

COMMONWEALTH TELEPHONE COMPANY
WITNESS: FRANK J. HANLEY
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COMMONWEALTH TELEPHONE COMPANY

I-00920020

DIRECT TESTIMONY

OF

FRANK J. HANLEY, PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES GROUP

CONCERNING

FAIR RATE OF RETURN

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1 jurisdictional rate base during the near-term future and to testify to the findings
2 of that study.

3 **Q. HAVE YOU PREPARED AN EXHIBIT WHICH SUPPORTS THE**
4 **CONCLUSIONS OF YOUR STUDY?**

5 A. Yes, I have. It has been marked for identification as Exhibit No. FJH-1 and it
6 consists of 20 schedules.

7 **SUMMARY**

8 **Q. PLEASE SUMMARIZE YOUR RECOMMENDED OVERALL COST OF**
9 **CAPITAL AND RATE OF RETURN.**

10 A. As shown on Schedule 1, page 1, I recommend an overall cost of capital of
11 10.45% based upon a hypothetical capital structure which will be discussed
12 subsequently. The hypothetical capital structure consists of 40.33% long-term
13 debt, 4.85% preferred stock and 54.82% common equity. The weighted
14 overall cost of capital is based upon those capital structure ratios, CTC's
15 estimated cost rates of long-term debt of 6.24% and preferred stock of 5.26%
16 and my recommended common equity cost rate of 14.00%. The basis of my
17 recommended common equity cost rate is summarized on Schedule 1, page
18 2.

19 **Q. PLEASE DISCUSS YOUR RECOMMENDED OVERALL COST OF CAPITAL**
20 **OF 10.45%.**

21 A. It is based on the weighted overall cost of capital approach, which involves the
22 adoption of a reasonable, representative, capital structure and the

1 determination of a cost rate applicable to each element of the capital structure.
2 The sum of the weighted costs of each element of capital (percentage times
3 the cost rate) represents the overall cost of capital. The embedded cost rates
4 of debt and preferred stock capital are readily determined. However, the cost
5 rate of common equity capital is a matter of informed expert judgment.
6 Because regulation is a substitute for the competition of the marketplace, an
7 analysis of marketplace transactions provides the most meaningful insight into
8 the determination of an appropriate common equity cost rate.

9 When a company such as CTCo has common stock which is not
10 traded, it is necessary to observe the market-based cost rates of similar risk
11 companies (proxy groups) for insight into a common equity cost rate. As I will
12 explain subsequently, although CTCo is a subsidiary of C-TEC Corporation (C-
13 TEC), C-TEC's consolidated capital structure is inappropriate to use as a proxy
14 for the risk of an operating local exchange company (LEC). Also, in making
15 a cost of capital determination, CTCo's stand-alone capital structure is not
16 appropriate to use because it is not consistent with the capital structure
17 required by investors given the constantly increasing business risk faced by
18 LECs. This is confirmed by comparison to the capital structures maintained
19 by operating telephone companies. Moreover, in the absence of relevant
20 market data for CTCo, and to be consistent with the comparable risk principle,
21 a group of similar risk utilities should be used as a proxy for CTCo.
22 Consequently, I rely upon market data for a proxy group of five independent

1 operating telephone companies. I also observed the indicated cost rates of
2 a proxy group of the seven regional holding companies (RHCs) in order to
3 arrive at a conclusion of common equity cost rate for CTCo. However, for
4 reasons which will be discussed subsequently, I did not rely upon the RHCs
5 results in formulating a recommendation of common equity cost rate for CTCo.

6 In formulating my recommendation of a common equity cost¹ rate
7 applicable to CTCo, I reviewed the results of the application of three different
8 cost of common equity models for the two proxy groups. The three cost of
9 common equity models employed were the Discounted Cash Flow Model
10 (DCF), Risk Premium Model (RP), and Capital Asset Pricing Model (CAPM).

11 As a check on the reasonableness of the indicated common equity cost
12 rate of 13.80% before recognition of management efficiency and high service
13 quality, I performed a comparable earnings analysis of proxy groups of
14 domestic non-utility companies comparable in total risk to the five LECs and
15 seven RHCs.

16 In arriving at my recommended common equity cost rate for use in
17 developing the weighted overall cost of capital, I kept in mind that no single
18 cost of common equity model is so inherently precise that it can be relied
19 upon solely, to the exclusion of other theoretically sound models. Therefore,
20 I relied upon the DCF, RP and CAPM results. The DCF model should receive
21 no more than equal weight, in this instance, with the RP and CAPM models
22 because it misspecifies the true common equity cost rate for reasons which

1 will be explained subsequently in detail. These reasons are:

- 2 - the assumption of an infinite investment horizon;
- 3 - the assumption of a constant dividend payout ratio;
- 4 - the assumption of a constant price/earnings (P/E) multiple; and
- 5 - when market values are well in excess of their book values,
6 application of the DCF model has a tendency to result in an
7 indicated common equity cost rate which is below the common
8 equity cost rate required by investors (and vice versa).

9 The DCF, RP and CAPM model based results are 13.8% for the five
10 LECs and 12.8% for the seven RHCs. The indicated common equity cost rate
11 is 13.8%, based upon the indicated common equity cost rate for the five LECs
12 to which I added 0.2% in recognition of management efficiency and high
13 service quality which will be explained subsequently. It is my opinion that
14 these five LECs are much more similar in risk to CTCO than are the much
15 larger seven RHCs.

16 **GENERAL PRINCIPLES**

17 **Q. WHAT GENERAL PRINCIPLES HAVE YOU CONSIDERED IN YOUR**
18 **DETERMINATION OF THE COST OF CAPITAL AND FAIR RATE OF**
19 **RETURN?**

20 A. In unregulated industries, competition in the marketplace is the principal
21 determinant in establishing the price of a product or service. In the case of
22 regulated public utilities, regulation must act as a substitute for the competition
23 of the marketplace. Consequently, marketplace data must be used in order
24 to assure that the utility can meet its service obligations and provide adequate

1 service. This requires a level of earnings sufficient to permit the attraction of
2 needed new capital at a reasonable cost and to maintain the integrity of
3 presently invested capital. These standards for a fair rate of return have been
4 established by the U.S. Supreme Court in the Bluefield Water Works
5 Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922), Federal Power
6 Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944) and Permian Basin
7 Area Rate Cases, 390 U.S. 747 (1968).

8 Therefore, in my determination of a fair rate of return, I have made every
9 effort to evaluate data gathered from the marketplace for similar-risk
10 enterprises. In my opinion, a fair rate of return should never be less than the
11 overall cost of capital, including the embedded cost of fixed capital, expected
12 to be experienced during a reasonable period of time in the future when any
13 new service rates will be in effect. It is essential that a reasonable opportunity
14 to earn the cost of capital be afforded if an enterprise is to compete
15 successfully with other seekers of capital in the marketplace.

16 **Q. PLEASE EXPLAIN THE APPROACH YOU EMPLOYED IN YOUR**
17 **DETERMINATION OF THE COST RATE FOR COMMON EQUITY CAPITAL.**

18 A. I relied upon the marketplace in order to determine the cost rate for common
19 equity capital. I observed the past and the present as guides to projecting the
20 near-term future. Commonwealth should be viewed as a stand-alone going
21 concern seeking capital in the marketplace on a reasonable basis
22 commensurate with its business risks; and the level of financial risk for

1 ratemaking purposes should be reflective of those business risks. Since new
2 rates are always set to be in effect for a period of time in the future, a
3 reasonable opportunity should be afforded for Commonwealth to earn its cost
4 of capital during that prospective time period.

5 **BUSINESS RISK**

6 **Q. WHAT IS BUSINESS RISK?**

7 A. Business risk is a collective term representing all of the risks of an enterprise
8 other than financial risk (i.e., the introduction of debt into the capital structure).
9 There are many examples of business risk, several of which are the extent and
10 efficacy of competition and the regulatory environment which have a direct
11 bearing on things such as the quantity and quality of earnings, quality of
12 management, sales mix, and prospective growth.

13 **Q. PLEASE DISCUSS THE BUSINESS RISK OF LECS.**

14 A. LECs, including CTCo, are faced with competition for many of their services,
15 including intraLATA toll and even extending to the local exchange network
16 level. Increasingly, Alternate Local Transport (ALT) providers are attracting
17 both large local customers and high volume national customers. ALTs are not
18 currently a factor in CTCo's service territory. However, the existence of such
19 a potential area of competition still exists for CTCo. Bypass is a reality which
20 also increases risk. Interexchange carriers (IXCs) provide a means for
21 customers to bypass LECs such as CTCo. Some customers set up their own
22 network. CTCo does experience IXC toll bypass and CTCo-provided facilities

1 bypass, where DS3 and T1 services are provided as an alternative to more
2 expensive customer options. Competitors can price their services less than
3 LECs, including CTCo, because they are not burdened by the obligation to
4 serve as are the LECs who must stand ready to provide service to all who
5 request it, including those who have chosen to bypass them. This type of
6 competition is appealing to high volume users who seek to reduce their costs
7 for network transport. Technological advances have placed competitors in the
8 enviable position of gaining immediately from state-of-the-art technology,
9 without concern for capital recovery of investments in outdated technology,
10 whereas LECs are faced with the regulatory uncertainty surrounding whether
11 such an investment in current technology will be recovered in rates at a later
12 date. As a result, competitive inroads have already been made by IXCs and
13 cellular operators, particularly in the intraLATA toll market and by personal
14 communications systems (PCSs) in the local exchange network. Major
15 competitors include cellular franchise holders, PCSs, and large customers
16 building their own networks to reach IXC points of presence (POP) within
17 CTCo's service area. CTCo's technological situation is exacerbated by this
18 competitive threat because CTCo faces the added risk of the future need to
19 fund the capital expenditures necessary for the continued technological
20 upgrading required to compete effectively.

21 Competition for local loop transport in CTCo's service area is
22 intensifying. Collocation has been mandated for ALTs for Tier 1 companies by

1 both the Pennsylvania Public Utilities Commission (PaPUC) and the Federal
2 Communications Commission (FCC). Collocation places local channel and
3 local channel mileage revenues at risk. Although CTCo likely will face this
4 competitive risk as early as 1994, it must position itself now to respond to this
5 area of competition.

6 Investors are cognizant of the increased business risk associated with
7 increasing competition. The increasing competition has also been recognized
8 by investor-influencing organizations such as Standard & Poor's (S&P). This
9 level of increased risk increases uncertainty about traffic volumes, revenues
10 and, therefore, earnings. Consequently, in view of significantly increasing
11 business risk there has been a trend to decrease the level of financial risk by
12 increasing the underlying level of equity.

13 **FINANCIAL RISK**

14 **Q. WHAT IS FINANCIAL RISK?**

15 A. Financial risk is the additional risk created by the introduction of debt into the
16 capital structure.

17 Utilities formerly were considered to have much less business risk vis-a-
18 vis unregulated enterprises, and, as a result, a larger percentage of debt
19 capital was acceptable to investors. Today, however, with LECs actually
20 experiencing ever-increasing competition, which results in increased business
21 risk, investors demand lesser financial risk concomitant with the greater
22 business risk.

1 Q. IS THERE AN ANALYTICAL PROCESS WHICH CAPTURES THE TOTAL
2 INVESTMENT RISK OF AN ENTERPRISE, I.E., THE SUM OF BOTH
3 BUSINESS AND FINANCIAL RISK?

4 A. Yes. The bond rating process captures all elements of business and financial
5 risk. S&P expressly states that the bond rating process involves an
6 assessment of business risk, as is shown in the excerpts from S&P's Credit
7 Review dated June 24, 1991 on page 1 of Schedule 2. An analysis of financial
8 risk is also made. As shown on Schedule 2, page 2, S&P states that "the
9 utility rating methodology encompasses two basic components: qualitative
10 business analysis and financial analysis," and then lists the principal elements
11 of each type of risk which is evaluated.

12 Pages 3 and 4 of Schedule 2 contain S&P's discussion of its current
13 telephone financial ratio guidelines from Standard & Poor's CreditWeek dated
14 February 10, 1992. S&P states:

15 ... Guidelines are revised as the environment in which local
16 telephone companies operate continues to evolve... Telephone
17 companies with similar service territories used to have very
18 similar business risks, but the competitive and regulatory
19 changes have affected them to varying degrees... changes in the
20 competitive and regulatory frameworks have stimulated telephone
21 companies to move toward cost-based pricing schemes... In
22 some cases, probably most notably in Centrex pricing, this
23 change has been voluntary. In others direct regulatory
24 intervention has precipitated the change. ... the updated
25 guidelines should be viewed as evolutionary, not revolutionary.

26 It is clear that S&P's analysis is credit oriented, (i.e., it goes toward
27 evaluating the safety of an investment in a long-term debt instrument of an

1 enterprise which is reflected in its bond rating). In my opinion, there is no
2 perfect single proxy such as bond rating, common stock ranking, etc., by
3 which one can identify identical risk levels to which common equity capital
4 invested in different companies is exposed. However, the bond rating provides
5 a useful guide because it results from a thorough and comprehensive analysis
6 of investment risk, (i.e., the sum of business and financial risks).

7 **C-TEC/CTCo**

8 **Q. HAVE YOU REVIEWED FINANCIAL DATA FOR C-TEC/CTCo?**

9 A. Yes. C-TEC owns all the common stock of Commonwealth Telephone
10 Company. CTCo provides local telephone service in nineteen counties
11 throughout Eastern Pennsylvania, through more than 200,000 main access
12 lines. C-TEC is a holding company with wholly-owned subsidiaries, except an
13 80% owned cable television subsidiary and two cellular telephone subsidiaries
14 which are 78.98% and 91.01% owned. C-TEC's operating subsidiaries are
15 organized into five principal groups: Telephone; Cable Television;
16 Communication Services; Mobile Services and Long Distance. The Telephone
17 Group consists of CTCo as previously described. The Cable Television Group,
18 through C-TEC Cable Systems, serves over 218,000 cable television
19 subscribers throughout New York, New Jersey, Pennsylvania and Michigan.
20 The Communications Services Group provides network engineering,
21 integration and management, communications facilities management and
22 premises wiring and campus distribution systems throughout the United

1 States, as well as selling, installing and maintaining business communications
2 systems on a regional basis. The Mobile Services Group comprises Cellular
3 Plus, which offers cellular telephone service in Northeastern and Central
4 Pennsylvania, as well as Southeast Iowa; and Paging Plus, which provides
5 telephone and paging services throughout Eastern Pennsylvania. The Long
6 Distance Group, through Commonwealth Long Distance Company, provides
7 various long-distance telephone services to customers in Eastern Pennsylvania
8 and resells service to strategic locations throughout the United States. C-TEC
9 is thus a company engaged in substantial unregulated activities. As such, C-
10 TEC's activities are subject to, in my opinion, a greater degree of business risk
11 than those of its subsidiary, CTCo.

12 Even if C-TEC were an appropriate proxy for CTCo, or CTCo's common
13 stock were traded, it is never prudent to rely solely on the results of a single
14 company to formulate an opinion of common equity cost rate for the reasons
15 cited by Morin¹ who states:

16 There are several reasons why the determination of cost of capital
17 should not rest on a sample of one firm: (1) Consistency with the
18 notions of fair and reasonable return promulgated in the Hope and
19 Bluefield cases. ... (2) Added reliability. ... (3) Abnormal
20 conditions. ... (4) Circularity.

21 * * *

22 The need to broaden the sample and to extend the analysis to
23 include comparable risk firms is evident in order to verify the

24 ¹ Roger A. Morin, Utilities' Cost of Capital, Public Utilities Reports, Inc., 1984, at pp.
25 143-44, 167-68.

1 reasonableness of the single-company estimate and to abide with
2 the spirit of the *Hope-Bluefield* doctrines. Referencing data on
3 other utilities and other unregulated companies will mitigate the
4 circularity problem as well.

5 Consequently, it is appropriate to rely on the market data of proxy
6 groups of companies comparable in risk to CTCo. Using these proxy groups
7 of similar risk companies demonstrates that my conclusion of common equity
8 cost rate of 13.8% for CTCo is reasonable as will be discussed subsequently.
9 Further, it should be noted that certain applications of the DCF model can
10 result in indicated common equity cost rates for the proxy groups which I
11 believe can misspecify the true cost of common equity especially when viewed
12 vis-a-vis the cost rates indicated by the use of other applications of the DCF
13 model as well as other cost of equity models. Thus, equal weight should be
14 given to the results of all three models, the DCF, RP and CAPM indicated cost
15 rates.

16 I have shown the capitalization and financial statistics for the years 1987-
17 1991 inclusive on Schedule 3. Page 1 of Schedule 3 contains data for C-TEC;
18 page 2 contains data for CTCo; and page 3 contains notes relevant to pages
19 1 and 2.

20 As shown on page 1 of Schedule 3, C-TEC's consolidated permanent
21 common equity ratio for 1991 of 13.6% was much lower than that of CTCo for
22 1991, which at 39.1% is, in my opinion, too low for an operating telephone
23 company, as shown on page 2 of Schedule 3. Neither of the equity ratios is
24 appropriate for ratemaking purposes.

1 Q. YOU PREVIOUSLY MENTIONED THAT BECAUSE CTCo'S COMMON
2 STOCK IS NOT TRADED, IT IS NECESSARY TO OBSERVE MARKET
3 DATA FOR PROXY GROUPS OF LECs IN ORDER TO GAIN INSIGHT INTO
4 A MARKET-BASED COMMON EQUITY COST RATE FOR CTCo. HOW DID
5 YOU SELECT THE PROXY GROUPS OF COMPANIES?

6 A. I began with the 111 telecommunications companies included in Standard &
7 Poor's Telecommunications Compustat II data base, whose common stocks
8 are traded, with 1991 year end data available.

9 I selected those companies contained in the S&P Telecommunications
10 Compustat II data base, which are reported in both Value Line Investment
11 Survey, which have common stock which is actively traded, and which had
12 less than 1,000,000 access lines in 1991. They are engaged primarily in
13 telephone operations, as evidenced by their Standard Industrial Classification
14 (S.I.C.) Code of 4813, Telephone Communications.

15 The basis of selection for the second proxy group was to include those
16 operating telephone companies who comprise the Seven Regional Holding
17 Companies which formerly were part of AT&T. This group of companies
18 represents a nationally recognized group of operating telephone companies
19 whose operations and risks are well known to investors.

20 All of the companies in both proxy groups have actively traded common
21 stock and pay a common dividend. As an integral part of my analysis I have
22 prepared schedules of comparative capitalization and financial statistics for

1 each proxy group for the years 1987 through 1991. I have prepared
2 Schedules 4 and 5 which contain such data for the smaller group of five
3 independent LECs and the seven RHCs, respectively. Each schedule consists
4 of three pages. Page 1 contains the summary of the comparative data; while
5 page 2 contains notes relative to page 1 and the basis of selection. Page 3
6 contains the most recent S&P bond rating for each company.

7 **Q. PLEASE DESCRIBE SCHEDULE 4, PAGE 1.**

8 A. Schedule 4, page 1, shows capitalization and financial statistics for the proxy
9 group of five independent LECs.

10 During the five-year period ending 1991, the achieved average earnings
11 rate on book common equity for these five telephone companies ranged
12 between 10.6% in 1991 and 14.4% in 1988 and averaged 12.6%. The five-year
13 average market/book ratio ending 1991 was 246.4%. The five-year average
14 common equity ratio ending 1991 based on permanent capital was 53.4%,
15 while the five-year average dividend payout ratio was 56.8%.

16 **Q. PLEASE DESCRIBE THE DATA AS SHOWN ON SCHEDULE 5, PAGE 1.**

17 A. Schedule 5, page 1, shows capitalization and financial statistics for the proxy
18 group of seven RHCs. During the five-year period ending 1991 the achieved
19 average earnings rate on book common equity for the seven RHCs ranged
20 between 11.6% in 1991 and 14.5% in 1988 and averaged 13.3%. The five-year
21 average market/book ratio ending 1991 was 175.7%. The five-year average,
22 common equity ratio based on permanent capital for the five-year average

1 ending 1991 was 58.2%, while the five-year average ending 1991 dividend
2 payout ratio was 75.6%.

3 **RECOMMENDED CAPITAL STRUCTURE**

4 **Q. IS CTCO'S ESTIMATED AVERAGE CAPITAL STRUCTURE FOR THE**
5 **CALENDAR YEAR 1993 APPROPRIATE FOR RATEMAKING PURPOSES?**

6 A. No. As shown on Schedule 6, page 1, CTCo's estimated average capital
7 structure for the year 1993 is comprised of 60.32% long-term debt, 0.12%
8 preferred stock and 39.56% common equity. These ratios are not consistent
9 with S&P's total debt benchmark criteria of 40%-52% and under 42% required
10 of a telephone company to obtain and maintain either an A or a AA bond
11 rating, respectively. CTCo's estimated average long-term debt ratio of 60.32%
12 is also not consistent with the long-term debt ratios maintained by either the
13 five independent LECs or the seven RHCs during the five years ending 1991.
14 As shown on Schedule 6, page 2, the average long-term debt ratios of the five
15 independent LECs was 46.69% in 1987 decreasing to 40.33% in 1991 in
16 response to the increased business risk occasioned by increasing competition
17 as previously discussed. In addition, as can be gleaned from Schedule 6,
18 page 3, the seven RHCs maintained an average long-term debt ratio of 41.73%
19 for the five years ending 1991.

20 Furthermore, CTCo's estimated average common equity ratio for the
21 calendar year 1993 of 39.56% is not consistent with the common equity ratios
22 expected to be maintained in 1993 by Value Line for either the five

1 independent LECs or the seven RHCs. Schedule 6, page 4 shows Value
2 Line's projected common equity ratios for both proxy groups for 1992, 1993
3 and 1995-1997. Clearly CTCO's estimated 1993 average common equity ratio
4 of 39.56% is far below either the average 55.7% or 60.1% 1993 projected
5 common equity ratios expected by Value Line for the five independent LECs
6 and seven RHCs, respectively. The disparity between CTCO's 1993 estimated
7 average common equity ratio and Value Line's projected common equity ratios
8 is understated because the Value Line projections are based upon total capital,
9 while CTCO's estimated average common equity ratio is based upon
10 permanent capital, (i.e., the Value Line projected common equity ratios would
11 be higher had short-term debt been included).

12 Clearly, when comparing CTCO's average 1993 capital structure to the
13 historical capital structures of the proxy groups, it is out of line vis-a-vis the
14 business risk level both CTCO and the industry faces. Moreover, when
15 compared to S&P's total debt benchmark criteria and Value Line's projected
16 common equity ratios for 1992, 1993, and 1995-97 for both proxy groups,
17 CTCO's estimated average capital structure is clearly inappropriate for
18 ratemaking purposes.

19 **Q. WHAT COMMON EQUITY COST RATE IS APPLICABLE TO CTCO'S**
20 **ESTIMATED AVERAGE COMMON EQUITY RATIO OF 39.56%.**

21 A. As explained in note 3 on page 1 of Schedule 6, the 13.80% recommended
22 common equity cost rate is applicable to a 54.82% common equity ratio. In

1 recognition of the increased financial risk reflected in CTCo's estimated
2 average capital structure for the calendar year 1993, the 13.80%
3 recommended common equity cost rate must be adjusted upward by 1.50%
4 to 15.30% (15.30% = 13.80% + 1.50%). This adjustment to recognize
5 financial risk differences is based upon a study by Brigham, Gapenski and
6 Aberwald as explained in note 3, page 1 of Schedule 6.

7 **Q. HOW DOES THE LEVEL OF A FIRM'S BUSINESS RISK AFFECT THE MIX**
8 **OF CAPITAL EMPLOYED?**

9 A. As previously stated, business risk is a collective term representing all of the
10 risks of an enterprise other than financial risk (i.e., the introduction of debt into
11 the capital structure). The significance of increasing competition is consistent
12 with accepted business risk analysis. Brealey and Myers² state:

13 With or without bankruptcy, financial distress is costly. Other
14 things equal, distress is more likely for firms with high business
15 risk. That is why such firms generally issue less debt.

16 In the recent past there has been an increasing level of competition for LECs,
17 including CTCo, and, consequently, a continued need to be able to cope with
18 this competition.

19 **Q. DOES A SINGLE OPTIMAL CAPITAL STRUCTURE EXIST FOR CTCO**
20 **WHICH WILL BE SUITABLE FOR RATE OF RETURN PURPOSES IN THE**
21 **NEAR TERM FUTURE, WHEN RATES SET IN THIS PROCEEDING WILL**

22 ² Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance,
23 McGraw-Hill Book Company, Third Edition, 1988, p. 435.

1 **BE IN EFFECT?**

2 A. No. A single optimal capital structure, which will be appropriate for more than
3 an instant in time, is a theoretical proposition rather than a reality. I do not
4 believe that an optimal capital structure can be determined, and certainly not
5 one which would be suitable at all points in time, due to constantly changing
6 elements of risk.

7 At best, a *range* of optimal capital structures can be established.
8 Therefore, the determination of a "reasonable" capital structure is the only
9 realistic approach of estimating a fair rate of return. A reasonable capital
10 structure is one which falls within an acceptable range given a perceived level
11 of business risk by investors and rating agencies.

12 The difficulty in establishing a single optimal capital structure is well
13 recognized in corporate finance. Brealey and Myers³ state:

14 There is no neat formula that you can plug in to find the optimal
15 capital structure... We have portrayed the capital structure choice
16 as a trade-off of the tax advantage of borrowing against the cost
17 of financial distress... This "trade-off theory" of capital structure
18 successfully explains many industry differences in capital structure,
19 but it does not explain why the most profitable firms *within* an
20 industry generally have the most conservative capital structures.

21 Similarly, Brigham⁴ states:

22 ... although it is theoretically possible to determine the optimal
23 capital structure, as a practical matter, we cannot estimate this

24 ³ Id., at p. 437 (emphasis in original).

25 ⁴ Eugene F. Brigham, Financial Management Theory and Practice, The Dryden Press,
26 Fourth Edition, 1985, p. 520.

1 structure with precision. Accordingly, financial executives generally
2 treat the optimal capital structure as a range...

3 **Q. WHAT CAPITAL STRUCTURE IS APPROPRIATE FOR DETERMINING A**
4 **FAIR RATE OF RETURN AT THIS TIME?**

5 A. I propose that the Commission adopt a hypothetical capital structure based
6 upon the 1991 permanent capital structure of the five independent LECs as
7 shown on Schedule 1, page 1 and comprised of 40.33% long-term debt,
8 4.85% preferred stock, and 54.82% common equity.

9 **Q. WHY IS A CAPITAL STRUCTURE OF 40.33% LONG-TERM DEBT, 4.85%**
10 **PREFERRED STOCK AND 54.82% COMMON EQUITY REASONABLE FOR**
11 **USE IN ESTABLISHING A FAIR RATE OF RETURN?**

12 A. These capital structure ratios are reasonable in view of S&P's benchmark
13 criteria. A capital structure consisting of less than 42% total debt qualifies for
14 both the AA and A bond rating based upon S&P's revised financial ratio
15 guidelines (Schedule 2, page 4). S&P's total debt to total capital standard of
16 less than 42% reflects a current, comprehensive analysis of all of the risks
17 faced by a LEC such as CTCO.

18 S&P publishes the criteria which it considers in the bond rating process,
19 which captures all elements of business and financial risk. S&P expressly
20 states that the bond rating process involves an assessment of both business
21 and financial risk, as previously discussed and shown in the excerpts from
22 S&P's CreditReview dated June 24, 1991 on page 1 of Schedule 2.

23 S&P, in its discussion of its February 10, 1992 revision of its telephone

1 financial ratio guidelines from Standard & Poor's CreditWeek on pages 4 and
2 5 of Schedule 2, states:

3 Guidelines are revised as the environment in which local telephone
4 companies operate continues to evolve. ... Telephone companies
5 with similar service territories used to have very similar business
6 risks, but the competitive and regulatory changes have affected
7 them to varying degrees. ... [C]hanges in the competitive and
8 regulatory frameworks have stimulated telephone companies to
9 move toward cost-based pricing schemes... In some cases,
10 probably most notably in Centrex pricing, this change has been
11 voluntary. In others direct regulatory intervention has precipitated
12 the change.

13 As the companies that face the strongest direct competitive
14 pressure shift pricing schedules to a cost basis, the rest of the
15 industry will be compelled to follow suit. The result is likely to be
16 an increase in competitive exposure for those telephone
17 companies whose rate structures have made them absolutely
18 immune to economic competition in the past. This will only
19 heighten the need to focus on the impact of business risk on
20 individual companies' creditworthiness. ...The updated guidelines
21 should be viewed as evolutionary, not revolutionary.

22 S&P's comments and new financial ratio guidelines demonstrate vividly why
23 there is no single optimal capital structure which would be appropriate over
24 time especially under increasingly competitive circumstances.

25 **Q. WHY IS IT REASONABLE TO USE THE 1991 PERMANENT CAPITAL**
26 **STRUCTURE RATIOS OF THE FIVE INDEPENDENT LECS AS THE**
27 **PROPOSED RATEMAKING CAPITAL STRUCTURE FOR CTCO AT THIS**
28 **TIME?**

29 A. It is my opinion that the five independent LECs are more similar in risk to
30 CTCo than the seven RHCs. CTCo had total 1991 permanent capital of
31 \$220.208 million as shown on Schedule 3, page 2. As indicated on Schedule

1 4, page 1, the five independent LECs had 1991 permanent capital of \$868.760
2 million, slightly less than the four times the size of CTCO. In contrast, with
3 \$16,310.200 million in 1991 permanent capital, as indicated on Schedule 5,
4 page 1, the seven RHCs are 74 times the size of CTCO. In addition, CTCO
5 had approximately 200,000 access lines in 1991, while the five independent
6 LECs had an average of approximately 500,000 access lines in 1991, about
7 two and one-half times the number of CTCO's access lines. In contrast, the
8 seven RHCs had an average of approximately 15,000,000 access lines in 1991
9 or 75 times the number of CTCO's access lines. Clearly, based on
10 capitalization and number of access lines, the five independent LECs are of
11 more similar risk to CTCO than the seven RHCs. Therefore, the proposed
12 ratemaking capital structure comprised of 40.33% long-term debt, 4.85%
13 preferred stock and 54.82% common equity actually maintained, on average
14 in 1991, by the five independent LECs is reasonable if not conservative, for
15 CTCO.

16 **Q. WHY IS YOUR RECOMMENDED CAPITAL STRUCTURE FOR CTCO**
17 **CONSERVATIVE?**

18 A. Ratemaking is prospective, as rates set in this proceeding will remain in effect
19 for a future period of time. The proposed common equity ratio based upon
20 permanent capital of 54.82% is conservative in view of the common equity
21 ratios based upon total capital projected by Value Line for the five independent
22 LECs and seven RHCs shown on Schedule 6, page 4. The 1993 projected

1 common equity ratio for the five independent LECs, 55.7%, is slightly greater
2 than the 54.82% proposed common equity ratio for CTCo confirming the
3 reasonableness of my recommended capital structure for CTCo. As can be
4 gleaned from page 4 of Schedule 6 not only are the projected common equity
5 ratios greater than my proposed common equity ratio of 54.82%, Value Line
6 expects these companies, on average, to increase their common equity ratios
7 over the next five years. As stated previously, this trend toward decreasing
8 financial leverage is in direct response to the increasing competition faced by
9 LECs, including CTCo.

10 Furthermore, since the projected common equity ratios shown on
11 Schedule 6, page 4 are based upon total capital, i.e., including short-term
12 debt, the proposed 54.82% common equity ratio based upon permanent
13 capital for CTCo is even more conservative since the exclusion of short-term
14 debt from the projected common equity ratios shown on Schedule 6, page 4
15 would serve to increase them. Thus, the projected common equity ratios
16 would be even higher than shown, were short-term debt excluded. Moreover,
17 that ratios I recommend are within the range of those actually maintained and
18 expected to be maintained by similar risk companies (Schedule 6, pages 2, 3
19 and 4) and reasonable when compared to S&P's financial ratio guidelines for
20 an A bond rating (Schedule 2, page 4).

21 In view of the foregoing, my recommended common equity ratio of
22 54.82% for CTCo is both reasonable and conservative.

1 **COMMON EQUITY COST RATE MODELS**

2 **Discounted Cash Flow Model (DCF)**

3 **Theoretical Basis**

4 Q. WHAT IS THE THEORETICAL BASIS OF THE DCF MODEL?

5 A. The DCF theory is based upon finding the present value of an expected future
6 stream of net cash flows during the investment holding period discounted at
7 the cost of capital or the capitalization rate. This implies that an investor buys
8 a stock for an expected total return which is to be derived from cash flows in
9 the form of dividends and appreciation in market price. Thus, the dividend
10 yield on market price plus a growth rate equals the capitalization rate. The
11 capitalization rate is the total return rate expected by investors.

12 Q. PLEASE COMMENT ON THE APPLICABILITY OF THE DCF MODEL IN
13 ESTABLISHING A COST OF COMMON EQUITY FOR CTCO.

14 A. The model is a useful tool which is worthy of consideration. The extent to
15 which it is relied upon, if at all, should depend upon the extent to which the
16 cost rate results are disparate from those derived from the use of other cost
17 of equity models. The principal reason why I believe the regulatory version
18 of the model, or standard DCF, should be used with caution is because it is
19 predicated upon a number of assumptions that are unrealistic. They include
20 an infinite investment horizon; a constant dividend payout ratio and constant
21 price/earnings (P/E) multiple. As I will demonstrate subsequently, these
22 assumptions do not hold in the real world, (i.e., investment horizons are finite

1 and typically under five years, and payout ratios and P/E multiples change
2 regularly). There is only one instance when the DCF model will produce an
3 indicated cost of common equity that is consistent with the return rate
4 expected by investors, (i.e., when market price and book value are
5 approximately equal, earnings and dividends grow at a constant rate, and
6 investors do not expect changes in P/E multiples). Of course, that is not likely
7 to happen. LECs in recent years have experienced market values well in
8 excess of their book values as can be gleaned from page 1 of Schedules 4
9 and 5, for the proxy groups of five independent LECs and seven RHCs,
10 respectively. In view of this, DCF-indicated cost rates based on the proxy
11 groups must be viewed with caution as market/book ratios well in excess of
12 1.0 have a tendency to result in a distortion (i.e., understatement) of the true
13 common equity cost rate expected by investors. Of course, the converse
14 situation is also true, (i.e., when market/book ratios are well below 1.0 there
15 is a tendency for the DCF model to overstate the true common equity cost rate
16 expected by investors). In some instances, certain applications of the DCF
17 model indicate a significant disparity in common equity cost rate from the true
18 cost of equity required by investors, as confirmed by comparison with cost
19 rates indicated through other applications of the DCF model as well as the
20 application of other cost of equity models. This generally indicates that the
21 DCF result should receive no more than equal weight with other cost of equity
22 model results in the exercise of expert informed judgment.

1 **Unrealistic Assumptions Implicit In The Model**

2 **Q. PLEASE DESCRIBE THE PREVIOUSLY-MENTIONED UNREALISTIC**
3 **ASSUMPTIONS IN THE DCF MODEL.**

4 A. The DCF model used in the regulatory environment assumes that the average
5 investment horizon is infinite, and that over time there is no change in the
6 dividend payout ratio or P/E multiple. Thus, over an infinite time horizon the
7 price of stock is assumed to grow at a constant rate which is proportionate to
8 the growth in earnings, dividends, and book value. There are no empirical
9 data which support such assumptions. The average investment horizon is not
10 infinite, and dividend payout ratios and P/E multiples change frequently rather
11 than remaining constant. Common sense mandates that the average
12 investment horizon is not infinite. As shown on Schedule 7, the average
13 investment horizon for the five years ended 1991 for the proxy group of five
14 independent LECs ranged between 2.4 and 3.8 years and averaged 3.3 years.
15 In addition, the average investment horizon for the five years ended 1991 for
16 the proxy group of seven RHCs ranged between 2.2 and 3.9 years and
17 averaged 3.2 years. Also, from the information shown it can be gleaned that
18 about 54% of the common shares of the five independent LECs and about
19 64% of the common shares of the seven RHCs are held by individuals as
20 opposed to institutional investors. Individual investors are very likely to place
21 great significance on the opinions expressed by financial information services
22 such as S&P and Value Line.

1 multiple) indicates a 14% cost rate (i.e., the sum of the dividend yield on line
2 9 of 9.0% and the growth rate of 5.0% on line 12). In column 2, it is shown
3 that if the P/E multiple increased from 7.14 to 7.25 times, the true cost of
4 equity increases from 14.0% to 15.6%. The difference between columns 1 and
5 2 is attributable to the fact that the DCF model used in the regulatory process
6 does not provide for recognition of any change in the P/E multiple.¹ For
7 example, if investors anticipate a decline in the level of interest rates, they likely
8 will bid up the market prices of interest rate-sensitive, capital-intensive, utilities.
9 This will cause an increase in prospective P/E multiples which is not reflected
10 in the DCF model. Of course, the converse situation is also likely, i.e., if
11 interest rates were expected to increase then P/E multiples would decrease
12 which is also not reflected in the DCF model.

13 Columns 3 and 4 reflect similar calculations. The only difference is that
14 the scenario assumes a market/book ratio of 150%. In column 3, it is shown
15 that if the DCF model, which assumes a constant P/E multiple, were
16 employed, the indicated common equity cost rate would be 10.9%, or
17 significantly lower than the 14% cost rate indicated with a market/book ratio
18 of 100%. In column 4, it is shown that the true cost rate is 13.8% when the
19 increase in P/E multiple from 10.71 to 11.00 times is properly taken into
20 account, because investors' total return is impacted greatly by the appreciation
21 in market value at the time of the sale.

22 The illustrations on Schedule 9 demonstrate that ignoring investors'

1 expectations of changes in P/E multiples can significantly affect the cost rate
2 of common equity capital derived from the DCF model which is based on the
3 erroneous premise of a constant P/E multiple.

4 **Q. IS IT REASONABLE TO CONTINUE TO EXPECT CHANGES IN THE P/E**
5 **MULTIPLES OF UTILITIES?**

6 A. Yes. Shown on Schedule 10 are the P/E multiples of the S&P Industrial Index
7 as well as the S&P Public Utility Index. They are shown at the peak and
8 trough of each business cycle since the important structural change in 1973
9 resulting from the Arab oil embargo and many relevant subsequent events
10 including the Public Utility Regulatory Policies Act of 1978, the formation of the
11 Department of Energy, and the advent of increased competitiveness which has
12 been fostered by national policy. Schedule 10 shows that as of March 1991,
13 the trough of the most recent business cycle, the market P/E multiple of the
14 S&P Industrial Index was 18.23 times which was much higher than the P/E
15 multiples at the peaks of the previous business cycles. It should be noted that
16 changes are always occurring, and by February 1993 the average P/E multiple
17 for the S&P Industrial Index was 27.05 times. While these changes indicate an
18 upward trend, it is most important to keep in mind that they change frequently.
19 It is also shown that in March 1991, the P/E multiple of the S&P Utility Index
20 was 14.80 times which was also greater than those which existed at the peaks
21 of the previous business cycles and increased to 17.54 times by February
22 1993. I believe that the common stocks of utilities will continue to sell

1 substantially above their book values because many investors, particularly
2 individuals, who traditionally committed less capital to the equity markets, now
3 commit a greater percentage of their capital to common stocks in view of
4 lower interest rate alternative investment opportunities. When utilities' common
5 stocks sell well above their book values, it can result in a downwardly biased
6 DCF cost rate.

7 Malkiel⁵ states:

8 We have seen ample evidence in Part One that stocks sometimes
9 do not sell on the basis of anyone's estimate of value (as hard as
10 this is to measure) -- that purchasers are often swept up in waves
11 of frenzy. The market pros were largely responsible for several
12 speculative waves from the 1960s through the 1980s. The
13 existence of these broader influences on market prices at least
14 raises the possibility that investors may not want to accept the
15 current tableau of market prices as being the best reflection of
16 intrinsic values.

17 Hence, the price of common stock, as in current market circumstances
18 and conditions, can be driven by forces other than investor-expected earnings
19 or dividends, such as the prospect of deregulation, diversification, takeovers
20 and increased competition.

21 **Q. WHY DOES A DCF-DERIVED COMMON EQUITY COST RATE MIS-**
22 **SPECIFY THE TRUE COMMON EQUITY COST RATE WHEN**
23 **MARKET/BOOK RATIOS ARE IN EXCESS OF OR BELOW 1.0?**

24 A. When market/book ratios are far in excess of or below 1.0, the application of

25 ⁵ Burton G. Malkiel, A Random Walk Down Wall Street, Fourth Edition, W. W. Norton
26 & Co., 1985, pp. 180-181.

1 the DCF model has a tendency to result in a distortion, either an
2 understatement or overstatement, respectively, of the true common equity cost
3 rates sought by investors. Therefore, in the current market environment,
4 where the market/book ratios of LECs are far in excess of 1.0 (see page 1 of
5 Schedules 4 and 5) and where there are factors other than regulated earnings
6 which affect market prices (due to prospective deregulation and the like) the
7 results of any DCF application must be viewed with extreme caution.

8 The premise of DCF is that it is market oriented. The return investors
9 expect (or require) is related to the price paid for a stock. That is the basis
10 upon which they relate their expected, and ultimately actual, rate of return.

11 The problem stems from the fact that a regulated utility is limited to
12 earning on a book value (original cost) rate base. As indicated previously, the
13 market value diverges from book value for many reasons unrelated to the rate
14 of earnings on book value. Thus, when market values are grossly disparate
15 from their book values, a market-based DCF cost rate applied to the book
16 value of common stock could either overstate (when market value is much less
17 than book value) or understate (when market value is well above book value).

18 The information shown on Schedule 11 demonstrates the inadequacy
19 of a DCF cost rate when market value is well above book value. As can be
20 gleaned from Schedule 11, the real opportunity to earn on book value is
21 grossly understated by the market-based DCF model when market price is well
22 above book value (in this example 150% of book value). Schedule 11, also

1 demonstrates that the implicit growth rate of approximately 0.2%, is a mere
2 fraction of the investor expected DCF growth rate of 3.5%. This is the result
3 of applying a market value cost rate to book value. Thus, a 10% market
4 based cost rate which implies \$15 of earnings translates only to an opportunity
5 for \$10 of earnings on book value. Given \$9.75 in dividends, there is implicitly
6 only \$0.25 available for growth, or 0.2%, and not the \$5.25 expected by
7 investors on market value. Clearly, it defies common sense that investors
8 requiring a \$15 return would purchase a common stock with the expectation
9 of realizing only a \$10 return.

10 Consequently, it is clear that the DCF model can significantly understate
11 the true cost of common equity capital under present market conditions (i.e.,
12 when market values of common stocks are significantly above their book
13 values). Of course, if the converse situation exists (market values substantially
14 below book values), the cost of equity resulting from the DCF model could be
15 overstated.

16 **Evidence of Impact on Market Prices**
17 **Other Than Earnings and Interest Rates**

18 **Q. IS THERE ANY OTHER EVIDENCE TO DEMONSTRATE THAT THERE IS**
19 **A SIGNIFICANT IMPACT ON MARKET PRICES OTHER THAN EARNINGS**
20 **AND INTEREST RATES?**

21 A. Yes. Shown on Schedule 12 is a two page Wall Street Journal article
22 regarding a Goldman Sachs study conducted by limited partner Barrie
23 Wigmore who found that during the 1980s only 35% of stock price growth of

1 the S&P 500 was attributable to earnings and interest rates. In the article
2 Wigmore indicates that:

3 ... his study seems to rule out fundamental corporate performance
4 as the rationale for much of stock price behavior.

5 That study affirms that it is imprudent to rely exclusively on the DCF model for
6 utilities which are capital-intensive and whose prices are influenced greatly by
7 interest rate levels especially since so little of stock price growth is attributable
8 to those factors.

9 The normal disparity of a DCF-indicated common equity cost rate from
10 the true cost rate expected by investors is exacerbated for LECs. This is
11 because all of the companies in the two proxy groups are heavily engaged in
12 the operation of cellular systems. The cellular industry is still in its infancy and
13 contains substantial potential for future earnings from such operations.
14 However, the potential earnings stream reflected in analysts' shorter-term
15 forecasts does not reflect the full longer-range potential of cellular operations.
16 Consequently, the prices being paid by investors in these companies reflect
17 expectations which go beyond the normal five-year future forecasts of analysts.
18 As a result, the market values (and market/book ratios) reflect a level of
19 growth (price appreciation) from the DCF model which is not reflected in
20 estimates of earnings and dividends.

21 **Q. IS THE DCF MODEL WIDELY USED BY REGULATORY AGENCIES?**

22 A. Yes. That is shown on Schedule 13, which consists of three pages. It is the
23 result of a survey of regulatory agencies by NARUC copyrighted 1992.

1 Although most regulatory agencies use the DCF model, it is shown on page
2 2 that the majority do not rely solely on one method.

3 When formulating a conclusion of common equity cost rate, it is
4 important to ascertain whether and to what extent a cost of common equity
5 model results in a cost rate which is an outlier (i.e., obviously too low or too
6 high when compared with alternative applications of the same model as well
7 as the cost rates resulting from the application of other models).

8 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSES BASED**
9 **THE PROXY GROUPS.**

10 A. I have summarized the results of my DCF analyses on Schedule 14. The
11 indicated-DCF cost rates are 12.3% and 10.7% based on the proxy groups of
12 five independent LECs and seven RHCs, respectively.

13 In arriving at these results, I reviewed the results of three applications
14 of the DCF model which will be discussed in detail subsequently. The first
15 version uses historical and projected growth in earnings per share (EPS) and
16 dividends per share (DPS) and will be designated DCF-historical/projected.
17 The second version uses only projected growth in EPS and DPS and will be
18 designated DCF-projected. Finally, the third version uses I/B/E/S (Institutional
19 Brokers Estimate System) projected growth in EPS as well as retention growth
20 plus or minus the accretion or diminution of book value resulting from the sale
21 of new common stock above or below book value, respectively, i.e., (BR + SV)
22 as recommended by the New York Public Service Commission Staff and will

1 be designated DCF-I/B/E/S(BR + SV).

2 I have used several versions of the DCF model since the investment
3 community is comprised of many individual investors. This is especially true
4 for the companies in both proxy groups as discussed previously with regard
5 to the percent of institutional holdings shown on Schedule 7. Therefore, it is
6 logical that these many individual investors utilize various versions of more
7 than one cost of common equity model in the determination of their
8 expectations of the return on common equity.

9 In addition, the use of three versions of the DCF model will ameliorate
10 the effect of the previously discussed unrealistic assumptions upon the DCF
11 result. As previously stated, it is prudent to view the results of the application
12 of various models to determine if there are outliers, and whether or to what
13 extent weight should be given to the outliers in formulating a conclusion of an
14 appropriate common equity cost rate. Likewise, it is prudent to view the
15 results of various applications of the DCF model, especially since the results
16 can vary widely depending upon the choice of inputs. A disparity of results is
17 evident in the range of results shown on Schedule 14, from a low 10.3% for
18 the seven RHCs using my DCF-historical/projected analysis to a high of 13.9%
19 using the DCF-I/B/E/S(BR + SV) analysis for the five independent LECs.

20 In view of the foregoing, the DCF common equity cost rates upon which
21 I will rely are 12.3% and 10.7% for the five independent LECs and seven
22 RHCs, respectively.

1 **Discounted Cash Flow Model Using Historical and**
2 **Projected Growth Earnings and Dividends Per Share**

3 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSIS USING**
4 **HISTORICAL AND PROJECTED EARNINGS AND DIVIDENDS PER**
5 **SHARE?**

6 A. I have summarized the results of my DCF-historical/projected analysis on page
7 1 of Schedule 15. The indicated DCF-historical/projected cost rates are 11.0%
8 and 10.3% based upon the proxy groups of five independent LECs and seven
9 RHCs, respectively. Pages 2 and 3 of Schedule 15 contain the results of my
10 DCF-historical/projected analysis for each company in both proxy groups.
11 The unadjusted dividend yields are based on an average of recent spot data
12 as well as an average of the last 3 months, 6 months, and 12 months,
13 respectively, which are shown on page 4 of Schedule 15. As shown on line
14 1 of page 1, Schedule 15, the average unadjusted yields are 2.8% and 5.0%,
15 respectively. These yields have been adjusted for discrete growth on line 2
16 and the adjusted dividend yields are shown on line 3 of pages 1, 2 and 3. The
17 growth rates on line 4 are an average of five-year historical and projected
18 growth rates in EPS and DPS. Page 5 contains data on historical and
19 projected growth rates in EPS and DPS; pages 6 and 7 contain analyses of the
20 number of standard deviations each growth rate is away from the mean of
21 historical and projected growth rates in EPS and DPS by company and proxy
22 group, respectively; and pages 8 through 19 contain the Value Line
23 publications as of January 15, 1993 and March 5, 1993 for each of the

1 companies in both proxy groups.

2 **Discrete Adjustment of Dividend Yield**

3 **Q. PLEASE EXPLAIN THE ADJUSTMENT FOR DISCRETE GROWTH SHOWN**
4 **ON SCHEDULE 15, PAGES 1, 2 AND 3, LINE 2.**

5 A. Due to the fact that dividends are paid quarterly, or periodically, as opposed
6 to continuously (daily), an adjustment must be made. This is often referred to
7 as the discrete, or the Gordon Periodic, version of the DCF model.

8 Since the various utilities in the proxy groups increase their quarterly
9 dividend at various times of the year, a reasonable assumption is to reflect
10 one-half the annual dividend growth rate in the D_1 expression, or $D_{1/2}$. This is
11 a conservative approach so as not to overstate the dividend yield as it should
12 be representative of the next twelve-month period. Therefore, the actual
13 average dividend yields on line 1 of page 1 of Schedule 15 and the individual
14 company dividend yields on line 1, pages 2 and 3 have been adjusted upward
15 to reflect one-half the growth rates shown on line 4.

16 **Selection of Growth Rates**

17 **Q. PLEASE EXPLAIN THE BASIS OF YOUR GROWTH RATES OF 8.1% AND**
18 **5.2% FOR THE FIVE INDEPENDENT LECS AND SEVEN RHCS,**
19 **RESPECTIVELY.**

20 A. There is no way to determine precisely what measures of growth are utilized
21 by investors. It is reasonable to assume that investors would avail themselves
22 of both historical and projected data, as available. Also, as shown in Schedule

1 7, investors' holding periods, on average, have been less than five years. In
2 addition, forecasts by analysts, including Value Line, are usually for five years.
3 Consequently, the use of five-year historical and five-year projected growth
4 rates in EPS and DPS are appropriate to consider in the determination of a
5 growth rate for use in the DCF model.

6 Studies which have been made by Cragg and Malkiel⁶ indicate that
7 analysts' forecasts do a much better job of explaining P/E multiples than do
8 historical growth rate extrapolations. Also, Brown, Griffin, Hagerman and
9 Zmijewski⁷ concluded that Value Line's earnings forecasts were superior to
10 Box and Jenkins time/series models. Nonetheless, for this application of the
11 DCF Model I will give equal weight to both analysts' forecasted and historical
12 growth rates. However, as far as historical growth rates are concerned, five
13 years is the longest historical period which should be used in conjunction with
14 five-year projected growth rates for use in the DCF Model.

15 Shown on page 5 of Schedule 15, are the historical and projected five-
16 year compound growth rates in EPS and DPS for the two proxy groups. The
17 historical growth rates are from Value Line while the projected growth rates in
18 earnings are an average of both Value Line and I/B/E/S forecasts. I/B/E/S

19 ⁶ John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share
20 Prices, University of Chicago Press, 1982, Chapter 4.

21 ⁷ L.D. Brown, T.A. Griffin, R.L. Hagerman and M.E. Zmijewski, The Existence and
22 Potential Sources of Analysts' Forecast Superiority, State University of New York
23 at Buffalo, School of Management, Working Paper No. 615, December 1984.

1 growth rate estimates are not available for DPS and internal growth nor do
2 they include the Value Line projections. Thus, Value Line's estimates are not
3 included twice.

4 It is important to recognize that the DCF methodology calls for the use
5 of a compound growth rate. In calculating compound growth rates, use of
6 single base year EPS or DPS can result in distorted compound growth rates
7 expected by investors because of significant annual variation. Value Line's
8 historical growth rates are calculated from three year (rather than single year)
9 base periods and thus ameliorate the probability of distorted growth by
10 reference to single year base periods.

11 **Analysis to Determine Aberrant Growth Rates in EPS and DPS**

12 **Q. PLEASE EXPLAIN YOUR ANALYSIS TO DETERMINE IF ANY OF THE**
13 **HISTORICAL OR PROJECTED GROWTH RATES IN EPS AND DPS USED**
14 **IN FORMULATING YOUR RECOMMENDED GROWTH RATES ARE**
15 **ABERRANT.**

16 A. Although certain growth rates may appear aberrant and seem to unduly
17 influence a mean, it does not mean that they are not investor-influencing. The
18 determination of whether or not any individual growth rate should be discarded
19 requires the exercise of informed judgment. So as to not be completely
20 arbitrary, a framework within which to make such a judgment was employed
21 using the number of standard deviations from the mean and Student's-t
22 statistics. The method is not a probabilistic statistical application. Rather, it

1 is a calculational technique to supplement informed judgment. Based on the
2 data on pages 6 and 7 of Schedule 15 and a 95% level of confidence, it was
3 determined that none of the growth rates shown on page 5 of Schedule 5 is
4 aberrant. Thus, all were included in the formulation of the growth rates
5 applicable to each proxy group.

6 **Q. WHAT ARE THE INDICATED COMMON EQUITY COST RATES DERIVED**
7 **FROM APPLICATION OF YOUR DCF-HISTORICAL/PROJECTED**
8 **ANALYSIS?**

9 A. They are 11.0% and 10.3% based upon each proxy group, respectively, as
10 summarized on page 1 of Schedule 15.

11 **Discounted Cash Flow Model Using Only Projected**
12 **Growth in Earnings and Dividends Per Share**

13 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSIS USING**
14 **ONLY PROJECTED EARNINGS AND DIVIDENDS PER SHARE?**

15 A. I have summarized the results of my DCF-projected analysis on page 1 of
16 Schedule 16. The indicated DCF-projected cost rates are 12.0% and 10.5%
17 based upon the five independent LECs and seven RHCs, respectively. Pages
18 2 and 3 of Schedule 16 contain the results of my DCF-projected analysis for
19 each company in both proxy groups. As with my DCF-historical/projected
20 analysis, the unadjusted dividend yields of 2.8% and 5.0% for each proxy
21 group, respectively, are based on an average of recent spot data as well as
22 an average of the last 3 months, 6 months, and 12 months, respectively, as
23 shown on page 4 of Schedule 15. These yields have been adjusted for

1 discrete growth on line 2 and the adjusted dividend yields are shown on line
2 3 of pages 1, 2 and 3. The growth rates on line 4 are an average of projected
3 growth rates in EPS and DPS as derived on page 4 of Schedule 16. Pages
4 5 and 6 contain analyses of the number of standard deviations each growth
5 rate is away from the mean of projected growth rates in EPS and DPS by
6 company and proxy group, respectively.

7 **Discrete Adjustment of Dividend Yield**

8 **Q. PLEASE EXPLAIN THE ADJUSTMENT FOR DISCRETE GROWTH SHOWN**
9 **ON SCHEDULE 16, PAGES 1, 2 AND 3, LINE 2.**

10 A. As in my DCF-historical/projected analysis, I adjusted upward the dividend
11 yields on line 1, pages 1, 2 and 3 to reflect one-half the growth rates shown
12 on line 4 for the reasons previously discussed.

13 **Selection of Growth Rates**

14 **Q. PLEASE EXPLAIN THE BASIS OF YOUR GROWTH RATES OF 9.1% AND**
15 **5.4% FOR THE FIVE INDEPENDENT LECS AND SEVEN RHCS,**
16 **RESPECTIVELY.**

17 A. As previously stated, there is no way to determine precisely what measures of
18 growth are utilized by investors. Based upon the Cragg and Malkiel and
19 Brown, et al studies discussed previously, it is logical to also review DCF cost
20 rates derived using only projected growth in EPS and DPS.

21 Shown on page 4 of Schedule 16 are the projected five-year compound
22 growth rate in EPS and DPS for the two proxy groups. These are the same

1 projected growth rates used in my DCF-historical/projected analysis as
2 previously discussed.

3 **Analysis to Determine Aberrant Growth**
4 **Rates in EPS and DPS**
5 _____

6 **Q. PLEASE EXPLAIN YOUR ANALYSIS TO DETERMINE IF ANY OF THE**
7 **PROJECTED GROWTH RATES IN EPS AND DPS USED IN FORMULATING**
8 **YOUR RECOMMENDED GROWTH RATES ARE ABERRANT.**

9 A. To determine whether any of the projected growth rates shown on page 4 of
10 Schedule 16 are aberrant, I followed the same methodology employed with
11 regard to the growth rates in my DCF-historical/projected analysis discussed
12 previously. Based on the data on pages 5 and 6 of Schedule 16 and a 95%
13 level of confidence, it was determined that none of the growth rates shown on
14 page 4 of Schedule 16 is aberrant. Thus, all were included in the formulation
15 of the growth rates applicable to each proxy group.

16 **Q. WHAT ARE THE INDICATED COMMON EQUITY COST RATES DERIVED**
17 **FROM APPLICATION OF YOUR DCF-PROJECTED ANALYSIS?**

18 A. They are 12.0% and 10.5% based upon each proxy group, respectively, as
19 summarized on page 1 of Schedule 16.

20 **Discounted Cash Flow Model Using the**
21 **New York Public Service Commission**
22 **Staff Recommended Methodology**

23 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSIS USING**
24 **THE NEW YORK PUBLIC SERVICE COMMISSION STAFF**
25 **RECOMMENDED METHODOLOGY?**

1 A. I have summarized the results of my DCF-I/B/E/S(BR+SV) analysis on page
2 1 of Schedule 17. The indicated DCF-I/B/E/S(BR+SV) cost rates are 13.9%
3 and 11.2% based upon the five independent LECs and seven RHCs,
4 respectively. Page 2 of Schedule 17 contains the results of my DCF-
5 I/B/E/S(BR+SV) analysis for each company in both proxy groups. The
6 annual adjusted dividend yields are based upon the most recent quarterly
7 dividends and projected DPS growth rate reported by Value Line and the six
8 month average of monthly high-low market prices adjusted for the ex-dividend
9 date which will be explained subsequently. Page 3 contains the derivation of
10 the six-month average price, the ex-dividend adjustment factor, the adjusted
11 six-month average price and the adjusted dividend yield. Page 4 contains the
12 derivation of the conclusion of growth, (i.e. the average of I/B/E/S mean
13 projected growth rate in EPS and BR+SV, (i.e. the sum of internal (BR) and
14 external (SV) growth as derived on page 7 of Schedule 17)). Pages 5 and 6
15 contain analyses of the number of standard deviations each growth rate is
16 away from the mean of projected I/B/E/S and BR+SV growth by company
17 and proxy group, respectively. Page 8 contains the derivation of the S factor,
18 (i.e., five year annual growth in common shares outstanding), while page 9
19 contains the derivation of the V factor, (i.e., the premium/discount of a
20 company's stock price relative to its book value). This approach to the
21 determination of DCF growth rate is widely discussed in the academic
22 literature.

1 Derivation of the Adjusted Dividend Yield

2 **Q. PLEASE EXPLAIN THE DERIVATION OF THE ADJUSTED DIVIDEND**
3 **YIELD.**

4 A. The adjusted dividend yield derived on page 3 of Schedule 17 is based upon
5 the most recent quarterly dividend payment, dividend payment schedule and
6 the projected DPS growth rate as reported by Value Line Investment Survey,
7 January 15, 1993 and March 5, 1993 contained on pages 8 through 19 of
8 Schedule 15.

9 The six-month average price is based upon an average of the high and
10 low market prices for each of the six months ending March 1993. This six-
11 month average price is then adjusted to reflect the fact that stock prices rise
12 as dividend payment dates approach and drop as soon as the payment date
13 (or date of record) passes. Dividends are paid once a quarter (i.e., essentially
14 every 91 days). The average number of days since the ex-dividend date in
15 every quarter (91 day period) is 45 days. Instead of keeping track of actual
16 dividend payment dates for the companies in each proxy group over a long
17 period of time, the same "average" ex-dividend adjustment factor was applied
18 to all companies. The expected quarterly dividend payment is defined as the
19 average of the expected dividend payments over the next four quarters as
20 estimated using Value Line data ($D_{AV,0}$), the ex-dividend adjusted price shown
21 in column 4, page 3 of Schedule 17 is defined as follows:

1
2
3

$$(1) \quad P_0 = P_0'' - \left[\left(\frac{45}{91} \right) \times (D_{AV,Q}) \right]$$

4 Where:

5 P_0'' = Six month average price (column 2, page 3 of Company Exhibit
6 Schedule 17).

7 $D_{AV,Q}$ = Average of the expected dividend payments over the next four
8 quarters as estimated using Value Line data (column 1, page 3
9 of Schedule 17).

10 **Selection of Growth Rates**

11 **Q. PLEASE EXPLAIN THE BASIS OF YOUR GROWTH RATES OF 10.9% AND**
12 **5.9% FOR THE FIVE INDEPENDENT LECS AND SEVEN RHCS,**
13 **RESPECTIVELY.**

14 A. The NYPSC staff recommends the use of an average of I/B/E/S five-year
15 projected growth in EPS and sustainable growth, (i.e. the sum of retention growth
16 (BR) plus an SV factor). I have used the same I/B/E/S mean five-year projected
17 growth in EPS as I used in my DCF-historical/projected and DCF-projected
18 analyses. As shown on page 7 of Schedule 17, retention growth is calculated by
19 multiplying the expected achieved rate of return on average book common equity
20 for the next five years, as derived from Value Line, by the retention ratio implied
21 by the expected achieved rate of return and the expected dividend payment. SV
22 is calculated by multiplying the average annual growth in common equity shares
23 over the past five years, (i.e. 1987 through 1991 (as shown on page 8 of
24 Schedule 17)), by the premium/discount of the company's stock price relative to
25 book value over the same six month period, (i.e., the six months ended March

1 1993), used to develop the adjusted dividend yield previously discussed. The
2 formula for calculating V (as shown in column 5, page 9 of Schedule 17) is as
3 follows:

$$4 \quad v = \left(1 - \frac{(0.5 \times (BVPS_1 + BVPS_0))}{P_0} \right)$$

7 where:

8 $BVPS_1$ = latest available quarterly book value at the end of the six-month
9 period during which P_0 was computed (column 2, page 9 of
10 Schedule 17); and

11 $BVPS_0$ = latest available quarterly book value at the beginning of the six-
12 month period during which P_0 was computed (column 1, page 9
13 of Schedule 17).

14 **Analysis to Determine Aberrant Growth Rates**
15 **in EPS and BR + SV**

16 **Q. PLEASE EXPLAIN YOUR ANALYSIS TO DETERMINE IF EITHER THE**
17 **PROJECTED GROWTH RATE IN EPS OR BR + SV GROWTH RATES ARE**
18 **ABERRANT.**

19 A. To determine whether any of the projected growth rates in EPS or the BR +
20 SV growth rates shown on page 4 of Schedule 17 is aberrant, I followed the
21 same methodology employed with regard to the growth rates in my DCF-
22 historical/projected and DCF-projected analyses discussed previously. Based
23 on the data on pages 5 and 6 of Schedule 17 and a 95% level of confidence,
24 it was determined that none of the growth rates shown on page 4 of Schedule
25 17 is aberrant. Thus, all were included in the formulation of the average of
26 growth in EPS and BR + SV applicable to each proxy group.

1 Q. WHAT ARE THE INDICATED COMMON EQUITY COST RATES DERIVED
2 FROM APPLICATION OF THE DCF-I/B/E/S(BR+SV) ANALYSIS?

3 A. They are 13.9% and 11.2% based upon each proxy group, respectively, as
4 summarized on page 1 of Schedule 17.

5 **The Risk Premium Model (RP)**

6 **Theoretical Basis**

7 Q. WHAT IS THE THEORETICAL BASIS OF THE RP MODEL?

8 A. The RP model is based upon the cost of common equity being greater than
9 the prospective company-specific cost rate for long-term debt capital. In
10 other words, it is the expected cost rate for long-term debt capital plus an
11 equity risk premium to compensate common shareholders for the added risk
12 of being unsecured and last-in-line in any claim on the corporation's assets
13 and earnings.

14 Q. HAVE YOU PERFORMED AN RP ANALYSIS OF COMMON EQUITY COST
15 RATE BASED ON THE PROXY GROUPS?

16 A. Yes. The results are summarized on page 1 of Schedule 18. As shown on
17 line 5, the indicated cost rates are 13.3% and 13.1% based upon the five
18 independent LECs and seven RHCs, respectively. I begin the analysis at line
19 1 with an average expected yield on A-rated public utility bonds of 7.9%. On
20 line 2, I show the adjustment necessary to the 7.9% A-rated yield to reflect
21 the average bond ratings of A+ and AA for the five independent LECs and
22 seven RHCs, respectively. The adjusted yields shown on line 3 are 7.8% and

1 7.7%, respectively. On line 4, I show my conclusion of equity risk premium
2 applicable to each proxy group, (i.e., 5.5% and 5.4%, respectively, for the five
3 independent LECs and seven RHCs). Thus, the sum of proxy group-specific
4 bond yields and equity risk premiums results in RP-derived common equity
5 cost rates of 13.3% and 13.1% for the five independent LECs and seven
6 RHCs, respectively.

7 **Estimation of Expected Bond Yields**

8 **Q. PLEASE DESCRIBE THE DERIVATION OF THE EXPECTED BOND**
9 **YIELDS.**

10 A. The first order of business in estimating a RP-based cost of common equity
11 is to obtain a meaningful estimate of the expected cost of long-term debt
12 capital. A consensus forecast by a number of economists provides a
13 meaningful basis. Consequently, reliance on the April 1993 consensus
14 forecast of about 50 economists of the expected yield on A-rated public utility
15 bonds for the five calendar quarters ending with the second calendar quarter
16 of 1994 was used. It was derived from Blue Chip Financial Forecasts which
17 is shown on page 2 of Schedule 18. The average expected yield on A-rated
18 utility bonds is 7.9% as shown on page 1 of Schedule 18.

19 It is then necessary to establish the likely expected long-term bond
20 yields applicable to each of the two proxy groups. In order to do so, it is
21 necessary to ascertain the average bond rating of each proxy group. S&P's
22 bond ratings as of March 1993 for all the companies in each proxy group are

1 shown on page 3 of Schedule 18, while page 4 contains the numerical
2 weighting legend used to determine the average bond rating for each group.
3 As shown on page 3 of Schedule 18, the average bond rating is A+ for the
4 proxy group of five independent LECs and AA for the seven RHCs.

5 In order to obtain a meaningful expected bond yield for each proxy
6 group, in view of the A+ and AA average ratings, it is necessary to adjust
7 downward the average expected yield of 7.9% on A-rated utility bonds. As
8 explained in notes 2 and 3 on page 1 of Schedule 18, this was accomplished
9 by the following procedure:

10 (1) To obtain an estimate of expected A+ bond yield relative to the proxy
11 group of five independent LECs, the expected average yield of 7.9%
12 on A-rated utility bonds was reduced by one-third of the average yield
13 differential of 23 basis points, or 0.077% rounded to 0.1% between A
14 and AA rated utility bonds experienced during the five year period 1988
15 through 1992.

16 (2) To obtain an estimate of expected AA bond yield relative to the proxy
17 group of seven RHCs, the expected average yield of 7.9% on A-rated
18 utility bonds was reduced by the full difference of the average yield
19 differential of 23 basis points, rounded to 0.2% between A and AA
20 rated utility bonds experienced during the five-year period 1988
21 through 1992. The average yield differentials are based on the interest
22 rate trends shown on page 5 of Schedule 18.

1 Thus, as shown on page 1 of Schedule 18, line 3, the expected
2 average bond yields are 7.8% and 7.7% relative to the proxy groups of five
3 independent LECs and the seven RHCs, respectively. It is then necessary
4 to estimate the premiums over and above those bond yields to reflect the
5 unsecured, last-in-line status of the common shareholders.

6 **Estimation of the Equity Risk Premium**

7 **Q. PLEASE EXPLAIN THE METHOD WHICH YOU UTILIZE TO DETERMINE**
8 **AN EQUITY RISK PREMIUM.**

9 A. In order to gain insight into an appropriate risk premium relative to each
10 proxy group, the results of three different equity risk premium studies as
11 detailed on pages 6, 7 and 8 of Schedule 18 were relied upon. As shown on
12 line 3, page 6 of Schedule 18, the mean equity risk premiums based on all
13 three studies are 5.5% and 5.4% relative to the five independent LECs and
14 seven RHCs, respectively.

15 It was determined that it would be very meaningful to estimate the
16 equity risk premiums for the proxy groups based on the use of betas in
17 conjunction with a long-term indication of equity risk premium on the market
18 as a whole. Premiums of 6.9% and 5.9% for the proxy groups of five
19 independent LECs and seven RHCs, respectively, were derived based on the
20 use of beta as summarized on page 7 of Schedule 18. A beta determined
21 equity risk premium should receive substantial weight because it utilizes
22 adjusted betas which are derived from the relative market data of common

1 stocks over a recent period of five years, or sixty months. Beta is a
2 meaningful indication to investors of prospective relative risk to the market as
3 a whole.

4 I used the Ibbotson Associates' data on holding period returns for the
5 S&P 500 Composite Index and Salomon Brothers Long-term High-grade
6 Corporate Bond Index for the period 1926-1992. Use of holding period
7 returns over a very long period of time is useful in the beta approach
8 because the market may not be efficient at all and certainly is not efficient in
9 the short-run as confirmed by a recent Goldman Sachs study (see Schedule
10 12). Moreover, Ibbotson Associates'⁸ 1992 Yearbook states:

11 During the last 66 years, there was a severe depression, four
12 wars, a period of pegged interest rates, several periods of wage
13 and price controls, periods of inflation and deflation, various oil
14 shocks and stock price crashes in 1929 and 1987. While it is
15 impossible to forecast which specific events will occur in the
16 future, it is reasonable to believe that historical events are
17 representative of the types of events that will occur in the future.
18 Thus, the rate of return effects of these event-types can be
19 expected to be experienced again.

20 It has been suggested that recent events should be emphasized
21 by weighting them more heavily than distant returns. However,
22 in the absence of a compelling reason to weight particular years
23 more heavily than others, it is appropriate to weight all of the
24 historical years equally. In general, the model described here
25 attempts to maintain a spirit of neutrality or objectivity in the
26 forecast it produces. The use of any weighting scheme risks
27 imparting subjectivity and bias into the forecasts.

28 In view of the foregoing, the use of the very long-term data (i.e., 1926-

29 ⁸ Ibbotson Associates, Stocks, Bonds, Bills and Inflation - 1992 Yearbook, pp. 130-
30 131.

1 1992) is appropriate for use in conjunction with the use of beta. The beta
2 reflects a more contemporary assessment of market risk over the most
3 recent five years on the pro rata determination of equity risk premium.
4 Consequently, the long-term arithmetic mean total return rates on the market
5 as a whole of 12.4% and on corporate bonds of 5.8% were used, as shown
6 at lines 1 and 2 of page 7 of Schedule 18. As shown on line 3 of the same
7 page, the resultant long-term historical equity risk premium on the market as
8 a whole is 6.6%. The arithmetic mean return rates were used because they
9 are appropriate for cost of capital purposes. As Ibbotson Associates⁹
10 states:

11 The arithmetic mean is the rate of return which, when
12 compounded over multiple periods, gives the mean of the
13 probability distribution of ending wealth values. (A simple
14 example given below shows that this is true.) This makes the
15 arithmetic mean return appropriate for computing a discount rate
16 and a cost of capital, or market-required, rate of return. The
17 discount rate that equates expected (mean) future values with the
18 present value of an investment is that investment's cost of capital.
19 The logic of using the discount rate as the cost of capital is
20 reinforced by noting that investors will discount their expected
21 (mean) ending wealth values from an investment back to the
22 present using the arithmetic mean, for the reason given above.
23 They will therefore, require such an expected (mean) return
24 prospectively (that is, in the present looking toward the future) in
25 order to commit their capital to the investment. The discount rate
26 is the market required rate of return or cost of capital.

27 The following example shows that the arithmetic mean,
28 compounded over the years that an investment is held, provides
29 the best estimate of the ending wealth value of the investment.

30 ⁹ Id., at pp. 115-116 and 118.

1 Assume that a dollar invested has two possible outcomes each
 2 year: it rises 30 percent or falls 10 percent. Each of these
 3 outcomes occurs with a probability of 0.5. After one year, the
 4 possible outcomes are:

	<u>Ending Wealth Value</u>	<u>Probability</u>
6	\$1.30	0.50
7	0.90	0.50

8 Extending the example one more year, the investment could start
 9 at \$1.30 and rise 30 percent or fall 10 percent (i.e., rise to \$1.69
 10 or fall to \$1.17 each with a probability of 0.25). Alternatively, the
 11 investment could start at \$0.90 and rise 30 percent or fall 10
 12 percent (i.e., rise to \$1.17 or fall to \$0.81, again each with a
 13 probability of 0.25). After two years, the possible outcomes are:

	<u>Ending Wealth Value</u>	<u>Probability</u>	<u>Value x Probability</u>
15	\$1.69	0.25	0.4225
16	1.17	0.50	0.5850
17	0.81	0.25	<u>0.2025</u>
18			
19		Summation	\$1.2100

20 Note that an extra column has been added: value times
 21 probability. For an investor in this security, the summation (\$1.21)
 22 represents the statistically expected wealth after two years.

23 The return required in order for an investment to grow from \$1.00
 24 to (an expected) \$1.21 in two years can now be calculated. This
 25 is given by $(1.21/1.00)^{(1/2)} - 1 = 0.10$ or 10 percent. The
 26 arithmetic mean of the two possible returns is $(1.3 \times 0.9)^{(1/2)} - 1$
 27 $= 0.082$ or 8.2 percent.

28 Since the arithmetic mean is the rate of return that equates the
 29 expected future value of an investment with its present value, this
 30 property makes the arithmetic mean the correct value to use as
 31 the discount rate or cost of capital.

32 Stated another way, the arithmetic mean is correct because an
 33 investment with uncertain returns will have a higher expected
 34 ending wealth value than an investment which earns, with
 35 certainty, its compound or geometric rate of return every year.

1 In the above example, compounding at the rate of 8.2 percent for
2 two years yields a terminal wealth of \$1.17, based on a dollar
3 invested. But holding the uncertain investment, with a possibility
4 of high returns (two + 30 percent years in a row) as well as low
5 returns (two -10 percent years in a row), yields a higher expected
6 terminal wealth, \$1.21. In other words, more money is gained by
7 higher-than-expected returns than is lost by lower-than-expected
8 returns.

9 Therefore, in the investment markets, where returns comprise a
10 probability distribution, the arithmetic mean is the measure that
11 accounts for uncertainty, and is the appropriate one for estimating
12 discount rates and the cost of capital.

13 The beta approach to the determination of an equity risk premium
14 should not be confused with the CAPM. Beta is a measure which largely
15 captures systematic, or market, risk which is a relatively small percentage of
16 total risk (i.e., the sum of both systematic and unsystematic risk).
17 Unsystematic risk (i.e., diversifiable current and prospective business and
18 financial risk to which an enterprise is exposed) is captured in the prospective
19 long-term bond yield. This proposition can be verified by reference to
20 Schedule 2, page 1. In addition, as shown on pages 1 through 6 of
21 Schedule 2, S&P has made it clear that the bond rating process involves an
22 assessment of both business and financial risk. In contrast, in the CAPM, the
23 use of a risk-free rate of return does not, and by definition cannot, reflect a
24 company's specific (i.e., unsystematic) risk.

25 On page 11 of Schedule 18, the most current adjusted betas from
26 Value Line are shown. The average beta for the proxy group of five
27 independent LECs is 1.04 and the average beta for the proxy group of seven

1 RHCs is 0.90. These adjusted betas are also shown on line 4, page 7 of
2 Schedule 18. The resultant equity risk premiums of 6.9% and 5.9%
3 applicable to each proxy group, respectively, are shown on line 5 of that
4 same page.

5 The basis of the mean equity risk premiums of 4.0% over A-rated
6 public utility bonds and 4.8% over AA-rated public utility bonds are based on
7 holding period returns from two different studies using public utilities, as
8 shown on line 2, page 6 of Schedule 18, is detailed on page 8 of Schedule
9 18.

10 The average equity risk premiums of 5.5% for the five independent
11 LECs and 5.4% for seven RHCs result from my analysis of these three
12 studies based on holding period returns. As shown on Schedule 18, page
13 6, equal weight was given to the beta approach results and the mean risk
14 premium of 4.0% and 4.8% based on the holding period returns of utilities.

15 **Q. DID YOU USE THE RESULTS OF ANY EQUITY RISK PREMIUMS**
16 **DERIVED THROUGH THE USE OF THE DCF MODEL AS A CHECK ON**
17 **YOUR RISK PREMIUM FINDINGS?**

18 A. Yes. I also reviewed the results of three other studies where the derived
19 equity risk premiums resulted from applications of the DCF model. I used
20 them only as a check on my conclusion of equity risk premium in view of the
21 unrealistic, previously discussed, assumptions implicit in the DCF model, as
22 well as the substantial premiums of market values above book values which

1 often result in an understatement of common equity cost rates and, hence,
2 risk premiums. The three studies are summarized on page 9 and detailed on
3 page 10 of Schedule 18. They are based on relatively short time periods as
4 shown at the top of page 10 of Schedule 18. They were also based on
5 periods with very high interest rate levels. The equity risk premium tends to
6 rise during periods of lowering interest rates and to decline during periods of
7 rising interest rates. For example, Brigham, Shome and Vinson¹⁰ have
8 found that since utility stocks now seem to provide a better hedge against
9 unanticipated inflation than do bonds, the interest rate risk in bonds offsets,
10 to a greater extent than was true earlier, the higher operating risk that is
11 inherent in equities. They concluded:

12 Therefore, when inflationary fears rise, the perceived riskiness of
13 bonds rises, helping to push up interest rates. However, since
14 investors today are less concerned about inflation's impact on
15 utility stocks than on bonds, the utilities' cost of equity does not
16 rise as much as that of debt, so the observed risk premium tends
17 to fall.

18 For the 1980-84 period, we found the following relationship (see
19 Exhibit 6):

20 ¹⁰ Eugene F. Brigham, Dilip K. Shome and Steve R. Vinson, The Risk Premium
21 Approach to Measuring a Utility's Cost of Equity, Financial Management/Spring
22 1985, p. 44.

1 A-rated public utility bonds and 6.0% over AA-rated public utility bonds are
2 indicated which demonstrates the reasonableness of equity risk premiums of
3 5.5% and 5.4% applicable to the five independent LECs and seven RHCs,
4 respectively. Thus, as shown on Schedule 18, page 1, line 5, the indicated
5 RP-derived common equity cost rates are 13.3% and 13.1% based on the
6 proxy groups of five independent LECs and seven RHCs, respectively. ' i

7 The Capital Asset Pricing Model (CAPM)

8 Theoretical Basis

9 **Q. PLEASE EXPLAIN THE THEORETICAL BASIS OF THE CAPM.**

10 A. The CAPM defines risk as the covariability of the security's returns with the
11 market's returns. This covariability is measured by beta (" β "), an index measure
12 of variability relative to the market. A beta less than 1.0 indicates that the
13 market price of a security is less volatile than the market, and therefore its price
14 will move less than the percentage change in the market. Conversely, a beta
15 greater than 1.0 indicates that the market price of a security is more volatile
16 than the market, and therefore its price will move greater than the percentage
17 change in the market.

18 The CAPM assumes that all other risk (i.e., non-market or unsystematic
19 risk) can be diversified away by proper portfolio selection. The risk that cannot
20 be diversified away is called market, or systematic risk. The model presumes
21 that investors require compensation for risks that cannot be diversified away.
22 Systematic risks are caused by socioeconomic and other events that affect the

1 returns on all assets. In essence, the model is applied by adding a risk-free
2 rate of return proxy to a market risk premium which is adjusted proportionally
3 to reflect the systematic risk of the security as measured by beta. The model
4 is expressed as:

$$5 \quad R_s = R_f + \beta (R_m - R_f)$$

6 where: R_s = Return rate on the common stock

7 R_f = Risk-free rate of return

8 R_m = Return rate on the market as a whole

9 β = Adjusted beta (volatility of the
10 security relative to the market
11 as a whole)

12 Risk-Free Rate of Return

13 **Q. PLEASE DESCRIBE YOUR SELECTION OF A RISK-FREE RATE OF**
14 **RETURN.**

15 A. My application of the CAPM is summarized on Schedule 19, page 1. As shown
16 on line 1, the risk-free rate adopted is 7.0%. It is based upon an average of the
17 expected yields for the five quarters ending with the second calendar quarter
18 1994 on 30-year Treasury bonds of 7.0%. The details are shown on page 3 of
19 Schedule 19. The estimates are derived from the consensus forecast of the
20 reporting economists in the April 1993 issue of the Blue Chip Financial
21 Forecasts. The use of such an average is appropriate because although 90-day
22 Treasury bills are considered riskless, their rates tend to fluctuate widely over
23 short periods of time. Thus, they are unreliable for use in the CAPM.

1 Q. WHY IS THE USE OF 90-DAY TREASURY BILLS INAPPROPRIATE FOR USE
2 IN THE CAPM?

3 A. The use of short-term Treasury bills as the risk-free rate of return is
4 inappropriate because they are too volatile. As Harrington¹² states:

5 The longer-term rates ... fit our tests of history better than Treasury
6 bill rates... Anyone using the CAPM must choose the R_f proxy with
7 care. The most widely used proxies, 30- or 90-day Treasury bill
8 rates, are empirically inadequate and theoretically suspect.

9 In addition, Ibbotson Associates¹³ advocates the use of the long-term
10 Government bond for cost of capital purposes for a regulated public utility when
11 they state:

12 When discounting cash flows projected over a long period, it is
13 necessary to discount them by a long-term cost of capital.
14 Additionally, regulatory processes for setting rates often specify or
15 suggest that the desired rate of return for a regulated firm is that
16 which would allow the firm to attract and retain debt and equity
17 capital over the long term. Thus, the long-term cost of capital is
18 typically the appropriate cost of capital to use in regulated
19 ratesetting.

20 ***

21 The CAPM was formulated by William F. Sharpe and John Lintner
22 to measure the short-term cost of capital. It can be adapted to
23 measure the long-term cost of capital by using the yield on a long-
24 term government bond as the current riskless rate, R_f , and by
25 subtracting long-term bond income returns from stock market
26 returns to arrive at the expected equity risk premium, R_p .

27 Consequently, the use of an average of the expected yield on 30-year

28 ¹² Diana R. Harrington, Modern Portfolio Theory & The Capital Asset Pricing
29 Model - A User's Guide, Prentice-Hall, Inc., 1983, p. 108.

30 ¹³ Id. at pp. 118-119 and 113.

1 Treasury bonds is appropriate because they are less volatile than short-term
2 Treasury bills and the long-term cost of capital is appropriate in regulatory
3 ratesetting.

4 **Market Equity Risk Premium**

5 **Q. PLEASE EXPLAIN THE MANNER IN WHICH YOU DETERMINED AN**
6 **APPROPRIATE EQUITY RISK PREMIUM ON THE MARKET AS A WHOLE.**

7 A. The market equity risk premium is determined by first establishing a reasonable
8 estimate of investors' expected total return rate on the market as a whole. Next,
9 an estimate of the expected risk-free rate is subtracted from the investors'
10 expected total market return rate. Finally, the market equity risk premium must
11 be adjusted by beta to reflect the proportional systematic risk of the security.

12 As shown on Schedule 19, page 1, line 2, the proportional market equity
13 risk premium return rates reflecting the systematic risk of the proxy groups are
14 an average of 8.7% for the proxy group of five independent LECs and an
15 average of 7.5% for the proxy group of seven RHCs. The total market equity
16 risk premium utilized was 8.3% and is based upon an average of the long-term
17 historical and expected market risk premiums. The basis of the market equity
18 risk premium is explained in detail in note 2 on page 3 of Schedule 19. It is
19 derived from an average of the most recent 12-month, 6-month, 3-month (using
20 the months April 1992 through March 1993) and most recent spot (April 2,
21 1993) 3-5 year total market price appreciation projections by Value Line. The
22 average expected price appreciation is 66% which translates to 13.5% per

1 annum which, when added to the average (similarly calculated) dividend yield
2 of 2.7% equates to a forecasted annual total return rate on the market as a
3 whole of 16.2%. Thus, this methodology is consistent with the use of the 12-
4 month, 6-month, 3-month and spot dividend yields in my application of the DCF
5 model. The market equity risk premium is also derived from the long-term
6 historical return rate of 12.4% on the market as a whole from Ibbotson
7 Associates' Stocks, Bonds, Bills and Inflation. In each instance, the relevant
8 risk-free rate was deducted from the total market return rate, e.g., from the
9 Value Line total market return of 16.2%, the projected average risk-free rate of
10 7.0% was deducted indicating an expected market risk premium of 9.2%. From
11 the Ibbotson historical total return rate of 12.4%, the long-term historical income
12 return rate on long-term U.S. Government Securities of 5.1% was deducted
13 indicating an historical equity risk premium of 7.3%. Thus, the average of 9.2%
14 (16.2% - 7.0%) and 7.3% (12.4% - 5.1%) equals 8.25%, rounded to 8.3%.

15 **Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE CAPM TO**
16 **THE PROXY GROUPS?**

17 A. As shown on Schedule 19, page 1, line 3, the CAPM cost rates are 15.7%, and
18 14.5% applicable to the proxy group of five independent LECs and the proxy
19 group of seven RHCs, respectively. The CAPM cost rates are shown by
20 company and by group on page 2 of Schedule 19.

21 **COMMON EQUITY COST RATE BASED ON THE PROXY GROUPS**

22 **Q. WHAT IS THE INDICATED COMMON EQUITY COST RATE BASED ON THE**

1 **TWO PROXY GROUPS?**

2 A. As shown on Schedule 1, page 2, line 4 it is 13.8% based upon giving reliance
3 to the DCF, RP and CAPM cost rates for the proxy group of five independent
4 LECs. As previously discussed, with respect to an appropriate ratemaking
5 capital structure for CTCO, the five independent LECs are more similar in terms
6 of size and number of access lines to CTCO than are the seven RHCs.
7 Therefore, the indicated common equity cost rate for the five independent LECs,
8 13.8%, is appropriate for CTCO before any adjustment to recognize
9 management efficiency and high service quality.

10 **CHECK ON THE REASONABLENESS OF THE INDICATED COMMON**
11 **EQUITY COST RATE BASED ON THE FIVE INDEPENDENT LECs**

12 **Comparable Earnings Analysis**

13 As a check on the reasonableness of the indicated 13.8% common equity
14 cost rate based on the five independent LECs, I performed a comparable
15 earnings analysis of a proxy group of domestic non-utility companies of similar
16 total risk to the proxy group of five independent LECs.

17 Comparable earnings is derived from the "corresponding risk" standard
18 of the landmark cases of the U.S. Supreme Court. Thus, comparable earnings
19 is consistent with the Hope doctrine that the return to the equity owner should
20 be commensurate with returns on investments in other firms having
21 corresponding risks.

22 This method is based on the opportunity cost principle which maintains
23 that the true cost of an investment is equal to the cost of the best available

1 alternative use of the funds to be invested. The opportunity cost principle is
2 consistent with one of the fundamental principles upon which regulation rests -
3 that it is intended to act as a surrogate for competition and to provide a fair
4 rate of return to investors.

5 The comparable earnings method is designed to measure the returns
6 expected to be earned on the book common equity, in this case net worth, of
7 similar risk enterprises. Thus, it provides a direct measure of return, since it
8 translates the competitive principle upon which regulation rests into practice.
9 In my opinion, the use of achieved returns of regulated utilities of similar risk
10 would be circular in reasoning and not consistent with the principle of being
11 equal to similar risk firms which are not price regulated. The difficulty in
12 application of the comparable earnings model is to select a proxy group(s) of
13 companies which are similar in risk but are not price regulated utilities.
14 Consequently, the first step in determining a cost of common equity using
15 comparable earnings model is to choose an appropriate proxy group. The
16 proxy group should be broad-based in order to obviate any company-specific
17 aberrations. Utilities should be eliminated to avoid circularity since the returns
18 on book common equity of utilities are substantially influenced by authorized
19 returns on equity.

20 I have chosen a proxy group of domestic unregulated firms to reflect both
21 the systematic and unsystematic risk of the five independent LECs. The criteria
22 used in the selection of this proxy group were that the non-utility companies be

1 domestic and included in Value Line Investment Survey. Value Line betas were
2 used as a measure of systematic risk while the residual standard deviation, (i.e.,
3 the standard error of the estimate from the regression equation which derived
4 the company's beta) was used as a measure of the firm's specific, (i.e.,
5 unsystematic risk). Thus, the greater a particular stock's residual standard
6 deviation, the greater effect events specific to the company's operations will
7 have on its stock price. In essence, companies which have similar betas and
8 residual standard deviations, have similar investment risk (i.e., the sum of
9 systematic (market) risk and unsystematic (business and financial) risk).

10 The companies in the non-utility group were chosen based on an
11 unadjusted beta range and a residual standard deviation range. The ranges
12 were based upon the average standard deviation of the average unadjusted
13 beta and average residual standard deviation of that beta for the proxy group
14 of five independent LECs. For example, the five independent LECs have an
15 average Value Line unadjusted beta of 1.03, whose average standard deviation
16 is 0.1211. The average residual standard deviation from the regression
17 equations which derived the five independent LECs' average unadjusted beta

1 is 3.6707 with a standard deviation of 0.1610¹⁴. A range of unadjusted betas
 2 from 0.67 to 1.39 and of residual standard deviations from 3.1878 to 4.1536,
 3 were used to select the proxy group of domestic non-utility companies
 4 comparable to the five independent LECs as shown on page 5 of Schedule 20.
 5 These ranges are based upon the five independent LECs' average unadjusted
 6 beta of 1.03 and residual standard deviation of 3.6707 plus or minus three
 7 standard deviations of beta (0.1211) or residual standard deviation (0.1610),
 8 respectively.

9 Once a proxy group of non-utility companies is selected, it is then
 10 necessary to derive returns on book common equity or net worth for the
 11 companies in the group. I have measured these returns using the rate of return
 12 on net worth as reported by Value Line. It is reasonable to measure these
 13 returns over the most recent three years so that any yearly, company-specific
 14 aberrations can be obviated. However, it must be remembered that these are

15 ¹⁴ The standard deviation of the residual standard deviation is calculated as
 16 follows:

17 Standard
 18 Deviation
 19 of the
 20 Resid. Std. = $\frac{\text{Residual Standard Deviation}}{\sqrt{2N}}$
 21

22 where: N = number of observations. Since Value Line betas are
 23 derived from weekly observations over a period of five years,
 24 N = 260

25 Thus, $0.1610 = \frac{3.6707}{\sqrt{520}} = \frac{3.6707}{22.8035}$
 26

1 achieved returns and not investor-expected returns. The opportunity for a fair
2 rate of return which a public utility should be allowed to earn must account for
3 attrition and regulatory lag, which is not reflected in achieved historical returns.

4 Due to the wide variation in the rates of return on net worth for the non-
5 utility companies in the proxy group, the median return is an appropriate
6 indicator of the return comparable to the proxy group of five independent LECs.
7 The comparable earnings result as shown on page 5 of Schedule 20 and
8 summarized on line 7, page 2 of Schedule 1 is 12.6%, comparable to the five
9 independent LECs. This confirms the reasonableness of the indicated common
10 equity cost rate of 13.8% based on the five independent LECs.

11 **ADJUSTMENT TO RECOGNIZE MANAGEMENT**
12 **EFFICIENCY AND HIGH SERVICE QUALITY**

13 **Q. PLEASE EXPLAIN THE ADJUSTMENT OF 0.2% SHOWN ON SCHEDULE 1,**
14 **PAGE 2, LINE 6.**

15 A. Company Witness Burnside has testified that CTCo provides an extraordinary
16 level of customer service without sacrificing efficiency stating:

17 CTCo's service levels are excellent as measured against any
18 standard. In all significant categories of measurement, CTCo can
19 consistently be found at or near the top of the industry. (Statement
20 No. 1, page 4, lines 20-23).

21 Both customers and shareholders should share in the benefits of this
22 outstanding performance. It is clear from Mr. Burnside's testimony that CTCo's
23 customers have benefitted, CTCo's customer complaint rate is among the best
24 in the industry, and while the number of access lines has increased over the last

1 five years, trouble reports have declined. Mr. Burnside has demonstrated that:
2 CTCo ... is operating a very efficient and lean organization.
3 (Statement No. 1, page 7, lines 14-16).

4 Shareholders should also benefit from CTCo's exceptional performance.
5 To recognize this outstanding performance, I have added an increment of 0.2%
6 to the 13.8% indicated common equity cost rate based upon the five
7 independent LECs. It is nearly impossible to quantify with any certainty the
8 precise increment. In my opinion, a range of 0.2% to 0.5% is reasonable.
9 Likewise, the true cost of common equity is not a precise point, but rather a
10 range. In addition, as previously discussed, the five independent LECs are
11 more similar in risk to CTCo than the seven RHCs. However, CTCo is still
12 smaller than the five independent LECs in terms of both capitalization and
13 number of access lines. All things being equal, smaller size means greater risk.
14 Therefore, the adjustment to recognize management efficiency and high service
15 quality of 0.2%, the low end of the range of 0.2% to 0.5%, is reasonable if not
16 conservative.

17 **CONCLUSION OF COMMON EQUITY**
18 **COST RATE APPLICABLE TO CTCO**

19 **Q. WHAT IS THE RECOMMENDED COMMON EQUITY COST RATE**
20 **APPLICABLE TO CTCO?**

21 A. The indicated common equity cost rate is 13.8% based on the five independent
22 LECs before any allowance in recognition of CTCo's level of management
23 efficiency and high service quality. This is appropriate, in my opinion, because

1 of CTCO's similar risk vis-a-vis the five independent LECs. After an adjustment
2 of 0.2% in recognition of management efficiency and high service quality, my
3 recommended common equity cost rate applicable to CTCO is 14.0%.

4 **Q. ARE YOU AWARE OF SUCH INCREMENTS TO RETURN ON EQUITY FOR**
5 **MANAGEMENT EFFICIENCY BEING RECOGNIZED IN ANY OTHER**
6 **JURISDICTION?**

7 A. Yes. A few examples of added return increments as a reward for management
8 efficiency follow:

9 The Florida PSC found that a utility should be allowed something
10 more in the rate of return if it had demonstrated its ability to operate
11 efficiently and has a minimum of service complaints (Re: General
12 Telephone of Florida (1962) 44 PUR3d 247.

13 The Iowa IUB made a management efficiency reward by increasing
14 the common equity cost rate. (Re: Iowa Public Service - Order in
15 Docket No. RPU-91-6, date 6/1/92) (Source: Regulatory Research
16 Associates, Inc. 6/12/92).

17 The New Mexico PSC concluded that regulatory incentives should
18 be provided for efficient management (Re: Southwestern Public
19 Service Co., (1978) 27 PUR4th 302.

20 The Texas PUC made an allowance to reward an electric utility for
21 its accomplishments in energy conservation and load management
22 (Re: Texas Utilities Electric - Order in Docket No. 9300, dated
23 8/16/91) (Source: Regulatory Research Associates, Inc., 8/23/91).

24 These are not meant to be all inclusive. Rather, they are representative
25 and they show that rewards are made for efficient management. Such a notion
26 not only has precedent but is equitable because decrements to the cost of
27 capital have sometimes been made by commissions to penalize substandard
28 service.

1 In view of the foregoing, it is both reasonable and consistent with
2 regulatory precedent to recognize CTCO's management efficiency and high
3 service quality.

4 **Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?**

5 A. Yes.

i

APPENDIX A

PROFESSIONAL QUALIFICATIONS
OF
FRANK J. HANLEY, PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES GROUP

Professional Qualifications of Frank J. Hanley

EDUCATIONAL BACKGROUND

I am a graduate of Drexel University where I received a Bachelor of Science Degree from the College of Business Administration. The principal courses required for this Degree include accounting, economics, finance and other related courses. I am also Certified by the National Society of Rate of Return Analysts as a Rate of Return Analyst (CRRA) -- Founding Member.

PROFESSIONAL EXPERIENCE

In 1959, I was employed by American Water Works Service Company, Inc., which is a wholly owned subsidiary of American Water Works Company, Inc., the largest investor-owned water works operation in the United States. I was assigned to its Treasury Department in Philadelphia until 1961. During that period of time, I was heavily involved in the development of cash flow projections and negotiations with banks for the establishment of lines of credit for all of the operating and subholding companies in the system, which normally aggregated more than \$100 million per year.

In 1961, I was assigned to its Accounting Department where I remained until 1963. During that two-year period, I became intimately familiar with all aspects of a service company accounting system, the nature of the services performed, and the methods of allocating costs. In 1963, I was reassigned to its Treasury Department as a Financial Analyst. My duties consisted of those previously performed, as well as the expanded responsibilities of assisting in the preparation of testimony and exhibits to be presented

to various public utility commissions in regard to fair rate of return and other financial matters. I also designed and recommended financing programs for many of American's operating subsidiaries and negotiated sales of long-term debt securities and preferred stock on their behalf either directly with institutional investors or through investment bankers. I was elected Assistant Treasurer of a number of operating subsidiaries in the Fall of 1967, just prior to accepting employment with the Communications and Technical Services Division of the Philco-Ford Corporation located in Fort Washington, Pennsylvania. While in the employ of the Philco-Ford organization, as a Senior Financial Analyst, I had responsibility for the pricing negotiations and analysis of acceptable rates of return to the corporation for all types of contract proposals with various agencies of the U.S. Government and foreign governments.

In the Summer of 1969, I accepted a position with the Financial Division of The Philadelphia National Bank. I was elected Financial Planning Officer of the bank in December 1970. While employed with The Philadelphia National Bank, my responsibilities included preparation of the annual and five-year profit plans. In the compilation of these plans, I had to perform detailed analyses and measure the various levels of profitability for each organizational unit. I also assisted correspondent banks in matters of recapitalization and merger, made recommendations and studies for their use before the various regulatory bodies having jurisdiction over them.

In September 1971, I joined AUS Consultants - Utility Services Group as Vice President. I was elected Senior Vice President in May 1975. I was elected President in September 1989. The principal services provided by my firm are fair rate of return,

depreciation, valuation and cost of service studies. We also arrange the private placement of fixed securities with institutional investors for small and medium-sized utilities and prepare studies on financial policy.

EXPERT WITNESS QUALIFICATIONS

I have offered testimony as an expert witness on the subjects of fair rate of return and utility financial matters before the Alaska Public Utilities Commission, the Arizona Corporation Commission, the Arkansas Public Service Commission, the California Public Utilities Commission, the Public Utilities Control Authority of Connecticut, the Delaware Public Service Commission, the Florida Public Service Commission, Hawaii Public Utilities Commission, the Indiana Public Utility Regulatory Commission, the Iowa Utilities Board, the Public Service Commission of Kentucky, the Maryland Public Service Commission, the Massachusetts Department of Public Utilities, the Michigan Public Service Commission, the Missouri Public Service Commission, the Board of Public Utility Commissioners of the State of New Jersey, the Public Service Commission of the State of New York, the North Carolina Utilities Commission, the Ohio Public Utilities Commission, the Pennsylvania Public Utility Commission, the Rhode Island Public Utilities Commission, the Tennessee Public Service Commission, the Public Service Board of the State of Vermont, the Virginia State Corporation Commission, the Public Service Commission of West Virginia, the Wisconsin Public Service Commission, the Federal Power Commission and its successor the Federal Energy Regulatory Commission. I have testified before a number of local and county regulatory bodies in various states on the subject of fair rate of return on behalf of cable television companies as well as before an arbitration panel in Ohio and a State

District Court in Texas. I have testified before the New Jersey Division of Tax Appeals with regard to the economic valuation of property. In addition, I have appeared as a Staff rate of return witness for the Arizona Corporation Commission and the Delaware Public Service Commission in a number of proceedings. I have testified on the fair rate of return for the City of New Orleans, Louisiana, which is the regulatory authority with regard to retail rates over New Orleans Public Service, Inc., in its application of an increase in both electric and gas rates. I have acted as a consultant to the District of Columbia Public Service Commission itself -- not in the capacity of Staff. I have testified before the Public Works Committee of the Nebraska State Senate in re Legislative Bill 731 which proposed permitting Public Power Districts and Municipalities to enter the Cable Television field. Also, I have testified before the U.S. Tax Court in Washington D.C. as an expert witness on the value of closely held utility common stock in a contested Federal Estate Tax case.

**PROFESSIONAL ASSOCIATIONS,
PUBLICATIONS AND GUEST SPEAKER APPEARANCES**

I am a Member of the National Society of Rate of Return Analysts and a Certified Rate of Return Analyst (CRRRA) -- Founding Member. I am also a member of the American Gas Association, and an Associate Member of The Pennsylvania Gas Association. I often attend meetings of the National Society of Rate of Return Analysts during which considerable information on the subject is exchanged. I have also attended corporate bond rating seminars held by Standard & Poor's Corporation. I continuously review financial publications of institutions such as Standard & Poor's, Moody's Investors' Service, Value Line Investment Survey, and periodicals of various agencies of the U.S.

Government.

My firm is a Member of the United States Independent Telephone Association, and an Associate Member of the National Cable Television Association.

I co-authored an article with A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" which was published in the July 15, 1991 issue of Public Utilities Fortnightly.

I have appeared as a guest speaker before an annual convention of the Mid-American Cable Television Association in Kansas City, Missouri and as a guest panelist on the small water companies' operation seminar of the National Association of Water Companies' 77th Annual Convention in Hollywood, Florida. I addressed the Second Annual Seminar on Regulation of Water Utilities sponsored by N.A.R.U.C., at the University of South Florida's St. Petersburg campus. I have spoken on fair rate of return to the Third and Fourth Annual Utilities Conferences, as well as the special conference on the cost of capital in El Paso, Texas sponsored by New Mexico State University. In 1983 I also made a presentation on the Cost of Capital in Atlantic City, New Jersey, at a seminar co-sponsored by Temple University. I have also addressed the Public Utility Law Section of the American Bar Association's Third Institute on Fundamentals of Ratemaking which was held in Washington, D.C. and I addressed a Conference on Cable Television sponsored by The University of Texas School of Law at Austin, Texas. Also, I addressed a meeting of the New England Water Works Association at Boxborough, Massachusetts, on the subject of Enterprise Financing. In addition, I was a speaker and mock witness in three different Utility Workshops for Attorneys sponsored by the Financial Accounting

Institute held in Boston and Washington, D.C. I also was on a panel at the 23rd Financial Forum sponsored by the National Society of Rate of Return Analysts. The topic was Rate of Return Determination in the Diversified and/or Partially Deregulated Environment. Finally, I addressed the 83rd Annual Meeting of the Pennsylvania Gas Association in Hershey, PA. My topic was the Cost of Capital Implications of Demand Side Management.

**COMMONWEALTH TELEPHONE COMPANY
I-00920020
EXHIBIT NO. FJH-1
WITNESS: FRANK J. HANLEY
DATE: MAY 3, 1993**

**COMMONWEALTH TELEPHONE COMPANY
BEFORE THE PENNSYLVANIA PUBLIC SERVICE COMMISSION**

**EXHIBIT NO. FJH-1
(Consisting of 20 Schedules)**

TO ACCOMPANY THE DIRECT TESTIMONY

of

**FRANK J. HANLEY, PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES GROUP**

**CONCERNING
FAIR RATE OF RETURN**

AUS CONSULTANTS

Commonwealth Telephone Company
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Commonwealth Telephone Company
Recommended Cost of Capital and Fair Rate of Return
Based Upon a Hypothetical Structure

<u>Type of Capital</u>	<u>Ratios(1)</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Long-Term Debt	40.33%	6.24%(2)	2.52%
Preferred Stock	4.85	5.26 (2)	0.26
Common Equity	<u>54.82</u>	14.00 (3)	<u>7.67</u>
Total	<u>100.00%</u>		<u>10.45%</u>

Notes:

- (1) Hypothetical capital structure ratios based upon the 1991 average permanent capital structure ratios maintained by the Proxy Group of Five Independent Operating Companies (detailed on Schedule 6, page 2) and discussed in Mr. Hanley's accompanying direct testimony.
- (2) Company provided.
- (3) Based upon informed judgment from the entire study, principal results of which are summarized on Schedule 1, page 2 and discussed in Mr. Hanley's accompanying direct testimony.

Commonwealth Telephone Company
 Brief Summary of Most Relevant Indicators
 of Common Equity Cost Rate

Line No.	<u>Principal Methods</u>	Proxy Group of Five Independent Operating Companies	Proxy Group of Seven Regional Holding Companies
1.	DCF Model (1)	12.3%	10.7%
2.	Risk Premium Model (2)	13.3	13.1
3.	Capital Asset Pricing Model (3)	<u>15.7</u>	<u>14.5</u>
4.	Indicated Common Equity Cost Rate	13.8%	12.8%
5.	Adjustment to Recognize Management Efficiency and High Service Quality	<u>.2</u> (4)	
6.	Conclusion of Common Equity Cost Rate	<u>14.0%</u> (5) -----	
	<u>Check on the Reasonableness of the Conclusion of Common Equity Cost Rate</u>		
7.	Comparable Earnings Analysis	12.6%(6)	

See page 3 for Notes.

Commonwealth Telephone Company
Brief Summary of Most Relevant Indicators
of Common Equity Cost Rate

Notes:

- (1) From Schedule 14, page 1.
- (2) From Schedule 18, page 1.
- (3) From Schedule 19, page 1.
- (4) Adjustment of 0.20% as discussed in Mr. Hanley's accompanying direct testimony to recognize the management efficiency and high service quality supported by Company Witness Burnside.
- (5) Conclusion of common equity cost rate based upon the indicated common equity cost rate after the adjustment to recognize management efficiency and high service quality (see Note 4) for the Proxy Group of Five Independent Operating Companies, since they are more similar in size and number of access lines to Commonwealth Telephone Company than the Proxy Group of Seven Regional Holding Companies, as discussed in Mr. Hanley's accompanying direct testimony.
- (6) From Schedule 20, page 1.

ASSESSING BUSINESS RISK

Implicit in the rating process is an assessment of business risk -- a measure of the stability and growth of revenues and the ability to control costs.

RATING FACTORS

Business risk is judged against a backdrop of economic, social, and political trends. When S&P rates a debt issue, the nature and level of business risk is the basic input used to determine the financial benchmarks employed in the credit quality.

Source of Information: Standard & Poor's Credit Review - Credit Comments, June 24, 1991, page 6.

UTILITIES

The utility rating methodology encompasses two basic components: qualitative business analysis and financial analysis. Qualitative aspects of a utility's operations are likely to shape the nature of long-term financial results. Therefore, analysis of the industry in which a utility operates, a judgment as to its operating position within that industry, review of regulation, and evaluation of management provide the context for assessing a firm's financial condition.

Business Risk

- Markets/competitive position
- Fuel/power supply
- Operating efficiency
- Regulatory treatment
- Construction risk/asset concentration
- Non-utility activities
- Management

Financial Risk

- Earnings protection
- Debt leverage
- Cash flow adequacy
- Financial flexibility/
capital attraction

Financial categories are evaluated using quantified measure of relative financial performance, while the business categories require subjective assessment, against the backdrop of economic, social, and political trends affecting utility operations. The view is prospective. S&P is concerned with events and results that will shape bondholder protection today and tomorrow rather than those that determined it yesterday. However, historical evaluation is vital in the analytical process, as a tool for identifying strengths and weaknesses, and measuring financial prospects.

Source of Information: Standard & Poor's Debt Ratings Criteria - S&P's Corporate Finance Criteria, 1991, page 27.

CREDIT COMMENTS

TELEPHONE FINANCIAL RATIO GUIDELINES REVISED

S&P has revised the financial ratio guidelines it uses in rating telephone utility company debt. However, the modifications are modest, and no ratings will be changed as a result. Guidelines are revised as the environment in which local telephone companies operate continues to evolve. Changes are made as necessary to ensure that the guidelines are appropriate based on developing industry conditions.

The spreads between minimums and maximums in the updated guidelines are still fairly wide, emphasizing the need to develop a financial profile using all of the guidelines together, as S&P does internally, rather than concentrating on a single financial parameter. The net cash flow-to-debt guideline has been redefined as net cash flow-to-total debt from net cash flow-to-long-term debt, reflecting S&P's practice of including short-term debt used to fund construction in permanent capital. S&P has also added to the list after-tax funds from operations interest coverage. This ratio is helpful in clarifying some of the differences that are introduced into pretax interest coverages as a result of variations in accounting, as well as the impact of certain variables that are outside of the company's control, such as different methods of state taxation.

USING GUIDELINES

Although financial ratios tell only a part of the rating story, a combination of ratios provides an indication of the overall financial profile appropriate for a given rating level. S&P publishes these guidelines to provide insight into the rating process. However, ratings also depend heavily on qualitative judgments. Evaluations of business risk, which generally determines the stability of financial performance, are not neatly quantifiable. Even some measures of financial risk, such as asset quality and financial flexibility, cannot be easily determined solely from published financial reports. Since ratings are forward looking, S&P applies guidelines based on expected future financial performance, not historical results.

EVOLUTION OF GUIDELINES

When S&P introduced specific financial ratio guidelines for telephone companies in 1985, competition had become the dominant industry issue. Telephone companies were divided into several risk classifications, reflecting the relative attractiveness of competitive entry based on the nature of service territories. The logic of this approach rested on the cost structure of service provision and the rate structures and industrywide revenue-sharing arrangements in place at the time. But the industry's operating and regulatory environments have changed, and S&P's prospective view of ratings requires appropriate revisions in methodology. As a result, S&P has focused increasingly on company-specific business risk factors over the last several years.

Telephone companies with similar service territories used to have very similar business risks, but competitive and regulatory changes have affected them to varying degrees. As a result of uneven impacts of these pressures, companies with similar service areas may have increasingly different business risk profiles. Therefore, they may have different financial profiles at the same rating level.

COMPETITION AND REGULATION

Competition now exists for a wide spectrum of services, such as telephone rentals, short-haul long distance, and even switched local service, that were once provided by local telephone companies operating as true monopolies. S&P has therefore reoriented its view of competition from an examination of niche competitive threats to a more inclusive, broader view focused on an issuer's share of the total market. This broader view starts with some service-by-service analysis, but gives a better sense of overall market position than the previous emphasis on discrete competitive threats.

The regulatory picture has changed as well. When guidelines were last revised in 1988, the regulatory environment still consisted almost entirely of minor variations on classic utility

"Guidelines are revised as the environment in which local telephone companies operate continues to evolve."

COMMENTS

rate-of-return regulation. The adoption of alternative regulatory plans that rest on other considerations (e.g., price caps) or that exempt earnings from competitive portions of the business from regulation have greatly increased the diversity of the regulatory environment. In addition, the amount of flexibility that companies have to price services varies considerably.

These changes in the competitive and regulatory frameworks have stimulated telephone companies to move toward cost-based pricing schemes from the formerly dominant fully distributed costing methodology. In some cases, probably most notably in Centrex pricing, this change has been voluntary. In others, direct regulatory intervention has precipitated the change. Examples of such intervention are the unbundling of access charges recently ordered by the New York Public Service Commission and the California Public Utility Commission's actions to reduce toll rates in anticipation of intra-LATA (local access and transport area) com-

petition.

As the companies that face the strongest direct competitive pressure shift pricing schedules to a cost basis, the rest of the industry will be compelled to follow suit. The result is likely to be an increase in competitive exposure for those telephone companies whose rate structures have made them absolutely immune to economic competition in the past. This will only heighten the need to focus on the impact of business risk on individual companies' creditworthiness. The adoption of a single set of guidelines for all local telephone companies anticipates this need. The updated guidelines should be viewed as evolutionary, not revolutionary. Although the new guidelines are likely to remain in place for some time, S&P will continue to review them and make minor changes periodically to ensure their relevance to the rating process.

*Frank Plumley
 (212) 208-1996*

Telephone financial ratio guidelines

	AA	A	BBB
Pretax interest coverage (x)	Over 4.5	3.3-5.0	2.3-4.0
Total debt to total capital (%)	Under 42	40-52	50-62
Net cash flow to average total debt (%)	Over 32	25-33	20-30
Funds from operations interest coverage (x)	Over 6.5	5.0-7.0	3.5-5.5

Glossary

Pretax interest coverage: Income from continuing operations, adjusted for nonrecurring items before taxes, plus minority interest, income tax, and interest expense, divided by interest incurred. Capitalized interest is excluded from interest expense but included in interest incurred.

Total debt to total capital: The sum of notes payable and other short-term obligations (including current maturities of long-term debt and capital lease obligations), plus long-term debt (including capital lease obligations), divided by the sum of total capital. Total capital is the sum of short-term debt, long-term debt, preferred stock (including subsidiary preferred stock), minority interest, and common equity.

Net cash flow to average total debt: Funds from operations (cash flow from operations before working capital changes) minus dividends paid, divided by average total debt.

Funds from operations interest coverage: The sum of funds from operations (cash flow from operations before working capital changes) and cash interest paid divided by interest incurred. Note: For comparability, significant operating lease obligations are treated as capitalized leases.

C-TEC CORPORATION
CAPITALIZATION AND FINANCIAL STATISTICS
1987 - 1991, INCLUSIVE

	1991	1990	1989	1988	1987	
	(THOUSANDS OF DOLLARS)					
AMOUNT OF CAPITAL EMPLOYED						
TOTAL PERMANENT CAPITAL	\$508,200	\$453,840	\$365,560	\$199,280	\$191,050	
SHORT-TERM DEBT	0	36,630	33,360	0	20,780	
TOTAL CAPITAL EMPLOYED	\$508,200	\$490,470	\$398,920	\$199,280	\$211,830	
	=====	=====	=====	=====	=====	
INDICATED AVERAGE CAPITAL COST RATES (1)						
LONG TERM DEBT	N/A	N/A	N/A	N/A	N/A	
PREFERRED STOCK	N/A	N/A	N/A	N/A	N/A	
FINANCIAL RATIOS-MARKET BASED						5 YEAR AVERAGE
EARNINGS/PRICE RATIO	(8.1%)	(3.0%)	1.2%	7.0%	10.1%	1.4%
MARKET/AVERAGE BOOK RATIO	328.1	371.3	401.4	234.1	191.2	305.2
DIVIDEND YIELD	0.0	0.0	0.7	2.5	3.3	1.3
DIVIDEND PAYOUT RATIO	0.0	0.0	53.4	32.6	30.9	23.4
CAPITAL STRUCTURE RATIOS						
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	86.0%	82.3%	74.4%	52.2%	55.8%	70.1%
PREFERRED STOCK	0.0	0.1	0.1	0.2	0.2	0.1
MINORITY INTEREST	0.4	0.4	0.2	0.4	0.4	0.4
COMMON EQUITY	13.6	17.2	25.3	47.2	43.6	29.4
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	=====	=====	=====	=====	=====	=====
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT TERM	86.0%	83.6%	76.5%	52.2%	60.1%	71.7%
PREFERRED STOCK	0.0	0.1	0.1	0.2	0.2	0.1
MINORITY INTEREST	0.4	0.4	0.2	0.4	0.3	0.3
COMMON EQUITY	13.6	15.9	23.2	47.2	39.4	27.9
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	=====	=====	=====	=====	=====	=====
RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY	(26.4%)	(11.3%)	4.8%	16.5%	19.3%	0.6%
COVERAGES-EXCLUDING ALL AFC (2)						
BEFORE INCOME TAXES: ALL INTEREST CHARGES	0.3x	0.6x	1.5x	3.5x	3.6x	1.9x
AFTER INCOME TAXES: ALL INTEREST CHARGES	0.5	0.7	1.2	2.7	2.6	1.5
OVERALL COVERAGE: ALL INTEREST + PFD. DIV.	0.5	0.7	1.2	2.7	2.6	1.5
QUALITY OF EARNINGS						
AFC/INCOME AVAILABLE FOR COMMON EQUITY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
EFFECTIVE INCOME TAX RATE	21.8	27.3	47.3	34.9	38.3	33.9
INTERNALLY GENERATED FUNDS/CONSTRUCTION (3)	101.0	76.3	91.1	117.2	109.1	98.9
NET CASH FLOW/AVERAGE TOTAL DEBT (4)	13.1	14.9	23.2	36.5	30.7	23.7
FUNDS FROM OPERATIONS/INTEREST COVERAGE (5)	2.5	2.7	4.4	6.5	5.9	4.4
COMMON DIVIDEND COVERAGE (6)	N/A	N/A	21.0x	9.9x	9.4x	13.4x

SEE PAGE 3 FOR NOTES.

COMMONWEALTH TELEPHONE COMPANY
CAPITALIZATION AND FINANCIAL STATISTICS
1987- 1991, INCLUSIVE

	1991	1990	1989	1988	1987	
<u>AMOUNT OF CAPITAL EMPLOYED</u>						
TOTAL PERMANENT CAPITAL	\$220,208	\$183,402	\$151,369	\$146,342	\$170,568	
SHORT-TERM DEBT	0	0	0	0	0	
TOTAL-CAPITAL EMPLOYED	<u>\$220,208</u>	<u>\$183,402</u>	<u>\$151,369</u>	<u>\$146,342</u>	<u>\$170,568</u>	
	=====	=====	=====	=====	=====	
<u>INDICATED AVERAGE CAPITAL COST RATES (1)</u>						
LONG TERM DEBT	6.0%	6.4%	7.0%	7.2%	7.1%	<u>5 YEAR AVERAGE</u> 6.7%
PREFERRED STOCK	5.3	5.3	5.3	5.3	5.3	5.3
<u>DIVIDEND PAYOUT RATIO</u>	56.1%	63.4%	63.8%	293.6%	41.9%	103.8%
<u>CAPITAL STRUCTURE RATIOS</u>						
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	60.8%	56.8%	52.1%	54.7%	46.1%	54.1%
PREFERRED STOCK	0.2	0.2	0.2	0.3	0.2	0.2
COMMON EQUITY	<u>39.1</u>	<u>43.0</u>	<u>47.7</u>	<u>45.0</u>	<u>53.7</u>	<u>45.7</u>
	=====	=====	=====	=====	=====	=====
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT TERM	60.8%	56.8%	52.1%	54.7%	46.1%	54.1%
PREFERRED STOCK	0.2	0.2	0.2	0.3	0.2	0.2
COMMON EQUITY	<u>39.1</u>	<u>43.0</u>	<u>47.7</u>	<u>45.0</u>	<u>53.7</u>	<u>45.7</u>
	=====	=====	=====	=====	=====	=====
<u>RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY</u>	19.9%	24.3%	25.3%	20.2%	20.1%	22.0%
<u>COVERAGES-EXCLUDING ALL AFC (2)</u>						
BEFORE INCOME TAXES: ALL INTEREST CHARGES	4.6 x	5.7 x	5.7 x	5.3 x	6.5 x	5.6 x
AFTER INCOME TAXES: ALL INTEREST CHARGES	3.3	4.1	4.1	3.8	4.3	3.9
OVERALL COVERAGE: ALL INTEREST + PFD. DIV.	3.3	4.1	4.0	3.8	4.3	3.9
<u>QUALITY OF EARNINGS</u>						
AFC/INCOME AVAILABLE FOR COMMON EQUITY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
EFFECTIVE INCOME TAX RATE	36.1	34.9	34.6	34.1	40.9	36.1
INTERNALLY GENERATED FUNDS/CONSTRUCTION (3)	81.0	69.8	90.5	-25.3	116.4	66.5
GROSS CASH FLOW/PERMANENT CAPITAL (4)	18.8	22.0	28.1	27.3	23.1	23.9
GROSS CASH FLOW/ AVG. TOT. DEBT(5)	34.8	44.1	53.5	50.3	49.8	46.5
GROSS CASH FLOW INTEREST COVERAGE(6)	6.8	7.8	8.4	8.1	8.4	7.9
COMMON DIVIDEND COVERAGE (7)	4.5 x	3.5 x	3.8 x	0.9 x	5.4 x	2.0 x

SEE PAGE 2 FOR NOTES.

C-TEC Corporation and
Commonwealth Telephone Company
Capitalization and Financial Statistics
1987-1991, Inclusive

Notes:

- (1) Computed by relating actual long-term debt interest or preferred stock dividends booked to average of beginning and ending long-term debt or preferred stock reported to be outstanding.
- (2) Coverages - excluding all AFC represent the number of times available earnings, excluding all AFC, cover fixed charges.
- (3) Internally generated funds construction is the percentage of gross construction expenditures, excluding all AFC, provided by internally generated funds from operations, excluding all AFC, and after payment of all cash dividends.
- (4) Net Cash Flow sum of (net income, depreciation, amortization, net deferred income tax and investment tax credits) less (total AFC, preferred, preference and common dividends), as a percentage of average total debt.
- (5) Funds from Operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits less AFC) plus interest charges, divided by interest charges.
- (6) Common dividend coverage is the relationship of internally generated funds from operations, excluding all AFC and after payment of preferred stock dividends, to common dividends paid.

Commonwealth Telephone Company

S&P Bond Rating
March 1993
NR

Source of Information: Standard & Poor's Compustat Services, Inc.
Telecommunications Compustat II
Standard & Poor's Bond Guide
Company-provided data

PROXY GROUP OF FIVE INDEPENDENT OPERATING COMPANIES
CAPITALIZATION AND FINANCIAL STATISTICS (1)
1987 - 1991, INCLUSIVE

	1991	1990	1989	1988	1987	
	(THOUSANDS OF DOLLARS)					
<u>AMOUNT OF CAPITAL EMPLOYED</u>						
TOTAL PERMANENT CAPITAL	\$868,760	\$708,280	\$630,660	\$507,690	\$460,050	
SHORT-TERM DEBT	49,400	44,960	16,350	10,640	12,030	
TOTAL CAPITAL EMPLOYED	\$918,160	\$753,240	\$647,010	\$518,330	\$472,080	
	=====	=====	=====	=====	=====	
<u>INDICATED AVERAGE CAPITAL COST RATES (2)</u>						
LONG TERM DEBT	8.9%	8.7%	8.0%	8.4%	8.6%	
PREFERRED STOCK	4.2	4.8	5.5	5.3	6.5	
<u>FINANCIAL RATIOS-MARKET BASED</u>						<u>5 YEAR AVERAGE</u>
EARNINGS/PRICE RATIO	4.7%	4.6%	4.1%	6.9%	7.8%	5.6%
MARKET/AVERAGE BOOK RATIO	230.5	268.9	326.3	226.0	180.2	246.4
DIVIDEND YIELD	2.8	2.5	2.3	3.4	4.1	3.0
DIVIDEND PAYOUT RATIO	65.6	52.6	58.7	52.8	54.3	56.8
<u>CAPITAL STRUCTURE RATIOS</u>						
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	40.3%	41.6%	41.1%	43.4%	46.7%	42.6%
PREFERRED STOCK	4.9	3.8	3.9	4.8	2.7	4.0
MINORITY INTEREST	0.0	0.0	0.1	0.0	0.0	0.0
COMMON EQUITY	54.8	54.6	54.9	51.8	50.6	53.4
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	=====	=====	=====	=====	=====	=====
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT TERM	43.4%	44.3%	42.1%	44.5%	47.8%	44.4%
PREFERRED STOCK	4.6	3.5	3.8	4.6	2.6	3.8
MINORITY INTEREST	0.0	0.0	0.1	0.0	0.0	0.0
COMMON EQUITY	52.0	52.2	54.0	50.9	49.6	51.8
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	=====	=====	=====	=====	=====	=====
<u>RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY</u>	10.6%	12.1%	12.6%	14.4%	13.5%	12.6%
<u>COVERAGES-EXCLUDING ALL AFC (3)</u>						
BEFORE INCOME TAXES: ALL INTEREST CHARGES	3.7x	3.9x	4.2x	4.2x	4.1x	4.0x
AFTER INCOME TAXES: ALL INTEREST CHARGES	2.7	2.9	3.1	3.2	2.8	2.9
OVERALL COVERAGE: ALL INTEREST + PFD. DIV.	2.5	2.7	2.9	3.0	2.7	2.8
<u>QUALITY OF EARNINGS</u>						
AFC/INCOME AVAILABLE FOR COMMON EQUITY	0.9%	1.8%	2.2%	2.6%	3.8%	2.3%
EFFECTIVE INCOME TAX RATE	38.3	35.4	35.7	33.5	40.1	36.6
INTERNALLY GENERATED FUNDS/CONSTRUCTION (4)	107.6	102.5	94.6	133.8	94.2	106.5
NET CASH FLOW/AVERAGE TOTAL DEBT (5)	28.7	30.9	35.1	38.4	32.6	33.1
FUNDS FROM OPERATIONS/INTEREST COVERAGE(6)	5.5	5.7	6.3	6.5	5.7	5.9
COMMON DIVIDEND COVERAGE (7)	5.5x	5.2x	5.4x	6.6x	5.6x	5.7x

Proxy Group of Five Independent Operating Companies
Capitalization and Financial Statistics
1987-1991, Inclusive

Notes:

- (1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.
- (2) Computed by relating actual long-term debt interest or preferred stock dividends booked to average of beginning and ending long-term debt or preferred stock reported to be outstanding. The long-term debt cost rate is for Cincinnati Bell, Inc. only due to the unavailability of data for the other companies in the proxy group.
- (3) Coverages - excluding all AFC (allowance for funds used during construction) represent the number of times available earnings, excluding all AFC, cover fixed charges.
- (4) Internally generated funds/construction is the percentage of gross construction expenditures, excluding all AFC, provided by internally generated funds from operations, excluding all AFC, and after payment of all cash dividends.
- (5) Net Cash Flow sum of (net income, depreciation, amortization, net deferred income tax and investment tax credits) less (total AFC, preferred, preference and common dividends), as a percentage of average total debt.
- (6) Funds from Operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits less AFC) plus interest charges divided by interest charges.
- (7) Common dividend coverage is the relationship of internally generated funds from operations, excluding all AFC and after payment of preferred stock dividends, to common dividends paid.

Criteria for Selection:

Basis of selection was to include those operating telephone companies included on the S&P Telecommunications Compustat II data base with 1991 year-end data available; with common stock which is actively traded, which are reported in Value Line Investment Survey, and which had less than 1,000,000 access lines in 1991.

Source of Information: Standard & Poor's Compustat Services, Inc.,
Telecommunications Compustat II

Proxy Group of Five Independent Operating Companies
Capitalization and Financial Statistics
1987-1991, Inclusive

Bond Ratings
March 1993
S&P

The names of the companies are:

Century Telephone Enterprises	NR
Cincinnati Bell, Inc.	AA-
Lincoln Telecommunications Co. (2)	AAA
Rochester Telephone Corp.	A+
Telephone and Data Systems, Inc.	BBB

- Notes: (1) Rated bonds are those of Cincinnati Bell Telephone, a telephone subsidiary.
(2) Rated bonds are those of Lincoln Telephone and Telegraph, a subsidiary.

Source of Information: Standard & Poor's Bond Guide

PROXY GROUP OF SEVEN REGIONAL HOLDING COMPANIES
CAPITALIZATION AND FINANCIAL STATISTICS (1)
1987 - 1991, INCLUSIVE

	<u>1991</u>	<u>1990</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	
<u>AMOUNT OF CAPITAL EMPLOYED</u>						
TOTAL PERMANENT CAPITAL	\$16,310,200	\$16,031,710	\$15,645,590	\$15,108,880	\$14,259,380	
SHORT-TERM DEBT	1,178,960	1,225,870	660,170	647,410	413,410	
TOTAL CAPITAL EMPLOYED	\$17,489,160	\$17,257,580	\$16,305,760	\$15,756,290	\$14,672,790	
	=====	=====	=====	=====	=====	
<u>INDICATED AVERAGE CAPITAL COST RATES (2)</u>						
LONG TERM DEBT	7.9%	8.0%	8.3%	8.8%	8.4%	
<u>FINANCIAL RATIOS-MARKET BASED</u>						<u>5 YEAR AVERAGE</u>
EARNINGS/PRICE RATIO	5.8%	6.9%	7.1%	9.9%	9.3%	7.8%
MARKET/AVERAGE BOOK RATIO	195.7	199.3	186.8	146.7	150.2	175.7
DIVIDEND YIELD	5.4	5.0	5.0	6.1	5.8	5.5
DIVIDEND PAYOUT RATIO	100.8	76.0	74.4	62.7	64.0	75.6
<u>CAPITAL STRUCTURE RATIOS</u>						
<u>BASED ON TOTAL PERMANENT CAPITAL:</u>						
LONG-TERM DEBT	43.5%	43.0%	42.4%	40.7%	39.0%	41.7%
MINORITY INTEREST	0.1	0.1	0.1	0.0	0.0	0.1
COMMON EQUITY	56.4	56.9	57.5	59.3	61.0	58.2
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	=====	=====	=====	=====	=====	=====
<u>BASED ON TOTAL CAPITAL:</u>						
TOTAL DEBT, INCLUDING SHORT TERM	47.4%	47.1%	44.6%	43.1%	40.7%	44.6%
MINORITY INTEREST	0.1	0.1	0.1	0.0	0.0	0.0
COMMON EQUITY	52.5	52.8	55.3	56.9	59.3	55.4
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	=====	=====	=====	=====	=====	=====
<u>RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY</u>	11.6%	13.5%	13.2%	14.5%	13.9%	13.3%
<u>COVERAGES-EXCLUDING ALL AFC (3)</u>						
BEFORE INCOME TAXES: ALL INTEREST CHARGES	3.2x	3.6x	3.8x	4.1x	4.7x	3.9x
AFTER INCOME TAXES: ALL INTEREST CHARGES	2.5	2.8	2.9	3.1	3.3	2.9
OVERALL COVERAGE: ALL INTEREST + PFD. DIV.	2.5	2.8	2.9	3.1	3.3	2.9
<u>QUALITY OF EARNINGS</u>						
AFC/INCOME AVAILABLE FOR COMMON EQUITY	4.1%	3.1%	2.7%	2.5%	2.7%	3.0%
EFFECTIVE INCOME TAX RATE	30.4	31.7	29.8	29.8	36.8	31.7
INTERNALLY GENERATED FUNDS/CONSTRUCTION (4)	105.5	104.2	115.4	120.2	105.5	110.2
NET CASH FLOW/AVERAGE TOTAL DEBT (5)	30.0	31.7	35.6	38.7	39.4	35.1
FUNDS FROM OPERATIONS/INTEREST COVERAGE(6)	5.7	5.9	6.3	6.5	7.1	6.3
COMMON DIVIDEND COVERAGE (7)	3.8x	3.8x	4.0x	4.2x	4.0x	4.0x

SEE PAGE 2 FOR NOTES.

Proxy Group of Seven Regional Holding Companies
Capitalization and Financial Statistics
1987-1991, Inclusive

Notes:

- (1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.
- (2) Computed by relating actual long-term debt interest to average of beginning and ending long-term debt reported to be outstanding. For the years 1987-1988, the long-term debt cost rate excludes NYNEX and US West, Inc. due to the unavailability of data.
- (3) Coverages - excluding all AFC represent the number of times available earnings, excluding all AFC, cover fixed charges.
- (4) Internal cash generation/gross construction is the percentage of gross construction expenditures, excluding all AFC, provided by internally generated funds from operations, excluding all AFC, and after payment of all cash dividends.
- (5) Net Cash Flow - sum of (net income, depreciation, amortization, net deferred income tax and investment tax credits) less (total AFC, preferred, preference and common dividends) as a percentage of average total debt.
- (6) Funds from Operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits less AFC) plus interest charges divided by interest charges.
- (7) Common dividend coverage is the relationship of internally generated funds from operations, excluding all AFC and after payment of preferred stock dividends, to common dividends paid.

Criteria for Selection:

Basis of selection was to include those operating telephone companies who comprise the Seven Regional Holding Companies.

Source of Information: Standard & Poor's Compustat Services, Inc.,
Telecommunications Compustat II

Proxy Group of Seven Regional Holding Companies
Capitalization and Financial Statistics
1987-1991

Bond Ratings
March 1993
S&P

The names of the companies are (1):

Ameritech	AAA
Bell Atlantic Corporation	AA+
Bell South Corporation	AAA
NYNEX Corp.	A+
Pacific Telesis Group	AA-
Southwestern Bell Corp.	A+
U.S. West, Inc.	AA-

Note: (1) Ratings for the seven RHCs, which are an average of the ratings of their subsidiaries, are determined on page 3 of Schedule 18.

Source of Information: Standard & Poor's Bond Guide