of alternatives access providers such as Metropolitan Fiber Systems and Teleport<sup>306</sup> are matters of public record and are well known to the investment community. Our market-based cost of capital estimates capture investor perceptions of RHC business risks, including future risks from interstate access competition and bypass; no additional or separate consideration of competition and bypass is necessary.

211. Furthermore, we can no longer assume, as we did in 1986, that the competitive risks attendant upon any RHC's interstate access operations exceed the risks of that RHC as a whole company. As the LECs have stressed in the record herein, RHC diversification into nonregulated arenas has increased in the past four years. We believe that the higher risks of nonregulated activities outweigh any component of especially low risk that might be attributed to intrastate regulated operations. We have taken this

possibility into account in reaching our findings as to cost of equity; no further consideration or adjustment to the end result is required.

212. On balance, we find that the debate in the record over the existence and significance of competition and bypass offers little guidance on the question of where within the range of reasonable cost of capital estimates we should prescribe the unitary rate of return.

### B. Decision

213. It is well established that rate of return prescription under the "just and reasonable" standard requires a balancing of ratepayer and shareholder interests.<sup>307</sup> The regulated company must be allowed the opportunity to earn a return that is high enough to maintain the financial integrity of the company and to attract new capital to the business.<sup>308</sup> At the same time, the authorized rate of return must not produce rates that are excessive.<sup>309</sup> The courts have also recognized that there is a zone of reasonableness within which reasonable rates may fall, and that we are entitled to exercise our judgment in selecting a rate of return within that zone.<sup>310</sup>

214. In Part III of this order we examined the cost of capital evidence in the record and concluded that the overall cost of capital for LEC interstate access lies in the range 10.85%-11.4%. We have now considered the arguments of the parties concerning other factors which they claim should influence our decision. We have determined that our concern for the future development of the infrastructure strongly suggests that we prescribe a rate of return toward the upper portion of the range we have identified.

215. In addition to the specific factors raised by the parties, we must also keep in mind that we are making this prescription for a future that is, as always, uncertain. The prescription will be in effect for two years or more, during which time costs of capital will fluctuate. While we cannot purport to forecast capital costs or any other aspect of the future with certitude, we do believe that, at this time, prudence favors a rate of return in the upper part of the range of reasonable cost of capital estimates.

216. Taking all of these matters into account, we conclude that an overall rate of return of 11.25% will strike a viable and sustainable balance between ratepayer and shareholder interests.<sup>311</sup>

217. In light of the ruling in the *Automatic Refund Decision*, in which the Court of Appeals determined that our automatic refund provision was at odds with our own understanding of our rate of return prescription,<sup>312</sup> we wish to clarify that we do not view this prescription as "both a maximum and a minimum." That is, it does not represent a unique balance point such that "[i]f the rate were higher, the balance would tip in favor of the investor; if lower, it would tip in favor of the consumer."<sup>313</sup> Our accumulated experience with rate of return prescriptions, and our review of the cost of capital evidence in this proceeding, convince us that there is no such point. Indeed, even the lower boundary of our range of cost of capital estimates does not represent a bright line such that a company earning just below that level would be forced out of business. We believe there is a substantial gap between an earnings level that is fully adequate to assure attraction of capital on favorable terms, and an earnings level which, if sustained over time, would be confiscatory.

218. It is also important to note, in light of our concurrent decision in the price caps docket concerning earnings limitations for price caps carriers, that neither our finding that the cost of capital is in the range of 10.85-11.4, nor our decision to prescribe a unitary rate of return of 11.25%, constitutes, in our view, an absolute finding that, under all circumstances, rates producing earnings above these levels are exorbitant, while rates below these levels are confiscatory.<sup>314</sup> As discussed in the price caps order, a rate of return that would clearly be excessive for a carrier that is allowed to recover all of its costs under rate of return regulation may be entirely reasonable for a carrier that has had to reduce rates, reduce costs, and become more efficient in order to take advantage of the incentives offered by our price cap plan. Similarly, we believe it is reasonable to balance the possible rewards of price cap regulation, and to reinforce the positive incentives those rewards provide, by requiring the carrier to accept the risk that it might experience earnings somewhat below the prescribed rate of return.

219. Finally, we observe that, while Part 65 clearly contemplates initiation of a represcription proceeding every two years,<sup>315</sup> the rules do not state that our rate of return prescriptions must expire at the end of two years. This prescription will take effect on January 1, 1991. It will endure until it is replaced with a new prescription.

220. In the interval between now and January, 1992, when the new represcription proceeding is scheduled to begin, we shall be returning to the task of refining our rate of return procedures. It may well be that our decision to regulate the largest carriers under a price caps regime will allow us to further streamline what is still a cumbersome and expensive process for determining the cost of capital. It may also be that we would wish to explore at the same time forms of incentive regulation suitable to replace traditional rate of return regulation for even the smallest LECs under our jurisdiction. An open ended prescription allows us a measure of flexibility to pursue these options.

221. We emphasize that we are by no means precluding represcription on the schedule contemplated by Part 65, or sooner if economic conditions so required. Nor are we at this time announcing a postponement of the January, 1992 initial submissions. We are simply establishing as a part of this rate of return prescription that the prescription is not intended to expire on December 31, 1992.

### V. DISPOSITION OF PROCEDURAL MOTIONS

222. Four parties filed motions to accept late filed notices of appearance in this proceeding.<sup>316</sup> On March 14, 1990, the Chief, Common Carrier Bureau adopted an Order<sup>317</sup> extending the time period for filing a notice of appearance until April 17, 1990.<sup>318</sup> All of the requesting parties filed notices of appearance within the extended time period, and we therefore dismiss their motions to accept late filed notices of appearance as moot.

223. Texas OPUC's April 9th Notice of Appearance also requested acceptance of its late filed affidavit and brief. Texas OPUC explained that its late filing resulted from late knowledge of the proceeding, as well as an unsuccessful attempt to submit its affidavit and brief with a party who timely filed.<sup>319</sup> On April 14, 1990, Southwestern filed an Opposition and Motion to Strike in reference to Texas OPUC's Notice of Appearance requesting acceptance of its affidavit and brief. Southwestern argued that, not only

had Texas OPUC failed to justify its late filed pleading, but Texas OPUC also filed a procedurally defective pleading.<sup>320</sup> Southwestern claimed that these defects justify rejection of Texas OPUC's filing "as they prejudice the other parties of record."<sup>321</sup> In the alternative, Southwestern requests that we accept its supplemental rebuttal submission in response to Texas OPUC's filing.<sup>322</sup>

224. Although we do not routinely accept late filed pleadings, we find that acceptance in this instance furthers the purpose of building a complete record in this proceeding. Only one party, Southwestern, objected to Texas OPUC's filing. Southwestern's main objection is that the filing is procedurally defective and such defects prejudice parties to the proceeding. The only alleged "defect" of potential prejudice is Texas OPUC's lack of certificate of service and apparent lack of service to Southwestern. We find, however, that this alleged "defect" was not prejudicial to Southwestern. Not only did Southwestern receive a copy of Texas OPUC's filing six days prior to its next filing date, but Southwestern also filed a lengthy supplemental rebuttal submission, which we accept as part of the record in this proceeding, directed at OPUC's filing. Moreover, Southwestern also had the opportunity to address Texas OPUC's filing in its proposed findings of fact and conclusions which were not to be filed until July 2, 1990.

225. On May 22, 1990, Ameritech filed a Motion to Accept Late Filed Pleading in reference to its supplemental submission concerning price cap issues.<sup>323</sup> On July 3, 1990 Consumer Coalition filed a Motion for Leave to File Out of Time in reference to its Proposed Findings due on July 2, 1990. Both parties cited mechanical difficulties in producing their submissions as reason for the late filings. Ameritech stated that no party would be prejudiced by its one day late filing since it served all parties by mail on May 21, 1990, the filing date.<sup>324</sup> Consumer Coalition stated that it would be in the public interest to accept its motion because of "the Coalition's unique status as a broad-based interstate access consumer group actively pursuing all of the legal and economic issues in this proceeding."<sup>325</sup> Consumer Coalition also maintained that it would make hand service upon all parties to this proceeding that designated an agent for service in Washington, D.C. by early afternoon on July 3.

226. We find that both Ameritech and Consumer Coalition have shown good cause for their late filings. Since no party objects to the late filings, and since accepting these late filings will serve to provide us with a complete record upon which we can make an informed decision, we shall accept Ameritech's May 22 filing and Consumer Coalition's July 3 filing.<sup>326</sup>

227. On January 22, 1990, USTA filed a Petition for Waiver of the "appropriate provisions of Part 65 of the Commission's rules to permit USTA, although it is not a carrier subject to Part 65, sufficient status to place on the record on February 16, 1990 calculations of the cost of capital."<sup>327</sup> USTA also sought waiver of section 65.102(b)(1) "so its filing will not count within the pages set therein for any carrier."<sup>328</sup>

228. Although Part 65 anticipated that only carriers would file the initial rate of return submissions,<sup>329</sup> such a limited reading is contrary to the purpose of our numerous rounds of submissions; to have a "full and fair record".<sup>330</sup> We find that the use of the words "initial carrier rate of return submissions", used in Part 65, are not words of limitation, rather they are words indicating

who must file submissions in the initial round of the comment cycle.<sup>331</sup> Consequently, a waiver is not required for USTA's participation in the initial submission round, and we dismiss as moot their waiver request.

229. On June 29, 1990, BellSouth filed a Petition for Waiver of Section 65.105(c) of the Commission's rules for the final round of comments due on July 16, 1990.<sup>332</sup> BellSouth reasoned that waiver of hand service was necessary because the July 4th holiday would delay receipt of proposed findings of fact and conclusions, due on July 2, 1990, by parties not located in Washington, D.C., and these parties would need the entire weekend preceding the July 16th filing date to prepare the reply proposed findings of fact and conclusion to meet the filing date. BellSouth also claimed that, because the purpose of the hand service rule is to provide parties the full time granted under the Commission's rules to prepare a response, no party would be prejudiced by approval of this waiver since no additional responsive pleadings would be forthcoming.<sup>333</sup>

230. Since the filing date and thus, the hand service date have passed, we dismiss as moot BellSouth's waiver request. We note, however, that we find BellSouth's reasoning unconvincing because the hand service rule would have been necessary to prevent prejudice to any party seeking oral argument on the reply proposed findings of fact and conclusions.<sup>334</sup> Moreover, BellSouth did not provide persuasive evidence of its inability to make service by hand to parties on the filing date.

## VI. ORDERING CLAUSES

231. Accordingly, IT IS ORDERED, pursuant to Sections 1, 4(i), 4(j), and 201-205 of the Communications Act of 1934, as amended, 47 U.S.C. §§151, 154(i), 154(j), and 201-205, that the authorized rate of return for the interstate access services of the local exchange carriers IS PRESCRIBED to be at an annual rate of 11.25 percent.

232. IT IS FURTHER ORDERED, that the motions to accept late filed notices of appearances filed by Colorado Office of Consumer Counsel, General Service Administration, Indiana Office of Utility Consumer Counselor and Ohio Office of Consumers' Counsel ARE DISMISSED.

233. IT IS FURTHER ORDERED, that the Notice of Appearance requesting acceptance of its notice of appearance, and its late filed affidavit and brief filed by Texas Office of Public Utility Counsel IS GRANTED IN PART to the extent indicated herein.

234. ITS IS FURTHER ORDERED, that the Motion to Strike Texas Office of Public Utility Counsel's late filed notice of appearance, affidavit, and brief filed by Southwestern Bell Telephone Company IS DENIED and DISMISSED to extent indicated herein.

235. IT IS FURTHER ORDERED, that the Motion to Accept Late Filed Pleading filed by Ameritech Information Technologies Corporation and the Ameritech Operating Companies IS GRANTED.

236. IT IS FURTHER ORDERED, that the Motion for Leave to File Out of Time filed by Consumer Coalition IS GRANTED.

237. IT IS FURTHER ORDERED, that the Motion for Leave to File a Supplemental Affidavit submitted by Consumer Coalition IS GRANTED.

238. IT IS FURTHER ORDERED, that the Petition for Waiver of the appropriate Part 65 rules to allow United States Telephone Association to file an initial rate of return submission filed by United States Telephone Association IS DISMISSED.

239. IT IS FURTHER ORDERED, that the Petition for Waiver of Section 65.105(c) filed by BellSouth IS DENIED.

240. IT IS FURTHER ORDERED, that the Motion to Substitute Original Affidavit for Facsimile Copy filed by Ameritech Information Technologies Corporation and the Ameritech Operating Companies IS GRANTED.

#### FEDERAL COMMUNICATIONS COMMISSION

Donna R. Searcy  
Secretary

#### FOOTNOTES

<sup>1</sup> In addition, on May 7, 1990, 21 parties filed Supplemental Submissions addressing the prescription of earnings limitations for price caps carriers; Replies to Supplemental Submissions were filed on May 21, 1990, by sixteen parties. These pleadings are addressed in the price caps order. See Policy and Rules Concerning Rates for Dominant Carriers, *Second Report and Order*, CC Docket 87-313, FCC No. 90-314, 5 FCC Rcd \_\_\_\_\_ (released Oct. 4, 1990).

<sup>2</sup> Lists of the parties filing each type of pleading are contained in Appendix A. Hereinafter, parties will be referred to by the short names indicated for each in the appendix.

<sup>3</sup> A list of ex parte presentations in this docket appears at Appendix B.

<sup>4</sup> See Refinement of Procedures and Methodologies of Represcribing Interstate Access Rates of Return for AT&T Communications and Local Exchange Carriers; Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers, 5 FCC Rcd 197, 202 (1989).

<sup>5</sup> *United States v. AT&T*, 552 F.Supp. 131 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 US 1001 (1983).

<sup>6</sup> AT&T; Modification of Prescribed Rate of Return, 86 FCC 2d 221 (1981), *aff'd sub nom. United States v. FCC*, 709 F.2d 610 (D.C. Cir. 1983); AT&T (Docket 20376), 57 FCC 2d 960 (1976); AT&T (Docket 19129), 38 FCC 2d 213 (1972), *aff'd sub nom. Nader v. FCC*, 520 F.2d 182 (D.C. Cir. 1975); AT&T (Dockets 16258 and 15011), 9 FCC 2d 30 (1967).

<sup>7</sup> See MTS and WATS Market Structure, Phase I, *Third Report and Order*, 93 FCC 2d 241 (1983).

<sup>8</sup> Authorized Rates of Return for the Interstate Services of AT&T Communications and Exchange Telephone Carriers, *Notice of Proposed Rule Making*, CC Docket No. 84-800, FCC 84-395, 49 Fed. Reg. 32971 (August 17, 1984); *Supplemental Notice of Proposed Rule Making*, FCC 85-458, 50 Fed. Reg. 33786 (August 21, 1985).

<sup>9</sup> Authorized Rates of Return for the Interstate Services of AT&T Communications and Exchange Telephone Carriers, CC Docket No. 84-800, Phase I, FCC 85-527, 50 Fed. Reg. 41350 (October 10, 1985), *mod. on recon.*, FCC 86-114, 51 Fed. Reg. 1103 (April 1, 1986), *further recon. den.*, 2 FCC Rcd 190 (1987), *remanded sub nom.*, AT&T v. FCC, 836 F.2d 1386 (D.C. Cir. 1988) (*Automatic Refund Decision*); Phase II, FCC 85-645, 51

Fed. Reg. 1796 (January 15, 1986), *mod. on recon.*, 104 FCC 2d 1404 (1986) (*84-800 Phase II Recon. Order*); Phase III, FCC 86-354, 51 Fed. Reg. 32920 (September 17, 1986), *recon. den.*, 2 FCC Rcd 5636 (1987) (*1986 Represcription Proceeding*).

<sup>10</sup> 47 C.F.R. §65.1 *et. seq.*

<sup>11</sup> 47 C.F.R. §65.102(c).

<sup>12</sup> 47 C.F.R. §65.100. Parties to the proceeding are given at least two, and in some cases, three opportunities to submit comments. See also 47 C.F.R. §65.105.

<sup>13</sup> 47 C.F.R. §65.103.

<sup>14</sup> 47 C.F.R. §65.104.

<sup>15</sup> 47 C.F.R. §65.106.

<sup>16</sup> 47 C.F.R. §§65.200 - 65.450.

<sup>17</sup> See 47 C.F.R. §65.201.

<sup>18</sup> See 47 C.F.R. §§ 65.300 - 65.304.

<sup>19</sup> See 47 C.F.R. §§65.400, 65.300 - 65.304. Under this "comparable firms" approach, specified screens were to be used to determine a list of firms that exhibit risk and financial characteristics comparable to the LECs' interstate access service.

<sup>20</sup> 47 C.F.R. §65.303. The DCF methodology requires identification of a stock price, a dividend, and a growth factor. In reaching these figures, the Commission rules require the use of data compiled over a two-year period. See 47 C.F.R. §65.303 (b)(c) and (d).

<sup>21</sup> *84-800 Phase II Recon. Order*, 104 FCC 2d at 1407, 1423-27. Although the Commission explicitly adopted the classic DCF methodology as one cost of equity estimate, codification was deferred. *Id.* at 1407.

<sup>22</sup> For the LECs, the increment was 25 basis points (one quarter of one percent) on overall interstate earnings, and 40 basis points (four tenths of one percent) on each of three categories of interstate access services. See 47 C.F.R. §§ 65.700(b) and 65.700(a), respectively.

<sup>23</sup> 47 C.F.R. §65.701(a).

<sup>24</sup> The refund was to be in the form of subsequent period reductions in the carrier's revenue requirement for the category in which the carrier overearned. 47 C.F.R. §65.703.

<sup>25</sup> *Automatic Refund Decision, supra.*

<sup>26</sup> *Id.*, 836 F.2d at 1390.

<sup>27</sup> *Id.*

<sup>28</sup> *New England Tel. & Tel. Co. v. FCC*, 826 F.2d 1101 (D.C. Cir. 1987).

<sup>29</sup> *Represcription Proceeding* at paras. 45-46.

<sup>30</sup> Refinement of Procedures and Methodologies for Represcribing Interstate Rates of Return for AT&T Communications and Local Exchange Carriers, *Notice of Proposed Rule Making*, 2 FCC Rcd 6491 (1987) (*87-463 Notice*).

<sup>31</sup> *Id.* at 6491.

<sup>32</sup> *Id.* at 6491.

<sup>33</sup> *Id.* at 6493-94.

<sup>34</sup> See 47 C.F.R. §65.102(c).

<sup>35</sup> Refinement of Procedures and Methodologies for Represcribing Interstate Rates of Return for AT&T Communications and Local Exchange Carriers, *Memorandum Order and Opinion*, 3 FCC Rcd 1697 (1988) (*Deferral Order*).

<sup>36</sup> Deferral of Rate of Return Represcription Filings Pursuant to Section 65.102(c) of the Rules, *Memorandum Opinion and Order*, 3 FCC Rcd 7220 (1988) and *Memorandum Opinion and Order*, 4 FCC Rcd 3920 (1989). The second delay pushed the filing date beyond June 30, 1989.

<sup>37</sup> Comment Sought on Extension or Revision of the Current Rate of Return Prescription for Interstate Services of Local Exchange Carriers, *Public Notice*, 4 FCC Rcd 7051 (1989).

<sup>38</sup> Refinement of Procedures and Methodologies of Represcribing Interstate Rates of Return for AT&T Communications and Local Exchange Carriers; Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers, *Order*, 5 FCC Rcd 197 (1989) (*Interim Prescription*).

<sup>39</sup> *Id.* at 202.

<sup>40</sup> *Id.*

<sup>41</sup> *Id.* at 20.

<sup>42</sup> *Id.* at 202.

<sup>43</sup> Policy and Rules Concerning Rates for Dominant Carrier, *Notice of Proposed Rulemaking*, 2 FCC Rcd 5208 (1987); *Further Notice of Proposed Rulemaking*, 3 FCC Rcd 3195 (1988) (*Further Notice*); *Report and Order and Second Further Notice of Proposed Rulemaking*, 4 FCC Rcd 2873 (1989) (*Second Further Notice*).

<sup>44</sup> Policy and Rules Concerning Rates for Dominant Carriers, *Supplemental Notice of Proposed Rulemaking*, 5 FCC Rcd 2176 (1990). We received comments on these issues in both this proceeding and the price caps proceeding. We address them in the price caps order which we adopt today, having incorporated in that docket the comments filed in this proceeding.

<sup>45</sup> See § 65.300.

<sup>46</sup> *e.g.*, USTA Proposed Findings at Appendix 1, p.2; Ameritech Proposed Findings at 19-21; Bell Atlantic Proposed Findings at 19-20; Southwestern Proposed Findings at 9-10.

<sup>47</sup> Maryland PC response at 2-3.

<sup>48</sup> Bell Atlantic Initial Submission at Vander Weide Affidavit, Appendix A, p.3.

<sup>49</sup> See generally J. Bonbright, A. Danielsen, D. Kamerschen, *Principles of Public Utility Rates* (2d ed. 1988), pp. 308-311.

<sup>50</sup> Bell Atlantic Initial submission at Attachment.

<sup>51</sup> USTA Proposed Findings at Appendix 1, p.2.

<sup>52</sup> Long-term debt on behalf of the ESOPs totaled \$790 million in 1989. Bell Atlantic Annual Report to Shareholders at 39-40.

<sup>53</sup> US West Initial Submission at Appendix A, Attachment 5, p.1 (revised).

<sup>54</sup> USTA Proposed Findings at Appendix 1, p.2.

<sup>55</sup> US West's 10K Report at A-6.

<sup>56</sup> See 47 C.F.R. §65.303.

<sup>57</sup> The data supporting these calculations is set out in Appendix D.

<sup>58</sup> 47 C.F.R. §65.400.

<sup>59</sup> *Interim Prescription Order*, 5 FCC Rcd 197, 202.

<sup>60</sup> 47 C.F.R. §65.201(a).

<sup>61</sup> *Interim Prescription Order*, 5 FCC Rcd. 197, 202.

<sup>62</sup> Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers, 5 FCC Rcd 543 (1990) (*Data Request*). See also Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers, 5 FCC Rcd 892 (1990) (modifying and clarifying the data request).

<sup>63</sup> 47 C.F.R. §65.303.

<sup>64</sup> Ameritech Proposed Findings at 24; Bell Atlantic Proposed Findings at 19; Pactel Proposed Findings at 13.

<sup>65</sup> US West Proposed Findings at 11; USTA Proposed Findings at 20; Southwestern Proposed Findings at 17; Rochester Proposed Findings at 13.

<sup>66</sup> See *e.g.*, Southwestern Initial Submission at 3, *citing* Authorized Rates of Return for the Interstate Services of AT&T Communications and Exchange Telephone Companies, CC Docket 84-800, Phase III, FCC 86-354, 51 Fed. Reg. 32920 (September 17, 1986), (*1986 Represcription Proceeding*), *recon. denied*, 2 FCC Rcd 5636 (1987).

<sup>67</sup> See *e.g.*, Pactel Reply Findings at 3.

<sup>68</sup> See *e.g.*, Southwestern Initial Submission at 3, *citing* Authorized Rates of Return for the Interstate Services of AT&T Communications and Exchange Telephone Companies, CC Docket 84-800, Phase III, FCC 86-354, 51 Fed. 32920 (September 17, 1986), (*1986 Represcription Proceeding*), *recon. denied*, 2 FCC Rcd 5636 (1987).

<sup>69</sup> *e.g.*, NYNEX Proposed Findings at 10-11; SNET Proposed Findings at 3; Pactel Proposed Findings at 24-25; US West Proposed Findings at 24-25.

<sup>70</sup> Response of Tennessee PSC at 9-10. We note that, during the pendency of this proceeding, the Tennessee PSC reduced its overall rate of return for South Central Bell from 12.18% to 11.6%. Telecommunications Reports, August 13, 1990, at 18.

<sup>71</sup> Consumer Coalition Response at 15.

<sup>72</sup> Phase II Order at paras. 25-33; Phase III Order at paras. 24-28.

<sup>73</sup> See Appendix D.

<sup>74</sup> USTA Proposed Findings at 18-19; Pactel Proposed Findings at 25-27; Southwestern Proposed Findings at 18-19.

<sup>75</sup> USTA Proposed Findings at 19; Pactel Proposed Findings at 26; Southwestern Bell Proposed Findings at 19.

<sup>76</sup> 5 FCC Rcd 197 at 200.

<sup>77</sup> *Id.* at 202.

<sup>78</sup> Another purpose was to collect the data needed to implement the Commission's 1986 decision to use a "classic" DCF formula to estimate RHC costs of capital in future represcription.

<sup>79</sup> We note in this regard that USTA does not apply market weighting in calculating the cost of equity for its comparable firms group.

<sup>80</sup> *1986 Represcription Order*, para. 39.

<sup>81</sup> Consumer Coalition Initial Submission, Miller Statement Table 1.

<sup>82</sup> Bell Atlantic Initial Submission, Affidavit of Vander Weide, Appendix A at 5.

<sup>83</sup> *1986 Represcription Order*, para. 15.

<sup>84</sup> Consumer Coalition Proposed Findings at 6.

<sup>85</sup> See, *e.g.*, BellSouth Initial Submission, Carleton Statement at 28 (Method specified in data submission produces a downward bias).

<sup>86</sup> USTA Reply Findings at 21.

<sup>87</sup> See, *e.g.*, BellSouth Initial Submission, Testimony of Carleton at 35-41; USTA Initial Submission, Appendix 1.

<sup>88</sup> See III. C. 10.b., below.

<sup>89</sup> *Phase II Reconsideration Order*, paras. 57-58.

<sup>90</sup> *Id.*

<sup>91</sup> *1986 Prescription Order*, para. 51.

<sup>92</sup> *e.g.*, PacTel Initial Submission at 16. BellSouth witness Carleton, while asserting the "conceptual superiority" of the quarterly-compounding model (BellSouth Rebuttal, Carleton Statement at 21), based his recommendations on the annual model because the results of using that model were not significantly different from the compounding model and the annual model is simpler to understand. BellSouth Initial Submission, Carleton Statement at 18.

- <sup>93</sup> *e.g.*, USTA Rebuttal at 21.
- <sup>94</sup> Consumer Coalition Findings at 5, n.11.
- <sup>95</sup> TPSC Response, Klein Statement at 20-22.
- <sup>96</sup> Pa OCA Reply Findings at 10, citing Kahal Statement at App. B.
- <sup>97</sup> Consumer Coalition Proposed Findings at 5, n.11. Bell Atlantic, however, contends that the retention of earnings does not guarantee a return to shareholders at the authorized return level. Bell Atlantic Rebuttal, Vander Weide Statement at 33. See also BellSouth Rebuttal, Carleton Statement at 21.
- <sup>98</sup> *Phase II Order*, para. 43.
- <sup>99</sup> *Phase II Reconsideration Order*, paras. 60-62.
- <sup>100</sup> See, *e.g.*, Bell Atlantic Rebuttal, Vander Weide Statement at 33-34 (stock issuance costs are not recovered in the period when incurred; benefits of capital raised will accrue over a long time period); Ameritech Rebuttal, Linke Statement at Ex. 3 (if flotation adjustment was allowed during the year that capital was raised, adjustment must continue because rate base was increased only by the net proceeds from equity issue).
- <sup>101</sup> *e.g.*, PacTel Initial Submission at 19.
- <sup>102</sup> Pa. OCA Proposed Findings at 11, citing Kahal Statement at 14.
- <sup>103</sup> Consumer Coalition Proposed Findings at 8, n.19.
- <sup>104</sup> *Phase II Reconsideration Order*, para. 62.
- <sup>105</sup> This is true whether DCF, CAPM, or a comparable earnings approach is used.
- <sup>106</sup> Authorized Rates of Return for the Interstate Services of AT&T Communications and Exchange Telephone Carrier, CC Docket 84-800, Phase II, FCC 85-645, 51 Fed. Reg. 1796, Para. 36 (January 15, 1986), *mod. on recon.*, 104 FCC 2d 1404 (1986).
- <sup>107</sup> *Id.*
- <sup>108</sup> See *e.g.* Bell Atlantic Proposed Finding at 14 (implying that application of the DCF formula to RHC data creates a downward bias by stating that LEC cost of equity is "appreciably greater" than RHC cost of equity due to the "portfolio effect"); Ameritech Proposed Finding at 29 (stating that "Drs. Vander Weide and Carleton showed that the different anticipated growth rates create a downward bias in the DCF-indicated return for the RBOCs.").
- <sup>109</sup> See *e.g.*, Rochester Proposed Findings at 8, US West Proposed Findings at 16, Pactel Reply Proposed Findings at 3-4.
- <sup>110</sup> Bell Atlantic Proposed Findings at 13, *citing*, 87-463 Notice, 2 FCC Rcd at 6493.
- <sup>111</sup> Bell Atlantic Proposed Findings at 14; Bell Atlantic Reply Proposed Findings at 10-12. See also USTA Reply Proposed Findings at 14. The "portfolio effect" is the reduction in the variability of an investor's overall portfolio return through the inclusion of assets whose returns are less than perfectly correlated. Bell Atlantic Rebuttal at Attachment 1, p. 8.
- <sup>112</sup> Bell Atlantic Initial Submission at Attachment 1, pp. 4-5. The companies included in Vander Weide's correlation study included 3 telephone companies, 3 leasing companies, 3 cellular companies, and 2 service maintenance companies.
- <sup>113</sup> *Id.*
- <sup>114</sup> *Id.* at 5.
- <sup>115</sup> This argument is set out in greater detail in section III.B.8; below.
- <sup>116</sup> See *e.g.*, US West Proposed Findings at 19.
- <sup>117</sup> See *e.g.*, Consumer Coalition Proposed Findings at 4-5; Pennsylvania OCA Reply Proposed Findings at 11.
- <sup>118</sup> Consumer Coalition Proposed Findings at 9; GSA Proposed Findings at 12.
- <sup>119</sup> Consumer Coalition Proposed Findings at 15. Consumer Coalition notes that all the LECs endorse the DCF formula, except Ameritech.
- <sup>120</sup> Maryland PC Response at 4.
- <sup>121</sup> Consumer Coalition Reply at Statement of Ralph E. Miller, p. 14.
- <sup>122</sup> *Id.*
- <sup>123</sup> *Id.* at 11-13.
- <sup>124</sup> *Id.*
- <sup>125</sup> Consumer Coalition Proposed Findings at 12, *citing* NYNEX Rebuttal at Attachment B, p. 11.
- <sup>126</sup> Bell Atlantic Rebuttal at Attachment 1, p. 9.
- <sup>127</sup> Bell Atlantic Reply Proposed Findings at 11, n.31.
- <sup>128</sup> See *e.g.*, Consumer Coalition Proposed Findings at 30. Consumer Coalition contends that the Commission has stated that "regulated ratepayers should benefit from joint cost savings resulting from combined operations." *Id.*, *citing*, Separation of costs of regulated telephone service from costs of nonregulated activities, 2 FCC Rcd 1298, 1304 (1987).
- <sup>129</sup> See *e.g.*, Bell Atlantic Proposed Findings at 14, n.38; Rochester Reply Proposed Findings at 3-5.
- <sup>130</sup> See 2 FCC Rcd at 6493.
- <sup>131</sup> Standard & Poor's, *Telecommunications Ratings Update*, May 13, 1988, pp. 10-11.
- <sup>132</sup> See Part III. C., below.
- <sup>133</sup> Ameritech Initial Submission at 10, Testimony of Linke at 16-17; Bell Atlantic Initial Submission at 5, Affidavit of Vander Weide at 2; BellSouth Initial Submission, Testimony of Carleton at 24; NYNEX Initial Submission at 6, Testimony of Carleton at 18, Statement of Cogswell at 2, Statement of Morris at 2; Pactel Initial Submission at 9; Southwestern Bell Initial Submission at 17; US West Initial Submission at 19.
- <sup>134</sup> *E.g.*, Bell Atlantic Initial Submission, Affidavit of Vander Weide at 3; Ameritech Initial Submission, Testimony of Linke at 17-18.
- <sup>135</sup> NYNEX Initial Submission, Statement of Carleton at 16-17; NYNEX Rebuttal, Statement of Carleton at 5.
- <sup>136</sup> Pactel Initial Submission at 14-15.
- <sup>137</sup> Consumer Coalition Proposed Findings at 16.
- <sup>138</sup> *Id.* at 17-21.
- <sup>139</sup> Consumer Coalition Response, Appendix to Statement of Miller at 3-7.
- <sup>140</sup> *Id.*, *citing* Smith Barney, Harris Upham & Co., Inc., *Telecommunications/Regulated Services*, August 7, 1989.
- <sup>141</sup> *Id.*, *citing* First Boston Corporation, *Equity Research-BellSouth*, p. 5, Sept. 16, 1989. Miller notes that this cellular growth did not include growth associated with the then-pending Lin acquisition.
- <sup>142</sup> Consumer Coalition Proposed Findings at 18-19.
- <sup>143</sup> BellSouth Reply Findings at 6. (emphasis in original)
- <sup>144</sup> *Id.* at 5. BellSouth also cites similar January, 1990 *Value Line* analyses of other RHCs. The *Value Line* reports referenced by BellSouth were submitted by GSA in its responsive submission. See GSA Responsive Submission, Exhibit 1.
- <sup>145</sup> See, *e.g.*, *Max Headroom: The Baby Bells are not all alike*, Morgan Stanley, May 10, 1990, at 18, 19, 37-43; *The Cellular Telecommunications Industry*, Donaldson, Lufkin, & Jenrette, May, 1989, at 40, 52. These and other analysts' reports became part of the Rule Making record in this proceeding through discovery. See Appendix G.
- <sup>146</sup> *Value Line Ratings and Reports*, p. 757, July 20, 1990.

<sup>147</sup> Consumer Coalition Proposed Findings at 18-19.

<sup>148</sup> We note in this regard that, of the analysts whose reports appear in the record, those who have the greatest expectations for cellular in the next five years tend to make growth forecasts that are a little higher than the IBES median estimate.

<sup>149</sup> See III. C., below.

<sup>150</sup> *FPC v. Hope Natural Gas*, 320 US 591, 603 (1944) (*Hope*). This standard is known as the "capital attraction" standard. See also *Bluefield Water Works v. PSC*, 262 US 679, 693 (1923) (*Bluefield*). These cases will be referred to collectively as *Bluefield/Hope*.

<sup>151</sup> *Hope*, 320 US at 603. This standard is known as the "comparable earnings" standard. See also *Bluefield*, 262 US at 692.

<sup>152</sup> Ameritech Proposed Findings at 39-40.

<sup>153</sup> *Farmers Union Central Exchange, Inc. v. FERC*, 734 F.2d 1486, 1527 (D.C.Cir. 1984), cert. denied, 469 US 1034 (1984) (*Farmers Union*).

<sup>154</sup> Ameritech Proposed Findings at 17-22.

<sup>155</sup> *Id.* at 18.

<sup>156</sup> *Id.* at 36. See also Ameritech Rebuttal, Phillips Statement at 6-7.

<sup>157</sup> Ameritech Proposed Findings at 32. Ameritech offers the following example: "If the book value of an RHCs' stock is \$100, the stock would be currently trading at \$180. Using a 5 percent dividend yield component and a 7 percent growth rate results in a DCF-required return of 12 percent. Applying this return to a firm's net original cost rate base of \$200 results in [authorized] earnings per share of \$12. After paying its \$9 dividend, the firm has \$3 left for growth, and \$3 equates to a 3 percent growth rate." *Id.*

<sup>158</sup> *Id.* at 50.

<sup>159</sup> *Id.* at 45-47; see III.B., below, for discussion of Ameritech's selection of a group of comparable firms.

<sup>160</sup> Ameritech's Reply Proposed Findings at 18-21. The efficient market hypothesis holds that all available and relevant information about a company is incorporated into the market price of that company.

<sup>161</sup> *Id.* at 21.

<sup>162</sup> Ameritech Proposed Findings at 18 and 51; Ameritech Initial Submission at 21.

<sup>163</sup> Ameritech Proposed Findings at 40.

<sup>164</sup> *Id.* at 50-51.

<sup>165</sup> Consumer Coalition Proposed Findings at 21.

<sup>166</sup> *Id.* at 21, citing *Permian Basin Area Rate Cases*, 390 US 747, 806 (1968) (*Permian Basin*).

<sup>167</sup> Consumer Coalition Proposed Findings at 22, citing *Generic Determination of Rate of Return on Common Equity for Public Utilities*, Order No. 489, 53 Fed. Reg. 3342 (February 5, 1988) (*Order No. 489*), reh'g. den., 489-A, 53 Fed. Reg. 11,991 (April 12, 1988).

<sup>168</sup> Consumer Coalition states that other RHCs used data from companies with market-to-book ratios greater than one in DCF formulas. Consumer Coalition Proposed Findings at Appendix A, p.2

<sup>169</sup> *Id.*

<sup>170</sup> *Id.*

<sup>171</sup> *Id.*

<sup>172</sup> *Id.* at 3.

<sup>173</sup> *Id.* Consumer Coalition claims that Ameritech's "fair value" approach allows a return on the market value of the total of equity-financed assets.

<sup>174</sup> *Id.* at 4, citing *Orange & Rockland Utilities, Inc.*, 40 FERC ¶ 63,053 (1987) (*O & R Initial Decision*), mod. on other grounds, 44 FERC ¶ 61,253 (1988) (*O & R Recon.*), rehearing granted in part on other grounds, 45 FERC ¶ 61,252 (1988).

<sup>175</sup> Consumer Coalition Proposed Findings at Appendix A, p. 4.

<sup>176</sup> *Id.* at 5, citing Ameritech Rebuttal, Phillips Statement at 11.

<sup>177</sup> *American Telephone & Telegraph Co. and the Associated Bell System Companies, Charges for Interstate and Foreign Communication Service, Interim Decision and Order*, 9 FCC 2d 20, 56 (1967).

<sup>178</sup> *Hope*, 320 US at 602. See also *United States v. FCC*, 707 F.2d 610, 618 (D.C. Cir. 1982) ("Under settled law, the Commission may employ any formula or combination of formulas it wishes and it is free to make pragmatic adjustments called for by particular circumstances."); *Arkansas Louisiana Gas Co. v. FERC*, 654 F.2d 435, 441 (5th Cir. 1981) ("It is not the law that the Commission may set a rate of return only by comparison to the actual earnings of comparable companies.\*\*\* [T]he comparable earnings and attraction of capital tests are neither exhaustive nor exclusive and . . . the Commission may set just and reasonable rates without reference to these standards.").

<sup>179</sup> See e. g., FERC's *Order 489*; *Southwestern Bell Telephone Company's Proposal for Network Modernization, Rate Stability and Pricing Regulation, a/k/a "Telekansas", Order*, Docket No. 166,856-U, (February 2, 1990) (issued by the Kansas Corporation Commission) (adopting a return on equity based on the DCF methodology); *Investigation of the Revenue Requirements, Rate Structures, Charges, Services, Rate of Return and Construction Program of South Central Bell Telephone Company in its Louisiana Intrastate Operations, the Appropriate Level of Access Charges, and All Matters Relevant to the Rates and Services Rendered by the Company, Order No. U-17949-A*, (May 25, 1989) (issued by the Louisiana Public Service Commission) (rejecting the comparable earnings methodology).

<sup>180</sup> *Farmers Union*, 734 F.2d at 1496.

<sup>181</sup> *Id.* at 1495.

<sup>182</sup> *Id.* at 1496-97.

<sup>183</sup> *Id.* at 1525-27. The court stated: "FERC's method ensures that the allowable revenues for oil pipelines will exceed the revenues earned by its selected unregulated companies by the extent to which the pipelines' 'equity component' exceeds the portion of the rate base financed through equity investments." *Id.* at 1526.

<sup>184</sup> In establishing a rate of return for AT&T in 1981, the Commission stated: "[a]lthough we reject the contention that this Commission has an affirmative obligation to set an interstate rate of return which will insure a market to book ratio for AT&T's common stock which will exceed one, we do recognize that a market to book ratio of less than one may be symptomatic of deficient rates of return." *American Telephone and Telegraph Co. Petition for Modification of Prescribed Rate of Return, Decision*, 86 FCC 2d 221, 245, n.44 (1981).

<sup>185</sup> Ameritech asserts that the loss in value will be \$78 billion. This figure is not explained, and appears to be a gross exaggeration based on the faulty assumption that all stock value lost (including value associated with intrastate and nonregulated activities) will result directly from our decision.

<sup>186</sup> We note that our analysis on this issues is also in accord with recent FERC decisions. See *Order No. 489*, 53 Fed. Reg. 3342 (February 5, 1988) *O & R Recon. Decision*, 44 FERC ¶ 61,253, 95 PUR4th 451 (1988). In reviewing a request to substitute the utility's book value per share for market price in the

dividend yield calculation, FERC stated: "O&R's circular approach to a rate of return determination would perpetuate whatever level of earnings is currently anticipated by investors. If expected earnings levels were depressed, as they were industry-wide during the mid-1970's, adopting O&R's approach would tend to perpetuate the low expected earnings levels and associated depressed stock prices. The cost of capital standard endorsed by this Commission avoids this self-perpetuating cycle by setting the allowed rate of return on common equity at the rate of return investors require on their investment." *O & R Recon. Decision*, 95 PUR4th at 453.

<sup>187</sup> As the Supreme Court noted in *Bluefield*, a rate of return that is reasonable at one time may be too high under different economic conditions. 262 US at 693.

<sup>188</sup> *Hope* rejected the position that a "fair value" rate base was constitutionally required. In so doing, *Hope* stated: "'fair value' is the end product of the process of rate-making not the starting point . . . [R]ates cannot be made to depend upon 'fair value' when the value of the going enterprise depends on earnings under whatever rates may be anticipated." *Hope*, 320 US at 601.

<sup>189</sup> *American Telephone and Telegraph Co. and the Associated Bell System Companies: Charges for Interstate and Foreign Communication Service*, 9 FCC 2d 30, 51 (1967) ("this Commission is committed to regulation on original cost rate base").

<sup>190</sup> AT&T (Docket 19129), 64 FCC 2d 1, 48-50 (1977).

<sup>191</sup> Ameritech Rebuttal (Phillips) at 11.

<sup>192</sup> The Supreme Court has recently accepted the proposition that most experts accept the concept of an efficient market. *Basics, Inc. v. Levinson*, 108 S.Ct. 978, 993 (1988).

<sup>193</sup> As the Supreme Court made clear in *Duquesne*, a carrier does not suffer confiscation simply because a prudent investment in plant is not included in the rate base. 109 S.Ct. at 619-620.

<sup>194</sup> The United States Court of Appeals for the District of Columbia Circuit recently considered our rules and policies concerning how we calculate the rate base that we use for ratemaking purposes, and affirmed those rules in most respects. *Illinois Bell Tel. Co. v. FCC*, 911 F.2d 776 (D.C. Cir. 1990). At least since 1977, the FCC has followed a policy of generally allowing only "used and useful" investments to be included in the rate base. See *id.*, 911 F.2d at 779.

<sup>195</sup> Southwestern Bell Initial Submission at 23, Attachment 8; *id.*, Joint Affidavit of William E. Avera and Bruce H. Fairchild.

<sup>196</sup> Texas OPUC Notice of Appearance, Affidavit of Carol A. Szerszen; Consumer Coalition, Proposed Findings at 24, n.64.

<sup>197</sup> SWB Rebuttal at 3-18; SWB Supplemental Rebuttal, Affidavit of Susan B. Fox.

<sup>198</sup> Colorado CC Responsive Submission at 9.

<sup>199</sup> Florida Citizens Responsive Submission, Testimony of Clinger at 15, Schedule 2, p. 1.

<sup>200</sup> Indiana/Ohio CC Responsive Submissions, Direct Testimony of Ben Johnson at 30.

<sup>201</sup> Pennsylvania OCA Responsive Submission, Affidavit of Matthew I. Kahal at 5.

<sup>202</sup> Tennessee PSC Responsive Submission, Testimony of Christopher C. Klein at 24.

<sup>203</sup> Consumer Coalition Responsive Submission, Statement of Matiyahu Marcus at 3; *id.* Statement of Ralph E. Miller at 7.

<sup>204</sup> US West Rebuttal, Statement of Laurence B. Siegel at 17; BellSouth Rebuttal at 5-9, 17-26, Rebuttal Statement of Willard T. Carleton; NYNEX Rebuttal, Statement of Willard T. Carleton.

<sup>205</sup> US West Initial Submission, Statement of Laurence B. Siegel at 23; Ameritech Initial Submission, Testimony of Charles M. Linke at 8, 14-15; USTA Cluster Group Betas - GSA Responsive Submission, Statement of Philip R. Winter at 25; USTA Initial Submission, Appendix 1, pp. viii-ix; Southwestern Bell Initial Submission, Joint Affidavit of William E. Avera and Bruce H. Fairchild at 22; Tennessee PSC Responsive Submission, Testimony of Christopher C. Klein at 27-28. Klein, however, did not offer his CAPM estimate as a final estimate of the cost of equity. Rather, he averaged it with his DCF estimates of 12.15-12.3 to produce a recommended return on equity of 12.8%. *Id.*

<sup>206</sup> Consumer Coalition Responsive Submission, Statement of Ralph E. Miller at 24-33; Consumer Coalition Proposed Findings at 24-32; Consumer Coalition Reply Findings at 16-18; *Stocks, Bonds, Bills, and Inflation 1989 Yearbook*, Ibbotson and Associates, Chicago, Ill., 1989.

<sup>207</sup> Southwestern Bell Rebuttal, Joint Affidavit of William E. Avera and Bruce H. Fairchild at 8; NYNEX Rebuttal, Statement of John H. Cogswell at 9; US West Rebuttal, Reply Statement of Laurence B. Siegel at 29-38; Ameritech Rebuttal, Rebuttal Testimony of Charles M. Linke at 31 and Exhibit 4.

<sup>208</sup> Consumer Coalition Responsive Submission, Statement of Ralph E. Miller at 24-33; Proposed Findings at 30-32; Reply Findings at 16-18; NYNEX Rebuttal, Statement of John H. Cogswell at 9; US West Rebuttal, Statement Submitted by Laurence B. Siegel at 34.

<sup>209</sup> Bell South Initial Submission, Testimony of Carleton at 35-41; NYNEX Initial Submission, Testimony of Carleton at 22-27.

<sup>210</sup> Bell Atlantic Initial Submission, Affidavit of Vander Weide at 10.

<sup>211</sup> USTA Initial Submission, Appendix 1, p. ix.

<sup>212</sup> USTA Rebuttal at 5, 9. Bell South Initial Submission, Testimony of Carleton at 35; NYNEX Initial Submission, Testimony of Carleton at 22. Bell Atlantic Initial Submission, Affidavit of Vander Weide at 10.

<sup>213</sup> Consumer Coalition Proposed Findings at 33. Florida Citizens, Direct Testimony of Steven F. Clinger at 33; GSA, Statement of Philip R. Winter at 23; and West Virginia GA, Statement of Stephen G. Hill at 6.

<sup>214</sup> Ameritech Initial Submission, Testimony of Charles F. Phillips; Ameritech Rebuttal, Rebuttal Testimony of Charles F. Phillips.

<sup>215</sup> Indiana/Ohio CC Responsive Submission, Direct Testimony of Ben Johnson, PhD., at 11-13. Ameritech Rebuttal, Rebuttal Testimony of Charles F. Phillips, Attachment 6.

<sup>216</sup> Ameritech Rebuttal, Rebuttal Testimony of Charles F. Phillips at 19.

<sup>217</sup> US West Initial Submission, Statement of Laurence B. Siegel at 23.

<sup>218</sup> Consumer Coalition Proposed Findings at 37; Responsive Submissions, Statement of Ralph E. Miller at 37. US West Rebuttal at 28.

<sup>219</sup> Consumer Coalition Proposed Findings at 37; US West Initial Submission, Statement of Laurence B. Siegel at 22; US West Rebuttal at 30.

<sup>220</sup> USTA Initial Submission, Proposed Findings, Appendix 2.

<sup>221</sup> GSA Responsive Submission, Statement of Philip R. Winter at 24; Maryland PC Response at 5-8; Pennsylvania OCA, Affidavit of Matthew I. Kahal at 12-14.

<sup>222</sup> Consumer Coalition Proposed Findings at 32-39.

<sup>223</sup> Consumer Coalition Reply Findings at 16.

<sup>224</sup> Consumer Coalition Responsive Submission, Statement of Ralph E. Miller at 33-39; Bell Atlantic Initial Submission, Affidavit of James H. Vander Weide at 6-9.

<sup>225</sup> Bell Atlantic Rebuttal Submission, Reply Affidavit of James H. Vander Weide at 13-19.

<sup>226</sup> *Id.* at 17-18.

<sup>227</sup> Tennessee PSC, Affidavit of Christopher C. Klein at 29; Bell Atlantic Rebuttal Submission, Reply Affidavit of James H. Vander Weide at 7-9; Maryland PC Response at 4.

<sup>228</sup> Two methods were used to apply the criteria to select comparable firms. USTA used a modification of the clustering procedure suggested in the *Docket 87-463 Notice*. The other analyses used screening procedures similar to the one described in Part 65.400. None of the parties argued that method of selection is a critical factor in establishing the validity of a comparable firms analysis. Accordingly, we assign no preference based on the selection method.

<sup>229</sup> Ameritech Rebuttal, Rebuttal Testimony of Charles F. Phillips; Bell Atlantic Attachment A Update for July, 1990.

<sup>230</sup> Bell Atlantic Attachment A Update for July, 1990.

<sup>231</sup> USTA Proposed Findings, Appendix 2; Bell Atlantic, Attachment A Update, December, 1989.

<sup>232</sup> Indiana/Ohio Response, Testimony of Ben Johnson at 14-26; USTA Initial Submission at 9 and Appendix 1, p. ix; Ameritech Initial Submission, Testimony of Charles F. Phillips; GSA Responsive Submission, Statement of Philip R. Winter.

<sup>233</sup> Florida's Citizens Response, Direct Testimony of Steven F. Clinger at 7; Indiana/Ohio CC Response, Direct Testimony of Ben Johnson at 18; PacTel Initial Submission at 32.

<sup>234</sup> *See, e.g.*, Bell Atlantic Proposed Findings at 4; BellSouth at 14; USTA at 8-9.

<sup>235</sup> *Id.*

<sup>236</sup> Consumer Coalition Proposed Findings at 45-46.

<sup>237</sup> *Id.* at 45.

<sup>238</sup> The parties placed a wide variety of interest rate comparisons in the record. We use these particular rates for illustrative purposes only.

<sup>239</sup> *1986 Represcription Proceeding* at paras 34-36. In that proceeding carriers took the position that, because the Part 65 rules did not specify a risk premium methodology, Part 65 precluded the Commission from taking into consideration in any way the 1984-86 decline in interest rates. The Commission found that consideration of interest rate data was necessary to evaluate objections to the use of 2-year average data inputs in the "historical" DCF formula. *Id.* paras. 14, 34-36. *See* III.B.3., above.

<sup>240</sup> *See also* Part IV. A.2., below.

<sup>241</sup> FERC's benchmark return on equity for electric utilities for the period February 2, 1990 - April 30, 1990, calculated using a somewhat different DCF formula, was 11.75. Generic Determination of Rate of Return on Common Equity for Public Utilities, 55 Fed. Reg. 2060 (January 22, 1990).

<sup>242</sup> Virtually all LEC-sponsored estimates, except the bottom of the range of the risk premium estimates offered by Southwestern Bell's experts Avera and Fairchild, lie above this range. We note, however, that no LEC estimate has been rejected solely or primarily on the basis of the equity market benchmarks. Each has been considered in its own terms and on its merits; the equity market benchmark data merely confirms our conclusions about the LEC estimates.

<sup>243</sup> *See e.g.*, National Telecommunications and Information Administration, Comprehensive Study of the Domestic Telecommunications Infrastructure, Notice of Inquiry, January, 1990.

<sup>244</sup> *See* NYNEX Proposed Findings at 22-26.

<sup>245</sup> NYNEX Initial Submission at Appendix B, p. 3-4.

<sup>246</sup> *Id.* at 5.

<sup>247</sup> Davidson states that the U.S. is currently running a multi-billion dollar trade deficit for telecommunications equipment and services. *Id.*

<sup>248</sup> *Id.* at 6.

<sup>249</sup> *Id.* at 9. *See also* NYNEX Reply Proposed Findings at 17-22.

<sup>250</sup> NYNEX Rebuttal, Attachment A at 5. *See also* NYNEX Initial Submission, Appendix B, p. 9-10.

<sup>251</sup> NYNEX Initial Submission, Appendix B, p. 11; NYNEX Proposed Findings at 24.

<sup>252</sup> NYNEX Initial Submission, Appendix B, p. 11.

<sup>253</sup> The Telecommunications Infrastructure In Perspective, Ad Hoc Reply at Appendix I.

<sup>254</sup> *Id.* at 7-13.

<sup>255</sup> ETI notes that Singapore has the most volume of usage per access line, but that Singapore also has lower levels of penetration which partially accounts for the volume of usage per access line. *Id.* at 8.

<sup>256</sup> *Id.* at 8-9.

<sup>257</sup> ETI states: digital switches are but subset of computer-controlled switches; France has more switches which are not computer-controlled; switches which are not computer-controlled are able to access only basic services. Therefore, because the U.S. exceeds France in the percentage of lines served through computer-controlled switches, it is not falling behind in the deployment of modern technologies. *Id.* at 12-13.

<sup>258</sup> This dollar amount includes investment in both private and public networks. *Id.* at 36.

<sup>259</sup> *Id.* at 4 and 22-26. *See also* Ad Hoc Proposed Findings at 24 and 26. Ad Hoc also contends that NYNEX's investment figures showing competitors spending more per subscriber line than the U.S. are misleadingly high because they include investment associated with customer premises equipment, equipment and facilities used for long-distance communication, PBXs, and activities not regulated in the U.S. These are all equipment investments that the BOCs do not have to make. *Id.* at 22.

<sup>260</sup> Ad Hoc Initial Submission at Appendix I, p. 31.

<sup>261</sup> NYNEX Rebuttal at Attachment A, p.1.

<sup>262</sup> Davidson states that countries such as Sweden, Denmark, and Canada exhibited higher penetration rates than the U.S. in 1987. Moreover, in 1989, France had a higher penetration rate than the U.S., and Germany and the United Kingdom had rates of penetration essentially identical to the U.S. *Id.* at 4.

<sup>263</sup> *Id.* at 4-5.

<sup>264</sup> NYNEX states that by 1994 the U.S. will trail all of its major competitor nations in the deployment of digital switching. NYNEX also maintains that the U.S. will trail a number of major competitor nations in the deployment of Signalling System 7 within the next few years. *Id.* at 2-3.

<sup>265</sup> *Id.* at 4-8.

<sup>266</sup> CIRI/WID Rebuttal, Paper of Mary G. Jones, p. 3.

<sup>267</sup> *Id.* at 12-14.

<sup>268</sup> CIRI/WID Rebuttal at 3.

<sup>269</sup> NYNEX Proposed Findings at 25-26.

<sup>270</sup> NYNEX implies that such widespread deployment increases the risk of infrastructure investment. NYNEX Proposed Findings at 26-27. USTA argues that infrastructure risk is great-

er because of the risk in making critical new investment in an increasingly competitive marketplace. USTA Reply Proposed Findings at 10.

<sup>271</sup> See e.g., BellSouth Proposed Findings at 7; NYNEX Proposed Findings at 26-27.

<sup>272</sup> See e.g., Pactel Proposed Findings at 28-30.

<sup>273</sup> See e.g., NYNEX Reply Proposed Findings at 28-29.

<sup>274</sup> Consumer Coalition Reply Proposed Findings at 29.

<sup>275</sup> Consumer Coalition Proposed Findings at 51.

<sup>276</sup> Ad Hoc Proposed Findings at 50.

<sup>277</sup> *Id.* at 30.

<sup>278</sup> Consumer Coalition Proposed Findings at 51. The LECs contend that Consumer Coalition's position is based on a rigid and unrealistic model. See e.g., BellSouth Reply Proposed Findings at 17-18.

<sup>279</sup> 47 U.S.C. § 151.

<sup>280</sup> The resulting higher rates could also, as Consumer Coalition suggests, have the perverse effect of reducing demand and profits.

<sup>281</sup> 1986 *Rescription Proceeding*, 51 Fed. Reg. 32920 at paras. 50-51.

<sup>282</sup> See e.g., Bell Atlantic Proposed Findings at 10-12.

<sup>283</sup> Rochester Proposed Findings at 14-15.

<sup>284</sup> NYNEX Proposed Findings at 29-30.

<sup>285</sup> CC Docket 87-339 established a program for monitoring the impact of Joint Board decisions. Under this program, the RHCs file reports which include information on bypass. Establishment of a Program to Monitor the Impact of Joint Board Decisions, *Order*, 2 FCC Rcd 5266 (1987), *recon.*, 4 FCC Rcd 7660 (1988).

<sup>286</sup> NYNEX Proposed Findings at 30, *quoting* NYNEX Bypass Reports in CC Docket 87-339, filed April 29, 1988, October 31, 1988, April 28, 1989. NYNEX states that it stands behind its bypass reports as "the most reliable estimate of bypass on the public record." *Id.* See also NYNEX Rebuttal at 20.

<sup>287</sup> Bell Atlantic Initial Submission at Attachment 2, p. 4.

<sup>288</sup> *Id.* at 5.

<sup>289</sup> *Id.* at 6.

<sup>290</sup> *Id.* at 8-9.

<sup>291</sup> *Id.* at 10-11.

<sup>292</sup> See e.g., Pactel Proposed Findings at 28; US West Proposed Findings at 30-31, *quoting* S & P report.

<sup>293</sup> See e.g., NYNEX Reply Proposed Findings at 31; US West Reply Proposed Findings at 13.

<sup>294</sup> See e.g., GTE Reply Proposed Findings at 5; US West Reply Proposed Findings at 13-14.

<sup>295</sup> See e.g., Ad Hoc Proposed Findings at 7-8.

<sup>296</sup> See e.g., Ad Hoc Proposed Findings at 9, *quoting*, Local Exchange Carriers' Individual Case Basis DS3 Service Offering, *Memorandum Opinion and Order*, 4 FCC Rcd 8634, 8643 and 8644 (1989).

<sup>297</sup> See e.g., Ad Hoc Proposed Findings at 10-11, *quoting*, Investigation of Special Access Tariffs of Local Exchange Carriers, *Order on Reconsideration*, 5 FCC Rcd 400 (1990). See also, Consumer Coalition Proposed Findings at 48-50.

<sup>298</sup> Ad Hoc Proposed Findings at 3.

<sup>299</sup> Consumer Coalition Reply Proposed Findings at 26.

<sup>300</sup> See e.g., Ad Hoc Proposed Findings at 11-13; ARINC Proposed Findings at 5.

<sup>301</sup> Ad Hoc Proposed Findings at 13.

<sup>302</sup> Consumer Coalition Reply Proposed Findings at 26.

<sup>303</sup> See e.g., Consumer Coalition Proposed Findings at 43-44; Pennsylvania OCA Reply Proposed Findings at 17.

<sup>304</sup> See Strategic Pricing Reconsideration Order, 5 FCC Rcd 400, 404 (1990).

<sup>305</sup> Cite NYNEX reply findings reiterating the value of the Joint Board maintaining Bypass reports.

<sup>306</sup> Cite petitions and complaints filed by MFS.

<sup>307</sup> *FPC v. Hope Natural Gas Co.*, 320 US 591, 603 (1944).

<sup>308</sup> *Bluefield Water Works v. PSC*, 262 U.S. 679, (1923); *Hope*, *supra*.

<sup>309</sup> See *Farmers Union Central Exchange, Inc. v. FERC*, 734 F.2d 1486, 1502 (D.C.Cir. 1984).

<sup>310</sup> See, e.g., *Farmers Union*, 734 F.2d at 1502; *FERC v. Penzoil Producing Co.*, 439 U.S. 508, 517 (1979).

<sup>311</sup> The implied return on equity is 13.2%. That is, a company with an embedded cost of debt of 8.8% and a capital structure of 44.2% debt/55.8% equity that earned 11.25% overall return on capital would have a return on equity of 13.2%. We prescribe only the overall rate of return, however.

<sup>312</sup> See para. 14, above.

<sup>313</sup> 836 F.2d at 1393. Invocation of the concept of balancing often conjures an image of a scale, or possibly, and more negatively, a see saw, that can only achieve balance at one point. Perhaps the more appropriate visual metaphor for the balance we have in mind would be a rocking chair that can be made to tip over frontwards or backwards, but that will remain upright through a considerable part of its total range of motion.

<sup>314</sup> Cf., e.g., *Jersey Central*, *supra*, at 1177 (characterizing the zone of reasonableness as bounded at one end by investor interest against confiscation and at the other by the consumer interest against exorbitant rates.) We see the range of reasonable estimates of the cost of capital that we have identified as considerably narrower than the broad zone of reasonableness described by the *Jersey Central* court. This is because our range of estimates represents the range within we feel reasonably certain of the correctness of our results, and we have tried to make it as narrow as possible.

<sup>315</sup> Section 65.102 (c) provides that the RHCs shall file initial rate of return submissions on February 3, 1986, and thereafter on January 3 at two year intervals. 47 C.F.R. §65.102(c). Section 65.701 (a) states that, for enforcement purposes, "interstate earnings shall be measured over a two year period to determine compliance with the maximum allowable rate of return. The review periods shall commence on January 1 in odd-numbered years and end on December 31 in even-numbered years." 47 C.F.R. §65.701(a).

<sup>316</sup> GSA filed a Motion to Accept its 2/06/90 Late Filed "Notice of Appearance" on February 6, 1990. Colorado CC filed a Motion to Accept its 3/16/90 Notice of Appearance on March 16, 1990. Indiana/Ohio CC filed a Motion for Leave to Intervene Late on March 28, 1990. Texas OPUC filed a Notice of Appearance requesting acceptance of its notice of appearance and its late filed affidavit and brief on April 9, 1990 (Texas OPUC Notice of Appearance).

<sup>317</sup> Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers, *Order*, 5 FCC Rcd 1812 (1990).

<sup>318</sup> *Id.*

<sup>319</sup> Texas OPUC Notice of Appearance at 1.

<sup>320</sup> Southwestern claims that Texas OPUC's filing is procedurally defective because: it failed to include a Motion to Accept Late Filed Pleadings; it failed to contain a filing date; and it

failed to provide a certificate of service as proof of service on parties of record. Southwestern Opposition and Motion to Strike at 2 and 3.

<sup>321</sup> *Id.* at 4.

<sup>322</sup> *Id.*

<sup>323</sup> These supplemental submissions were to be filed on May 21, 1990.

<sup>324</sup> Ameritech Motion to Accept Late Filed Pleading at 1.

<sup>325</sup> Consumer Coalition Motion for Leave to File Out of Time at 2.

<sup>326</sup> We also accept Consumer Coalition's supplemental affidavit filed on July 3, 1990. This affidavit, upon which Consumer Coalition filed a Motion for Leave to File Supplemental Affidavit, contains no information going to the merits of this proceeding, instead it offers support for the credibility of one of Consumer Coalition's expert witnesses, Dr. Matityahu Marcus. Therefore, its acceptance in the record will not prejudice any party.

<sup>327</sup> USTA Petition for Waiver at 1.

<sup>328</sup> *Id.*

<sup>329</sup> See 47 C.F.R. §65.102(b)(1) ("[i]nitial carrier rate of return submissions").

<sup>330</sup> See 47 C.F.R. §65.102 (a) ("The Chief, Common Carrier Bureau may require from carriers providing interstate services, and from other participants submitting rate of return submission, data or studies that are reasonably calculated to lead to a full and fair record").

<sup>331</sup> Moreover, we note that the language of §65.102(c)(1) uses both "initial rate of return submissions" and "initial carrier rate of return submission" in setting the filing date for these first submissions. 47 C.F.R. §65.102(c)(1). This indicates that the first submissions are not limited in participation to carriers.

<sup>332</sup> Section 65.105(c) requires "[s]ervice shall be made by hand on the filing date upon all participants who have filed a notice of appearance pursuant to § 65.100(a)(1)." 47 C.F.R. §65.105(c).

<sup>333</sup> BellSouth Petition for Waiver at 1-2.

<sup>334</sup> Section 65.106 of the Commission's rules gives parties the right to oral argument on submissions if the requisite proof of necessity is shown. A request for oral argument must be filed within seven calendar days after the filing date of the controversial submissions. Hand service in the final round of submissions is necessary to prevent prejudice to any party who might seek oral argument thereon. See 47 C.F.R. §65.106.

## APPENDIX A

### PARTIES FILING NOTICES OF APPEARANCE IN CC DOCKET 89-624

The Ad Hoc Telecommunications Users Committee  
(Ad Hoc)

Aeronautical Radio, Inc. (ARINC)

ALLTEL Operating Companies (ALLTEL)

American Telephone and Telegraph Company (AT&T)

America's Carriers Telecommunication Association  
(ACTA)

Illinois Bell Telephone, Indiana Bell Telephone  
Company, Michigan Bell Telephone Company,  
Ohio Bell Telephone Company, Wisconsin  
Bell, Inc., and American Information

Technologies Corporation (Ameritech)  
The Bell Atlantic Telephone Companies (Bell Atlantic)  
BellSouth Corporation, South Central Bell Telephone  
Company and Southern Bell Telephone  
and Telegraph Company (BellSouth)  
Central Telephone Company (Centel)  
Cincinnati Bell Telephone (CBI)  
Citizens of Florida (Florida's Citizens)  
Colorado Office of Consumer Counsel (Colorado CC)  
Consumer Federation of America, International  
Communications Association, and MCI  
Telecommunications Corporation (Consumer  
Coalition)  
Consumer Interest Research Institute and the World  
Institute on Disability (CIRI/WID)  
Consumer Advocate Division of the West Virginia  
Public Service Commission (West Virginia CA)  
Contel Corporation (Contel)  
Cox Enterprises, Inc. (Cox)  
General Services Administration (GSA)  
GTE Service Corporation and its affiliated domestic  
telephone companies (GTE) Indiana Office of  
Utility Consumer Counselor and Ohio Office  
of Consumer's Counsel (Indiana/Ohio CC)  
Iowa Office of Consumer Advocate (Iowa CA)  
Maryland People's Counsel (Maryland PC)  
National Exchange Carrier Association (NECA)  
National Rural Telecom Association (NRTA)  
National Telephone Cooperative Association (NTCA)  
New England Telephone and Telegraph Company  
and New York Telephone Company (NYNEX)  
New York Department of Public Service  
(New York DPSC)  
Organization for the Protection and Advancement of  
Small Telephone Companies (OPASTCO)  
Pacific Bell and Nevada Bell (Pactel)  
Pennsylvania Office of Consumer Advocate  
(Pennsylvania OCA)  
Public Service Commission of the District of Columbia  
(D.C. PSC)  
Puerto Rico Telephone Company (PRTC)  
Rochester Telephone Corporation (Rochester)  
Southern New England Telephone Company (SNET)  
Southwestern Bell Telephone Company (Southwestern)  
Texas Office of Public Utility Counsel (Texas OPUC)  
Teleport Communications Group (Teleport)  
Tennessee Public Service Commission (Tennessee PSC)  
United States Telephone Association (USTA)  
United Telecommunications, Inc. (United)  
US West, Inc., the Mountain States Telephone  
and Telegraph Company, Northwestern Bell  
Telephone Company and Pacific Northwest  
Bell Telephone Company, doing business  
as US WEST Communications (US West)

**PARTIES FILING INITIAL SUBMISSIONS**  
February 16, 1990

Ameritech  
Bell Atlantic  
BellSouth  
NYNEX  
Pactel  
Southwestern  
USTA  
US West

**PARTIES FILING RESPONSES  
TO INITIAL SUBMISSIONS**  
March 27, 1990

Ad Hoc  
ARINC  
Centel  
Colorado Consumer Counsel  
Consumer Coalition  
Florida's Citizens  
GSA  
GTE  
Indiana & Ohio Consumers' Counsel  
Maryland People's Counsel  
NECA  
NTCA  
OPASTCO  
Pennsylvania Office of Consumer Advocate  
Rochester Telephone Corp.  
SNET  
Tennessee PSC  
United  
West Virginia Consumer Advocate

**PARTIES FILING REBUTTAL SUBMISSIONS**  
April 17, 1990

Ameritech  
Bell Atlantic  
BellSouth  
CIRI/WID  
Contel  
GTE  
NYNEX  
Rochester  
Pactel  
Southwestern Bell  
USTA  
US West

**PARTIES FILING SUPPLEMENTAL SUBMISSIONS**  
May 7, 1990

Ad Hoc  
ARINC  
AT&T  
Ameritech  
BellSouth  
Centel  
Cincinnati Bell  
Consumer Coalition  
Contel  
DCPSC  
GTE  
NYNEX  
Pactel  
Rochester  
SNET  
Southwestern Bell  
United  
USTA  
US West

**PARTIES FILING REPLIES  
TO SUPPLEMENTAL SUBMISSIONS**  
May 21, 1990

Ad Hoc  
AT&T  
Ameritech  
Bell Atlantic  
BellSouth  
Centel  
Consumer Coalition  
GTE  
NYNEX  
OPASTCO  
Pactel  
Rochester  
Southwestern  
SNET  
United  
USTA  
US West

**PARTIES FILING PROPOSED FINDINGS**  
July 2, 1990

Ad Hoc  
AT&T  
Ameritech  
Arinc  
Bell Atlantic  
BellSouth  
Centel  
Consumer Coalition

DCPSC  
GSA  
GTE  
NYNEX  
Pactel  
Rochester  
SNET  
Southwestern  
USTA  
US West

**PARTIES FILING REPLY FINDINGS**  
**July 16, 1990**

Ad Hoc  
Ameritech  
Bell Atlantic  
BellSouth  
Centel  
Consumer Coalition  
GSA  
GTE  
NYNEX  
Pactel  
PA OCA  
Rochester  
Southwestern  
USTA  
US West

Appendix B

Ex Parte and Other Presentations

<u>Date</u>	<u>Party Filing Presentation or Other Submission</u>	<u>Nature of Presentation</u>
1/10/90	USTA	Oral
1/18/90	BellSouth	Oral
1/23/90	NYNEX	Oral
1/30/90	NYNEX	Oral
2/1/90	US West	Oral
2/6/90	Bell Atlantic	Oral
3/16/90	USTA	Oral
3/22/90	NTCA	Oral
3/30/90	BellSouth	Oral
5/31/90	Bell Atlantic	Written
6/5/90	USTA	Oral
6/6/90	USTA	Oral
6/7/90	USTA	Oral
6/25/90	Metropolitan Fiber Sytems	Written
7/17/90	Bell Atlantic	Oral
7/18/90	Bell Atlantic	Oral
7/19/90	Bell Atlantic	Oral
7/19/90	USTA	Oral
7/23/90	Pactel	Oral
7/25/90	Bell Atlantic	Oral
7/26/90	Southwestern	Oral
7/30/90	NYNEX	Oral
7/31/90	Bell Atlantic	Oral
7/31/90	Southwestern	Written
8/06/90	Southwestern	Written
8/08/90	Bell Atlantic	Oral
8/09/90	Bell South	Oral
8/14/90	Southwestern	Oral
8/14/90	MCI	Oral
8/23/90	Bell Atlantic	Oral
8/24/90	Bell Atlantic	Oral
8/27/90	Bell Atlantic	Oral
8/27/90	BellSouth	Oral
9/04/90	Bell Atlantic	Oral
9/05/90	Bell Atlantic	Oral
9/05/90	USTA	Oral
9/05/90	USTA	Oral
9/06/90	BellSouth	Oral
9/06/90	USTA	Oral
9/06/90	USTA	Oral
9/06/90	USTA	Oral
9/07/90	NYNEX	Oral
9/11/90	BellSouth	Oral
9/12/90	MCI	Oral

APPENDIX C

Part 65  
Capital Structure/Cost of Debt  
As of September 30, 1989

	Percent of Capitalization					Cost of Debt			
	ST Debt	LT Debt	Other Debt	Total Debt	Equity	ST Debt	LT Debt	Other Debt	Total Debt
Ameritech	3.04%	38.43%	0.00%	41.47%	58.53%	9.16%	7.89%	0.00%	7.98%
Bell Atl	7.88%	41.19%	0.67%	49.74%	50.26%	9.27%	8.47%	8.80%	8.61%
BellSouth	0.00%	38.41%	0.00%	38.41%	61.59%	0.00%	8.91%	0.00%	8.91%
NYNEX	7.34%	36.54%	0.00%	43.88%	56.12%	8.79%	8.46%	0.00%	8.52%
Pactel	1.42%	39.84%	0.00%	41.26%	58.74%	9.53%	9.36%	0.00%	9.37%
SW Bell	2.14%	39.95%	0.07%	42.16%	57.84%	9.14%	9.05%	16.27%	9.07%
US West	8.39%	44.12%	0.00%	52.51%	47.49%	9.00%	8.88%	0.00%	8.90%
Average	4.32%	39.78%	0.11%	44.21%	55.79%	7.84%	8.72%	3.58%	8.76%

AVERAGE BOC CAPITAL STRUCTURE AND DEBT COST  
 .... 1989 .....  
 (\$000)

	..... Beg. Bal. .....	..... Debt Ending Bal. .....	..... Average .....	Total Interest on Debt .....	Cost of Debt .....	..... Beg. Bal. .....	..... Equity Ending Bal. .....	..... Average .....	Total Capital .....	Debt Ratio .....	Equity Ratio .....
	a	b	c=(a+b)/2	d	e=d/c	f	g	h=(f+g)/2	i=c+h	j=c/i	k=h/i
Illinois	1,512,067	1,437,163	1,474,615	118,859	0.080603	2,142,672	2,190,433	2,166,553	3,641,168	0.404984	0.595016
Indiana	470,049	459,460	464,755	37,499	0.080686	859,647	879,461	869,554	1,334,309	0.348311	0.651689
Michigan	1,385,132	1,399,097	1,392,115	117,188	0.084180	1,985,967	1,995,291	1,990,639	3,382,754	0.411533	0.588467
Ohio	875,234	877,498	876,366	70,104	0.079994	1,526,206	1,539,832	1,533,019	2,409,385	0.363730	0.636270
Wisconsin	514,490	533,584	524,037	41,010	0.078258	841,160	832,785	836,973	1,361,010	0.385036	0.614964
New Jersey	1,410,991	1,391,506	1,401,249	117,283	0.083699	2,399,501	2,427,901	2,413,701	3,814,950	0.367305	0.632695
Bell of PA	1,634,311	1,716,659	1,675,485	138,751	0.082812	2,321,376	2,345,261	2,333,319	4,008,804	0.417951	0.582049
Diamond State	88,710	92,671	90,691	7,671	0.084584	189,067	187,591	188,329	279,020	0.325033	0.674967
CAP - Maryland	983,092	1,018,693	1,000,893	89,774	0.089694	1,334,634	1,385,694	1,360,264	2,361,157	0.423899	0.576101
CAP - Virginia	906,314	977,360	941,837	80,461	0.085430	1,373,079	1,387,896	1,380,488	2,322,325	0.405558	0.594442
CAP - DC	242,961	244,059	243,510	20,577	0.084502	337,375	339,281	338,328	581,858	0.418519	0.581481
CAP - W. Virginia	315,322	306,604	310,963	26,520	0.085283	441,066	438,466	439,766	750,729	0.414215	0.585785
Southern Bell	3,774,078	3,954,577	3,864,328	260,884	0.067511	6,293,858	6,500,339	6,397,099	10,281,426	0.378588	0.623412
South Central	2,884,532	2,862,207	2,873,370	260,884	0.090794	4,538,435	4,687,154	4,612,795	7,486,164	0.383824	0.616176
New York	4,040,908	4,004,244	4,022,576	376,202	0.093523	5,719,506	5,598,898	5,659,202	9,681,778	0.415479	0.584521
New England	2,058,082	2,301,199	2,179,641	217,131	0.099618	2,880,010	2,931,028	2,905,519	5,085,160	0.428628	0.571372
Pacific	5,457,321	5,252,129	5,354,725	493,415	0.092146	6,992,569	7,042,550	7,017,560	12,372,285	0.432800	0.567200
Nevada	83,171	78,371	80,771	8,001	0.099058	120,075	116,803	118,439	199,210	0.405457	0.594543
Southwestern Bell	5,126,428	4,926,239	5,026,334	474,733	0.094453	7,010,344	7,060,874	7,035,609	12,061,943	0.416710	0.583290
Mountain States	2,293,916	2,247,100	2,270,508	219,831	0.096820	3,275,924	3,505,688	3,390,806	5,661,314	0.401057	0.598943
Northwestern	1,221,515	1,210,811	1,216,163	115,098	0.094640	1,849,391	1,872,350	1,860,871	3,077,034	0.395239	0.604761
Pacific Northwest	1,065,614	1,168,086	1,116,850	91,159	0.081622	1,517,829	1,511,800	1,514,815	2,631,665	0.424389	0.575611
TOTAL	38,344,238	38,459,317	38,401,778	3,383,055	0.088096	55,949,711	56,777,576	56,363,644	94,765,421	0.405230	0.594770

Sources: Col. a: 1988 Form N, Sch. B-1, Rows 420+4020+4050+4060+1407  
 Col. b: 1989 ARMIS 43-02, Table 1, Rows 420+4020+4050+4060+1407  
 Col. d: 1989 ARMIS 43-02, Table II, Row 7500  
 Col. f: 1988 Form N, Sch. B-1, Row 440  
 Col. g: 1989 ARMIS 43-02, Table 1, Row 440

Source: USTA Proposed Findings, APPENDIX 1.

APPENDIX D

## State Rate of Return Determinations

State	Date of Order	Unadjusted Rate of Return	Adjusted Rate of Return+
Virginia*	Dec-83	10.41%	11.83%
Mississippi	Mar-84	11.99%	
Connecticut	Oct-84	12.48%	
North Carolina	Nov-84	12.51%	
South Carolina	Jan-85	12.63%	
Wyoming	Jan-85	11.91%	
New Jersey*	Apr-85	10.48%	11.20%
Arkansas	May-85	9.98%	11.72%
Kentucky*	May-85	11.80%	
Maryland	May-85	11.98%	12.15%
New Hampshire	Jun-85	12.11%	
South Dakota	Jul-85	11.90%	
D.C.	Aug-85	12.29%	
Georgia	Sep-85	12.69%	
West Virginia	Sep-85	11.50%	
New York*	Oct-85	11.85%	
Pennsylvania	Oct-85	12.38%	
Montana	Nov-85	10.94%	
Ohio	Dec-85	12.22%	
-Indiana	Dec-85	10.30%	12.38%
Oklahoma	Jan-86	11.98%	
Colorado	May-86	11.67%	
Texas	Jun-86	12.03%	
Alabama*	Nov-86	11.65-12.30%	
Rhode Island*	Jul-87	11.36%	
Minnesota	Feb-88	10.64%	
Delaware*	Aug-88	10.72%	12.00%
Florida*	Oct-88	8.42-10.63%	11.51%
New Mexico	Dec-88	11.76%	
Iowa	Feb-89	10.86%	
Massachusetts	Mar-89	11.24%	
Arizona	May-89	11.68%	
Louisiana	Jun-89	10.89%	
Missouri*	Jun-89	10.73%	
Wisconsin	Jul-89	11.58%	
California*	Oct-89	11.50%	
Utah	Oct-89	10.64%	
Illinois*	Nov-89	10.77%	
Oregon	Dec-89	11.20%	
Washington*	Jan-90	10.53%	
Tennessee	Mar-90	11.60%	
Michigan*	Mar-90	9.21%	11.30%

\*Price cap or incentive regulation plan in effect.

+Adjusted to reflect comparability with FCC treatment.

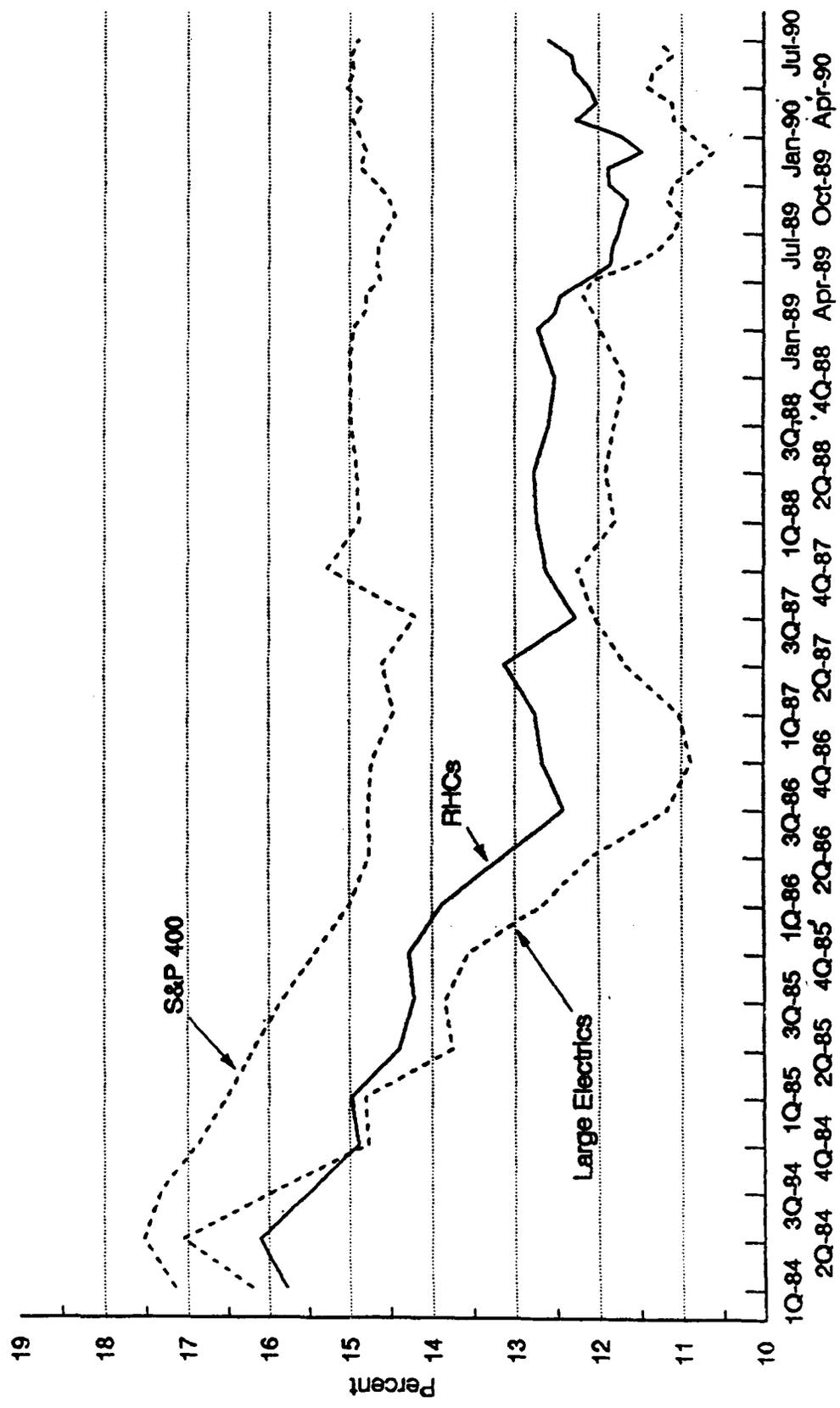
1989 and 1990 State Determined Cost of Equity

State	Date of Order	Cost of Equity
Iowa	Feb-89	12.85%
Massachusetts	Mar-89	13.00%
Louisiana	Jun-89	12.75%
Missouri*	Jun-89	12.61%
Wisconsin	Jul-89	14.00%
California*	Oct-89	12.95%
Utah	Oct-89	11.80%
Illinois*	Nov-89	12.76%
Michigan*	Mar-90	13.25%
Tennessee*	Aug-90	13.40%

Average 12.94%

\*Price cap or incentive regulation plan in effect.

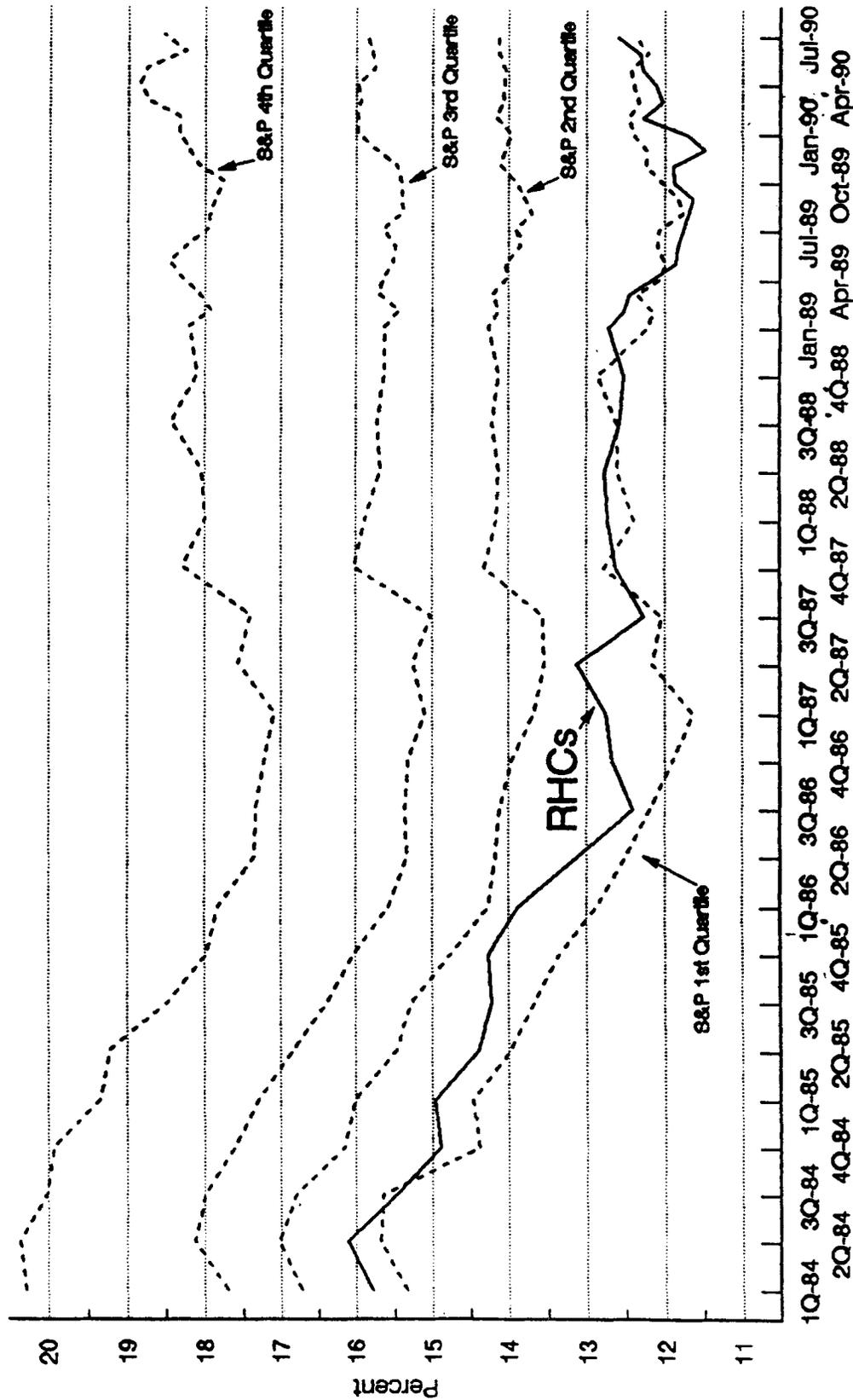
**Estimated DCF Cost of Equity for the RHCs  
Median Est. DCF Cost of Equity for the S&P 400  
and Large Electric Companies**



Note: The period 1984 through 1988 are quarterly DCFs, Jan-89 to Jul-90 are monthly DCFs.

(D:\FLVBNDEL\SP7\GD5)

**S&P 400 Est. DCF Cost of Equity by Quartile**  
**Estimated Cost of Equity for the RHCs**



Note: The period 1984 through 1988 are quarterly DCFs, Jan-89 to Jul-90 are monthly DCFs.

(D:\FLVABOND\S&P\GD9)

S&P 400 Estimated DCF Cost of Equity by Quartiles  
and Overall Median.  
Lower limit is the Corporate A bond yield.

Period		-----Quartile Medians-----				Overall
Mo	Yr	1st	2nd	3rd	4th	Median
3	84	15.34	16.72	17.71	20.28	17.16
6	84	15.68	17.03	18.13	20.37	17.53
9	84	15.65	16.79	17.99	20.01	17.31
12	84	14.39	16.16	17.61	19.94	16.87
3	85	14.46	16.02	17.29	19.33	16.51
6	85	13.98	15.48	16.84	19.21	16.18
9	85	13.68	15.28	16.39	18.48	15.83
12	85	13.36	14.77	16.04	17.98	15.43
3	86	12.89	14.27	15.58	17.83	15.00
6	86	12.52	14.18	15.33	17.34	14.76
9	86	12.20	14.12	15.35	17.34	14.77
12	86	11.91	13.97	15.32	17.21	14.72
3	87	11.64	13.68	15.10	17.09	14.47
6	87	12.16	13.54	15.26	17.57	14.60
9	87	12.04	13.56	15.03	17.40	14.21
12	87	12.78	14.32	16.03	18.30	15.26
3	88	12.40	14.16	15.89	18.00	14.87
6	88	12.61	14.14	15.68	18.04	14.91
9	88	12.62	14.23	15.73	18.45	14.98
12	88	12.86	14.13	15.63	18.11	15.00
1	89	12.23	14.27	15.64	18.21	14.97
-2	89	12.14	14.13	15.44	17.94	14.81
3	89	12.35	14.21	15.71	18.08	14.80
4	89	12.05	14.02	15.65	18.31	14.63
5	89	12.00	14.04	15.52	18.47	14.66
6	89	12.09	13.85	15.50	18.25	14.65
7	89	12.08	13.91	15.65	17.97	14.56
8	89	11.77	13.70	15.39	17.93	14.45
9	89	11.82	13.81	15.41	17.86	14.51
10	89	12.04	13.92	15.42	17.77	14.67
11	89	12.24	14.11	15.47	18.10	14.88
12	89	12.24	14.05	15.77	18.22	14.80
1	90	12.40	13.96	15.98	18.33	14.87
2	90	12.46	14.17	15.98	18.34	14.96
3	90	12.33	14.07	15.95	18.74	14.84
4	90	12.39	14.06	15.98	18.85	15.04
5	90	12.43	14.05	15.76	18.75	14.95
6	90	12.21	14.13	15.80	18.26	14.97
7	90	12.36	14.13	15.86	18.53	14.90

**Large Electric Companies' Median Estimated  
DCF Cost of Equity.  
Lower limit is the Corporate A bond yield.**

Period		
Mo	Yr	Median
3	84	16.21
6	84	17.04
9	84	15.92
12	84	14.77
3	85	14.81
6	85	13.75
9	85	13.84
12	85	13.56
3	86	12.67
6	86	12.08
9	86	11.16
12	86	10.89
3	87	11.03
6	87	11.68
9	87	12.04
12	87	12.24
3	88	11.81
6	88	11.91
9	88	11.80
12	88	11.69
1	89	11.99
-2	89	12.06
3	89	12.17
4	89	12.07
5	89	11.58
6	89	11.28
7	89	11.09
8	89	11.01
9	89	11.16
10	89	11.11
11	89	10.87
12	89	10.62
1	90	10.86
2	90	11.09
3	90	11.12
4	90	11.40
5	90	11.35
6	90	11.11
7	90	11.26

**RHCs' Average Estimated DCF. Cost  
of Equity.**

Period		
Mo	Yr	Average
3	84	15.78
6	84	16.10
9	84	15.48
12	84	14.89
3	85	14.97
6	85	14.39
9	85	14.22
12	85	14.27
3	86	13.89
6	86	13.13
9	86	12.42
12	86	12.67
3	87	12.76
6	87	13.12
9	87	12.27
12	87	12.63
3	88	12.74
6	88	12.77
9	88	12.59
12	88	12.52
1	89	12.73
2	89	12.52
3	89	12.46
4	89	12.15
5	89	11.86
6	89	11.84
7	89	11.76
8	89	11.70
9	89	11.64
10	89	11.88
11	89	11.89
12	89	11.48
1	90	11.71
2	90	12.27
3	90	12.03
4	90	12.11
5	90	12.29
6	90	12.32
7	90	12.60

APPENDIX F

**Central Office Technology  
Total Bell Operating Companies  
(Summarized by Office)**

Year	Total	Electromechanical		Analog-Electronic		Digital-Electronic	
		Offices	% Total	Offices	% Total	Offices	% Total
1980	9,195	6,842	74.4%	2,353	25.6%	0	0.0%
1981	9,229	6,668	72.3%	2,536	27.5%	25	0.3%
1982	9,207	6,381	69.3%	2,741	29.8%	85	0.9%
1983	9,196	6,102	66.4%	2,916	31.7%	178	1.9%
1984	9,145	5,743	62.8%	3,048	33.3%	354	3.9%
1985	9,169	5,275	57.5%	3,022	33.0%	872	9.5%
1986	9,181	4,605	50.2%	2,920	31.8%	1,656	18.0%
1987	9,237	3,853	41.7%	2,820	30.5%	2,564	27.8%
1988	9,348	3,068	32.8%	2,674	28.6%	3,606	38.6%
1989	9,389	2,457	26.2%	2,493	26.6%	4,439	47.3%
1990	9,406	1,746	18.6%	2,278	24.2%	5,382	57.2%
1991	9,393	1,243	13.2%	2,124	22.6%	6,026	64.2%
1992	9,373	870	9.3%	1,989	21.2%	6,514	69.5%
1993	9,375	705	7.5%	1,866	19.9%	6,804	72.6%
1994	9,366	556	5.9%	1,736	18.5%	7,074	75.5%

**Central Office Technology  
Total Bell Operating Companies  
(Thousands of Access Lines Served)**

Year	Total	Electromechanical		Analog-Electronic		Digital-Electronic	
		Lines	% Total	Lines	% Total	Lines	% Total
1980	80,234	45,039	56.1%	35,191	43.9%	4	0.0%
1981	82,709	40,809	49.3%	41,847	50.6%	53	0.1%
1982	83,716	36,954	44.1%	46,566	55.6%	196	0.2%
1983	85,924	32,763	38.1%	52,674	61.3%	488	0.6%
1984	88,546	30,180	34.1%	56,333	63.6%	2,033	2.3%
1985	91,442	25,651	28.1%	58,759	64.3%	7,033	7.7%
1986	93,863	20,053	21.4%	59,421	63.3%	14,390	15.3%
1987	96,654	14,496	15.0%	59,506	61.6%	22,653	23.4%
1988	99,524	8,972	9.0%	59,716	60.0%	30,835	31.0%
1989	102,648	5,933	5.8%	58,845	57.3%	37,870	36.9%
1990	105,844	3,345	3.2%	56,954	53.8%	45,545	43.0%
1991	109,228	2,121	1.9%	55,459	50.8%	51,647	47.3%
1992	112,476	1,301	1.2%	53,558	47.6%	57,617	51.2%
1993	115,700	1,076	0.9%	51,970	44.9%	62,654	54.2%
1994	118,961	853	0.7%	50,081	42.1%	68,028	57.2%

Note: 1980-88 Actual; 1989-94 Projected

Source: CC Docket 89-624 Initial Submission, Attachment B, Tables 1-4

Ref: Tbls1-4.wk1 Sept. 14, 1990 JMA

**Central Office Features  
Total Bell Operating Companies  
(Equipped Offices)**

Year	Total	Equal Access		Access to CCS-S7		ISDN Service	
		Offices	% Total	Offices	% Total	Offices	% Total
1980	9,195	0	0.0%	0	0.0%	0	0.0%
1981	9,229	0	0.0%	0	0.0%	0	0.0%
1982	9,207	0	0.0%	0	0.0%	0	0.0%
1983	9,196	0	0.0%	0	0.0%	0	0.0%
1984	9,145	124	1.4%	0	0.0%	0	0.0%
1985	9,169	1,934	21.1%	0	0.0%	0	0.0%
1986	9,181	3,637	39.6%	0	0.0%	0	0.0%
1987	9,237	4,839	52.4%	29	0.3%	4	0.0%
1988	9,348	6,089	65.1%	435	4.7%	82	0.9%
1989	9,389	6,810	72.5%	950	10.1%	179	1.9%
1990	9,406	7,559	80.4%	2,083	22.1%	426	4.5%
1991	9,393	7,987	85.0%	3,087	32.9%	1,595	17.0%
1992	9,373	8,295	88.5%	4,101	43.8%	1,764	18.8%
1993	9,375	8,472	90.4%	4,895	52.2%	1,962	20.9%
1994	9,366	8,625	92.1%	5,362	57.2%	2,269	24.2%

**Central Office Features  
Total Bell Operating Companies  
(Thousands of Equipped Access Lines)**

Year	Total	Equal Access		Access to CCS-S7		ISDN Service	
		Lines	% Total	Lines	% Total	Lines	% Total
1980	80,234	0	0.0%	0	0.0%	0	0.0%
1981	82,709	0	0.0%	0	0.0%	0	0.0%
1982	83,716	0	0.0%	0	0.0%	0	0.0%
1983	85,924	0	0.0%	0	0.0%	0	0.0%
1984	88,546	3,528	4.0%	0	0.0%	0	0.0%
1985	91,442	46,688	51.1%	0	0.0%	0	0.0%
1986	93,863	69,957	74.5%	0	0.0%	0	0.0%
1987	96,654	81,381	84.2%	1,035	1.1%	1	0.0%
1988	99,524	91,565	92.0%	10,325	10.4%	43	0.0%
1989	102,648	97,181	94.7%	21,555	21.0%	99	0.1%
1990	105,844	102,639	97.0%	36,706	34.7%	496	0.5%
1991	109,228	106,728	97.7%	52,250	47.8%	1,059	1.0%
1992	112,476	110,548	98.3%	66,394	59.0%	1,370	1.2%
1993	115,700	114,246	98.7%	78,645	68.0%	1,888	1.6%
1994	118,961	117,778	99.0%	86,964	73.1%	2,218	1.9%

Note: 1980-88 Actual; 1989-94 Projected

Source: CC Docket 89-624 Initial Submission, Attachment B, Tables 1-4

Ref: Tbls1-4.wk1 Sept.14, 1990 JMA

**Transmission Facilities – Loop and Inter-Office  
Total Bell Operating Companies  
(Millions of Sheath Miles)**

<b>Year</b>	<b>Total</b>	<b>Copper</b>	<b>Fiber</b>	<b>Fiber % Total</b>
1980	2,230	2,230	0	0.0%
1981	2,276	2,275	0	0.0%
1982	2,321	2,320	1	0.1%
1983	2,351	2,348	3	0.1%
1984	2,371	2,362	8	0.3%
1985	2,392	2,372	20	0.8%
1986	2,424	2,390	34	1.4%
1987	2,453	2,407	45	1.9%
1988	2,470	2,410	60	2.4%
1989	2,504	2,425	78	3.1%
1990	2,553	2,455	98	3.8%
1991	2,603	2,484	119	4.6%
1992	2,650	2,509	141	5.3%
1993	2,696	2,534	162	6.0%
1994	2,742	2,558	185	6.7%

Note: 1980–88 Actual; 1989–94 Projected

Source: CC Docket 89–624 Initial Submission, Attachment B, Table Sa

Ref: Tbls5–8.wk1 Sept. 14, 1990 JMA

**Transmission Facilities – Inter-office  
Total Bell Operating Companies  
Working Circuits (000s)**

Year	Total		Baseband		Analog Carrier		Digital Carrier	
	Working Circuits	Working Circuits	% Total	Working Circuits	% Total	Working Circuits	% Total	
1980	11,369	4,889	43.0%	1,629	14.3%	4,852	42.7%	
1981	12,068	4,802	39.8%	1,324	11.0%	5,942	49.2%	
1982	12,806	4,626	36.1%	1,048	8.2%	7,132	55.7%	
1983	12,664	4,404	34.8%	1,011	8.0%	7,249	57.2%	
1984	12,537	4,038	32.2%	661	5.3%	7,839	62.5%	
1985	13,250	3,731	28.2%	571	4.3%	8,948	67.5%	
1986	13,796	3,203	23.2%	499	3.6%	10,093	73.2%	
1987	14,206	2,643	18.6%	410	2.9%	11,152	78.5%	
1988	15,148	2,232	14.7%	249	1.6%	12,667	83.6%	
1989	15,782	1,928	12.2%	168	1.1%	13,686	86.7%	
1990	16,308	1,670	10.2%	142	0.9%	14,497	88.9%	
1991	16,752	1,434	8.6%	126	0.8%	15,192	90.7%	
1992	17,333	1,331	7.7%	108	0.6%	15,894	91.7%	
1993	17,777	1,219	6.9%	94	0.5%	16,464	92.6%	
1994	18,353	1,129	6.2%	148	0.8%	17,076	93.0%	

Note: 1980-88 Actual; 1989-94 Projected

Source: CC Docket 89-624 Initial Submission, Attachment B, Table 5b

Ref: Tbls5-8.wk1 Sept. 14, 1990 JMA

**Transmission Facilities - Inter-office  
Total Bell Operating Companies  
Working Carrier Spans (Links) (000s)**

Year	Total	Total			Total			Fiber
		Analog	Copper	Radio	Digital	Copper	Radio	
1980	1,000	344	306	38	656	637	16	3
1981	997	342	293	50	654	627	20	8
1982	1,001	310	262	48	691	642	24	25
1983	1,009	289	241	48	721	635	27	59
1984	970	195	169	26	775	635	30	111
1985	1,012	139	124	15	873	647	33	194
1986	1,118	118	94	24	1,000	682	35	283
1987	1,172	69	57	13	1,103	704	37	362
1988	1,241	49	36	14	1,192	708	36	448
1989	1,313	29	19	10	1,284	684	35	565
1990	1,341	20	12	8	1,321	625	35	667
1991	1,384	11	5	6	1,373	596	35	741
1992	1,428	8	3	5	1,420	562	36	822
1993	1,484	5	2	3	1,479	530	37	913
1994	1,535	2	1	1	1,532	498	37	997

Year	Working Spans			Digital % Total Working Spans		
	Total	% Analog	% Digital	Copper	Radio	Fiber
1980	1,000	34.4%	65.6%	63.7%	1.6%	0.3%
1981	997	34.3%	65.7%	62.9%	2.0%	0.8%
1982	1,001	31.0%	69.0%	64.1%	2.4%	2.5%
1983	1,009	28.6%	71.4%	62.9%	2.6%	5.8%
1984	970	20.1%	79.9%	65.4%	3.1%	11.4%
1985	1,012	13.7%	86.3%	63.9%	3.2%	19.1%
1986	1,118	10.6%	89.4%	61.0%	3.2%	25.3%
1987	1,172	5.9%	94.1%	60.1%	3.1%	30.9%
1988	1,241	4.0%	96.0%	57.0%	2.9%	36.1%
1989	1,313	2.2%	97.8%	52.1%	2.7%	43.0%
1990	1,341	1.5%	98.5%	46.6%	2.6%	49.3%
1991	1,384	0.8%	99.2%	43.1%	2.6%	53.6%
1992	1,428	0.5%	99.5%	39.3%	2.5%	57.6%
1993	1,484	0.3%	99.7%	35.7%	2.5%	61.5%
1994	1,535	0.2%	99.8%	32.4%	2.4%	65.0%

Note: 1980-88 Actual; 1989-94 Projected

Source: CC Docket 89-624 Initial Submission, Attachment B, Table 5b

Ref: Tbls5-8.wk1 Sept. 14, 1990 JMA

**Transmission Facilities – Local Loop  
Total Bell Operating Companies  
Working Channels (000s)**

Year	Total	Copper								Fiber	
		Baseband		Analog Carrier		Digital Carrier		All Copper		Working Channels	% Total
		Working Channels	% Total								
1980	91,143	90,593	99.4%	206	0.2%	336	0.4%	91,135	100.0%	0	0.0%
1981	93,987	93,309	99.3%	205	0.2%	465	0.5%	93,979	100.0%	1	0.0%
1982	95,108	94,245	99.1%	199	0.2%	645	0.7%	95,089	100.0%	12	0.0%
1983	97,780	96,601	98.8%	198	0.2%	945	1.0%	97,744	100.0%	31	0.0%
1984	101,911	100,122	98.2%	191	0.2%	1,354	1.3%	101,667	99.8%	240	0.2%
1985	104,646	102,006	97.5%	201	0.2%	1,926	1.8%	104,133	99.5%	509	0.5%
1986	106,922	102,979	96.3%	198	0.2%	2,671	2.5%	105,848	99.0%	1,072	1.0%
1987	109,601	104,538	95.4%	201	0.2%	3,383	3.1%	108,122	98.7%	1,477	1.3%
1988	112,481	106,021	94.3%	178	0.2%	3,989	3.5%	110,188	98.0%	2,291	2.0%
1989	115,708	107,721	93.1%	198	0.2%	4,638	4.0%	112,557	97.3%	3,150	2.7%
1990	119,650	109,453	91.5%	173	0.1%	5,548	4.6%	115,175	96.3%	4,475	3.7%
1991	123,456	110,975	89.9%	155	0.1%	6,330	5.1%	117,461	95.1%	5,995	4.9%
1992	127,298	112,040	88.0%	130	0.1%	7,144	5.6%	119,314	93.7%	7,973	6.3%
1993	131,327	112,757	85.9%	105	0.1%	7,951	6.1%	120,812	92.0%	10,504	8.0%
1994	135,304	113,109	83.6%	85	0.1%	8,695	6.4%	121,888	90.1%	13,424	9.9%

**Transmission Facilities – Local Loop  
Total Bell Operating Companies  
Equipped Channels (000s)**

Year	Total	Copper								Fiber	
		Baseband		Analog Carrier		Digital Carrier		All Copper		Equipped Channels	% Total
		Equipped Channels	% Total	Equipped Channels	% Total	Equipped Channels	% Total	Working Channels	% Total		
1980	136,952	136,136	99.4%	274	0.2%	537	0.4%	136,947	100.0%	0	0.0%
1981	143,175	142,156	99.3%	269	0.2%	738	0.5%	143,162	100.0%	1	0.0%
1982	148,484	146,824	98.9%	263	0.2%	1,070	0.7%	148,157	99.8%	17	0.0%
1983	153,492	151,642	98.8%	264	0.2%	1,534	1.0%	153,440	100.0%	44	0.0%
1984	158,265	155,422	98.2%	262	0.2%	2,219	1.4%	157,904	99.8%	354	0.2%
1985	162,870	158,716	97.4%	266	0.2%	3,054	1.9%	162,037	99.5%	828	0.5%
1986	166,827	161,035	96.5%	270	0.2%	3,926	2.4%	165,232	99.0%	1,591	1.0%
1987	171,052	163,529	95.6%	269	0.2%	4,996	2.9%	168,795	98.7%	2,254	1.3%
1988	175,863	166,481	94.7%	245	0.1%	5,872	3.3%	172,598	98.1%	3,263	1.9%
1989	179,947	168,593	93.7%	246	0.1%	6,720	3.7%	175,559	97.6%	4,387	2.4%
1990	184,553	170,251	92.3%	226	0.1%	8,016	4.3%	178,493	96.7%	6,059	3.3%
1991	189,062	171,504	90.7%	198	0.1%	9,110	4.8%	180,812	95.6%	8,240	4.4%
1992	193,489	171,944	88.9%	170	0.1%	10,250	5.3%	182,363	94.3%	11,124	5.7%
1993	198,226	172,318	86.9%	140	0.1%	11,263	5.7%	183,721	92.7%	14,514	7.3%
1994	203,092	172,263	84.8%	113	0.1%	12,198	6.0%	184,574	90.9%	18,527	9.1%

Note: 1980–88 Actual; 1989–94 Projected

Source: CC Docket 89–624 Initial Submission, Attachment B, Tables 6–7

Ref: Tbls5–8.wk1 Sept. 14, 1990 JMA

**Transmission Facilities - Local Loop  
Total Bell Operating Companies  
Pairs Terminated at Main Frame  
and Fiber-to-User Access Lines**

<b>Year</b>	<b>Pairs Terminated at Main Frame</b>		<b>Fiber to User</b>
	<b>Copper</b>	<b>Fiber</b>	<b>Access Lines</b>
1980	142,595,297	0	50
1981	149,339,952	0	84
1982	154,923,000	108	364
1983	160,022,271	3,977	1,165
1984	163,334,255	11,991	25,221
1985	166,751,816	25,135	53,066
1986	170,035,480	45,547	101,114
1987	172,772,227	65,642	148,218
1988	175,567,662	89,179	220,620
1989	178,149,865	126,653	265,119
1990	180,041,664	181,466	296,846
1991	181,485,207	237,153	338,299
1992	182,065,422	276,029	400,706
1993	182,561,213	331,157	483,040
1994	182,660,546	392,701	612,511

Note: 1980-88 Actual; 1989-94 Projected

Source: CC Docket 89-624 Initial Submission, Attachment B, Table 8

Ref: Tbls5-8.wk1 Sept. 14, 1990 JMA

**Construction Program**  
**Total Bell Operating Companies**  
**Gross Additions per Access Line Gained and by Category,**  
**and Average Net Book Investment per Access Line**

Year	Access Lines		Total Gross Additions (\$000)	Gross Additions For:			Gross Additions for Growth Per Line Gained	Average Net Book Investment (\$Mil.)
	Total (000s)	Change (000s)		Modernization (\$000)	Growth (\$000)	Replacement (\$000)		
1980	81,140	2,209	\$16,390	\$3,155	\$10,312	\$2,544	\$4,669	\$87,634
1981	83,699	2,560	\$16,854	\$3,228	\$10,892	\$2,409	\$4,255	\$94,944
1982	84,640	938	\$15,649	\$3,380	\$9,904	\$2,276	\$10,553	\$100,186
1983	86,442	2,097	\$13,135	\$3,196	\$8,420	\$1,308	\$4,015	\$102,002
1984	89,252	2,510	\$13,271	\$3,006	\$7,364	\$1,024	\$2,934	\$96,534
1985	91,847	2,632	\$14,926	\$3,688	\$8,264	\$914	\$3,140	\$94,862
1986	94,101	2,233	\$14,497	\$3,592	\$7,984	\$966	\$3,576	\$96,095
1987	96,859	2,727	\$14,148	\$3,605	\$8,188	\$890	\$3,002	\$96,536
1988	99,613	2,744	\$13,976	\$3,463	\$8,443	\$907	\$3,077	\$97,449
1989	102,531	2,922	\$13,798	\$3,226	\$8,191	\$1,250	\$2,803	\$98,242
1990	105,816	3,290	\$14,334	\$3,373	\$8,246	\$1,283	\$2,506	\$99,900
1991	109,132	3,328	\$14,108	\$3,417	\$8,253	\$1,161	\$2,480	\$100,393
1992	112,338	3,208	\$14,123	\$3,216	\$8,469	\$1,113	\$2,640	\$101,321
1993	115,679	3,340	\$14,055	\$3,091	\$8,468	\$1,117	\$2,535	\$102,029
1994	119,100	3,421	\$14,171	\$3,097	\$8,572	\$1,110	\$2,506	\$102,554

Note: 1980-88 Actual; 1989-94 Projected

Source: CC Docket 89-624 Initial Submission, Attachment B, Table 9

Ref: Tbl9.wk1 Sept.26, 1990 JMA

**Sources and Uses of Funds  
Total Bell Operating Companies  
(Millions of Dollars)**

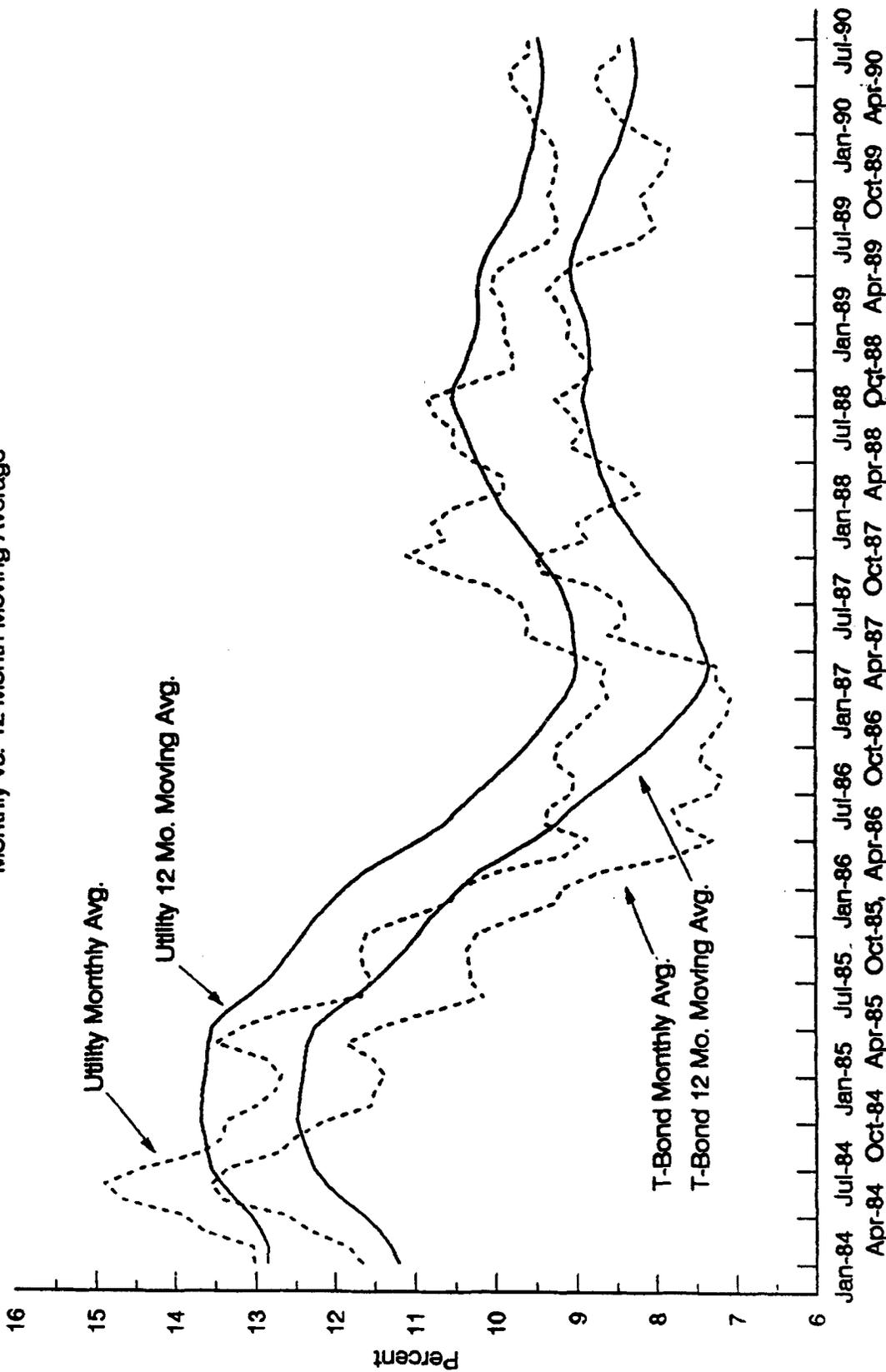
Year	Funds from Operations				Allowance				Funds from Investment Activities			Funds from Financing Operations			
	Net Income	Depreciation	Deferred Income Taxes	Investment For Funds Used During Construction	Tax Credit	Sub-Total	Gross Plant Additions	Change in Affiliate Investment	Sub-Total	Advances to Affiliates	Change in Funded		Dividends	Sub-total	
											Debt	Equity			
1970	1,815	2,327	72	21	(99)	4,107	6,561	0	6,561	67	2,712	999	(1,214)	2,232	
1971	1,913	2,550	260	50	(139)	4,595	6,703	0	6,703	55	2,131	1,738	(1,292)	2,226	
1972	2,210	2,807	436	210	(143)	5,477	7,643	0	7,643	(139)	2,398	1,748	(1,413)	2,133	
1973	2,543	3,084	875	222	(159)	6,523	8,592	0	8,592	(116)	2,374	1,911	(1,541)	2,053	
1974	2,769	3,428	1,193	245	(160)	7,425	9,298	0	9,298	(188)	2,847	1,539	(1,724)	1,839	
1975	2,931	3,812	1,324	641	(144)	8,507	8,849	(64)	8,785	215	1,668	1,406	(1,825)	780	
1976	3,502	4,172	1,418	661	(129)	9,562	9,583	0	9,583	(197)	1,148	1,517	(1,995)	(283)	
1977	3,992	4,719	1,564	723	(144)	10,784	10,882	0	10,882	(30)	1,387	1,650	(2,240)	(81)	
1978	4,512	5,203	1,535	616	(166)	11,619	12,884	0	12,884	104	2,488	1,734	(2,465)	894	
1979	4,863	5,747	1,640	744	(123)	12,803	14,942	0	14,942	59	3,216	2,601	(2,750)	2,048	
1980	5,099	6,646	1,687	921	(169)	14,117	16,098	0	16,098	42	4,551	2,139	(2,943)	2,579	
1981	5,790	7,428	1,836	935	(211)	15,744	16,590	0	16,590	(61)	1,822	3,969	(3,324)	1,076	
1982	6,697	8,238	2,638	474	(210)	17,779	15,336	175	15,511	987	(396)	1,266	(3,876)	(3,521)	
1983	7,097	9,145	2,180	375	(212)	18,493	12,762	0	12,762	661	234	82	(4,674)	(5,274)	
1984	6,910	8,581	2,243	398	(193)	17,834	12,865	91	12,956	(397)	1,114	299	(3,910)	(4,597)	
1985	7,507	9,965	2,067	520	(218)	19,731	14,491	61	14,552	711	(242)	396	(4,795)	(5,621)	
1986	8,252	11,265	2,024	(139)	(197)	21,123	14,197	138	14,335	107	(1,465)	193	(5,205)	(8,210)	
1987	8,382	12,919	621	(572)	(190)	21,108	13,874	10	13,883	(251)	1,068	205	(5,508)	(6,493)	
1988	8,684	13,426	(183)	(606)	(162)	21,128	13,731	14	13,745	284	(385)	531	(5,580)	(7,167)	
1989	7,926	13,455	128	(633)	(135)	20,715	13,420	108	13,529	93	(283)	307	(5,793)	(7,563)	
1990		13,473	(145)	(562)	(136)		14,154								
1991		13,640	(390)	(525)	(134)		13,942								
1992		13,648	(213)	(494)	(136)		13,956								
1993		14,057	(226)	(435)	(134)		13,880								
1994		14,498	(326)	(405)	(136)		13,995								

Note: 1970-89 Actual; 1990-94 Projected  
Source: CC Docket 89-624 Initial Submission, Attachment B, Table 10  
Ref: Tb110.wk1 Sept. 26, 1990 JMA

APPENDIX H

Interest Rates

10 Year Treasury and Public Utility Aa Bond Yields  
Monthly vs. 12 Month Moving Average\*



\*The 12 month moving average yield is the average of month's yield and the preceding 11 months' yields.