

PA PUC V. COMMONWEALTH TELEPHONE COMPANY
DOCKET NO. I-00920020

OCA CROSS EXAMINATION EXHIBIT NO. 1

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From the Board

The Perplexing Issue of Valuation: Will the Real Value Please Stand Up?

by Steven G. Einhorn, Partner, Goldman, Sachs & Co.

The relation between interest rates and share prices is changing. Specifically, the historical relation has not been binding on the market. Stocks have for some time traded "rich" relative to interest rates (see Tables I and II). There are several reasons one could offer for this—(1) significant corporate demand for shares over the last several years; (2) heightened participation by the Japanese in the U.S. stock market (see Table III); and (3) an unusually long business expansion.

These reasons are partially responsible for shares achieving higher levels than would be suggested by the historical relation between stocks and interest rates. To us, however, the two most important reasons for the unusual level of shares relative to interest rates are financial market deregulation (which has increased the volatility of debt instruments and reduced the sensitivity of the economy/earnings to interest rates) and contained and moderate inflation.

We believe that, when inflation is contained and moderate, a nominal-interest-rate approach to market valuation is less binding and will understate the true value of shares. Why? First, when inflation is contained, the corporate sector is better able to index profits to inflation. Second, contained inflation is associated with less economic/earnings volatility.

Third, the quality of corporate profits is higher when inflation is moderate. Fourth, contained inflation is associated with a higher real return on assets and longer business expansions (see Figure A). Fifth, contained inflation may foreshadow lower bond yields, and share prices may reflect this long before yields actually decline.

Is there empirical support for our argument that nominal bond yields are less binding on the market when inflation is contained? Yes. First, as indicated in Table IV, the sensitivity of the market's P/E to interest rates in the low-inflation decade of the 1960s was much less than in the high-inflation decade of the 1970s. Also, the amount of P/E variability explained by interest rates in the 1960s was less than in the 1970s. And since 1986, a period of stable/low inflation, the importance of interest rates to P/Es has declined relative to the 1970s and early 1980s.

Second, real interest rates are usually above average when inflation is contained and usually below average when inflation is troublesome. So, if our contention is correct that nominal bond yields are less binding on shares when inflation is contained, there should be an inverse relation between the equity risk premium and real interest rates. The premium should be below its long-term average (i.e., shares should look expensive compared with nominal interest rates) when real interest rates are high and inflation is contained, and the premium should be above its long-term average (i.e., shares should look inexpensive compared with nominal interest rates) when real

Table I Interest Rates and Dividend Yield

Peak of S&P 500		Ratio			Trough of S&P 500		Ratio		
Date	Level	T-Bill ^a	5-Yr. Bond ^b	30-Yr. Bond ^c	Date	Level	T-Bill ^a	5-Yr. Bond ^b	30-Yr. Bond ^c
Dec. 1961	72.64	0.9	1.4	1.4	June 1962	52.32	0.7	1.0	1.1
Jan. 1966	94.06	1.6	1.7	1.5	Sept. 1966	73.20	1.4	1.5	1.3
Nov. 1968	108.37	2.0	2.1	2.0	June 1970	72.72	1.5	1.8	1.7
Dec. 1972	118.05	1.9	2.3	2.3	Sept. 1974	63.54	1.7	1.7	1.6
Dec. 1976	107.46	1.2	1.7	1.9	Mar. 1978	86.90	1.2	1.5	1.6
Nov. 1980	140.52	3.2	2.9	2.7	Aug. 1982	102.42	1.5	2.1	2.0
Oct. 1983	172.65	2.2	2.8	2.8	July 1984	147.82	2.1	2.7	2.7
Aug. 1987	336.77	2.4	3.2	3.5	Dec. 1987	223.92	1.6	2.1	2.3
Average					Average				
1961-1980		1.8	2.0	2.0	1962-1982		1.3	1.6	1.6
1983 and 1987		2.3	3.0	3.2	1984 and 1987		1.9	2.4	2.5
Current ^d		2.6	2.4	2.4					

a. Ratio is the T-bill rate divided by the S&P 500 dividend yield.

b. Ratio is the five-year government bond yield divided by the S&P 500 dividend yield.

c. Ratio is the 30-year government bond yield divided by the S&P 500 dividend yield.

d. As of March 15, 1990.

Table II Adjusted Cash Flow Yield and Interest Rates

Peak of S&P 400		Ratio ^a			Trough of S&P 400		Ratio ^a		
Date	Level	T-Bill ^b	5-Yr. Bond ^c	30-Yr. Bond ^d	Date	Level	T-Bill ^b	5-Yr. Bond ^c	30-Yr. Bond ^d
Dec. 1961	76.69	3.3	2.2	2.1	June 1962	54.80	4.5	3.4	3.1
Jan. 1966	99.19	2.2	2.1	2.3	Sept. 1966	81.65	2.4	2.4	2.6
Nov. 1968	118.03	1.8	1.7	1.7	June 1970	79.89	2.1	1.8	1.9
Dec. 1972	131.87	2.0	1.6	1.7	Sept. 1974	71.01	2.2	2.1	2.1
Dec. 1976	119.46	3.1	2.2	1.9	Feb. 1978	95.52	3.0	2.5	2.3
Nov. 1980	160.96	1.0	1.1	1.1	Aug. 1982	114.08	2.5	1.8	1.9
Oct. 1983	194.84	1.8	1.4	1.4	July 1984	167.75	2.2	1.7	1.7
Aug. 1987	393.17	1.9	1.4	1.3	Dec. 1987	255.43	3.1	2.1	2.0
Average					Average				
1961-1980		2.2	1.8	1.8	1962-1982		2.8	2.3	2.3
1983 and 1987		1.9	1.4	1.4	1984 and 1987		2.7	1.9	1.9
Current ^e		1.8	1.6	1.6					

a. Details about the calculation of adjusted cash flow are available on request.
 b. Ratio is the adjusted cash flow yield of S&P 400 divided by three-month T-bill rate.
 c. Ratio is the adjusted cash flow yield of S&P 400 divided by five-year government bond yield.
 d. Ratio is the adjusted cash flow yield of S&P 400 divided by 30-year government bond yield.
 e. As of March 15, 1990; 1989 adjusted cash flow of S&P 400 is \$54.80.

interest rates are low and inflation is troublesome. This, in fact, has been the case (see Figure B).

Empirical analysis is consistent with our position. When inflation is contained and real interest rates are high, a nominal-interest-rate-based approach to market valuation will understate the true value of the market. These two circumstances are present today. This suggests to us that the value imbalance between shares and nominal interest rates of 20 per cent, portrayed in Table V, overstates stock market vulnerability. The value imbalance of 5 to 7 per cent between shares and inflation is closer, we think, to the value imbalance of shares.

We do not believe that shares in 1990 will have to experience anything near the full decline implied by interest-rate valuation approaches. Such a decline would require a sustained troublesome acceleration in inflation and a narrowing in real interest rates. We do not expect such a landscape in 1990. This is one reason why we believe downside risk in the market is contained over the coming months.

The combination of monetary gradualism, demographics and a reversal in the consumer/business debt build-up could encourage sustained low infla-

tion in the United States. This would suggest that historically established relations between shares and nominal interest rates will continue to overstate the value imbalance of shares.

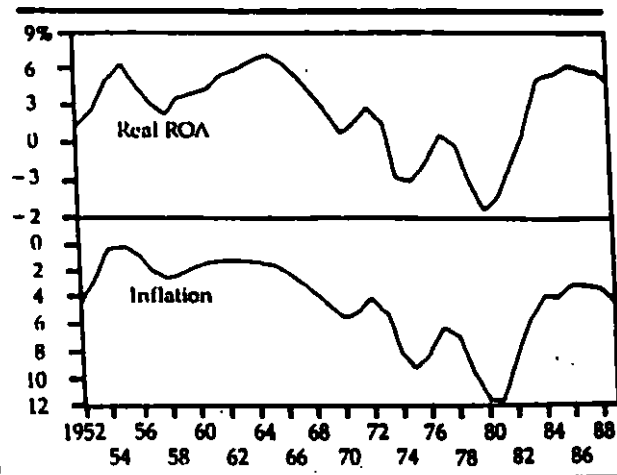
We are aware that much of the above smacks of the always dangerous phrase, "This time things are different." Nonetheless, we believe that things *are* different this time; it is incorrect to apply strict historical stock market/nominal interest rate relations to shares when inflation is contained and real interest rates are well above their long-term average. In defense of what may sound a bit radical, we would simply point out that it is not unusual for the stock market/interest

Table III Japanese Acquisition of U.S. Equities (millions)

Year	Amount	Year	Amount
1978	\$ 73	1984	\$ (131)
1979	123	1985	298
1980	(153)	1986	3,305
1981	114	1987	11,365
1982	0	1988	1,923
1983	271	1989:	2,600

Source: Treasury Bulletin; U.S. Treasury Department

Figure A Real ROA and Inflation*



*Real ROA is the return on assets for nonfinancial business minus inflation (the three-year moving average of CPI inflation).

Table IV Interest Rates and P/E's

	Three-Month T-Bills		Long-Term Gov't Bond Yield	
	Regression Coefficient*	R ²	Regression Coefficient*	R ²
1960 to 1969	0.21	0.23	0.28	0.14
1970 to 1979	1.00	0.46	2.45	0.82
1986 to 1989	0.56	0.38	0.66	0.21
1960 to 1989	0.70	0.58	0.72	0.58

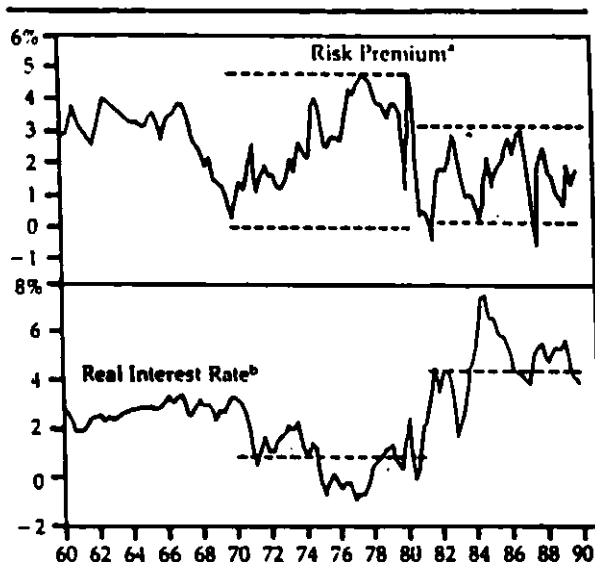
* Regression coefficient of the S&P 500 earnings yield on short or long-term interest rates.

rate relation to change. Such change was rather significant between the decades of the 1950s and the 1960s, the 1960s and the 1970s, and the 1970s and the 1980s (see Table VI).

If what we have said above is correct, many of the commonly used valuation approaches have to be supplemented. Commonly used approaches typically relate shares to nominal interest rates. These need to be supplemented by relating shares to inflation and real interest rates. When inflation is contained, it is

Concluded on page 16.

Figure B The Equity Risk Premium and Real Interest Rate



*Based on quarter-end prices; equity risk premium derived from dividend discount model and actual S&P 500 price.

^bReal interest rate is the five-year government bond yield minus five-year weighted inflation rate.

Table V Valuation Statistics (S&P 500)

	Percentage Overvaluation		
	Market Peak ^a (1)	Aug. 1987 (2)	Current ^b (3)
<i>Interest-Rate Valuation Approaches</i>			
DDM using 5-Yr. Gov't Bond and Normalized EPS	20%	45%	35%
DDM using 5-Yr. Gov't Bond and Reported EPS	24	47	46
T-Bill Rate/Dividend Yld.	19	33	22
T-Bill Rate/Adj. Dividend Yld.	17	18	10
Int. Bond Yld./Dividend Yld.	14	47	9
Int. Bond Yld./Adj. Dividend Yld.	3	31	(1)
Long Bond Yld./Dividend Yld.	15	56	6
Long Bond Yld./Adj. Dividend Yld.	14	39	(3)
Adj. Cash Flow Yld./T-Bill Rate ^c	16	22	32
Adj. Cash Flow Yld./Int. Bond Yld. ^c	14	36	19
Adj. Cash Flow Yld./Long Bond Yld. ^c	15	46	18
Average	16	38	19
<i>Inflation Valuation Approaches</i>			
Inflation-Based DDM using Normalized EPS	19	22	12
Inflation-Based DDM using Reported EPS	22	24	20
Inflation/Dividend Yld.	11	17	(13)
Adj. Cash Flow Yld./Inflation ^c	8	17	3
Average	15	20	6

a. Average of market peaks since 1966.

b. As of March 15, 1990: T-bill rate 7.95%; five-year government bond yield 8.65%; 30-year government bond yield 8.60%; inflation (CPI) 4.5%; S&P 400 price 391; S&P 500 price 338. Numbers in parentheses mean market is undervalued. Based on S&P 500 1990 estimates of earnings (\$24.00) and dividends (\$12.10), and S&P 400 adjusted cash flow (\$52.50).

c. S&P 400.

Table VI The Changing Relation Between Stock Prices and Interest Rates

	Average Ratio			
	1950-1959	1960-1969	1970-1979	1980-1989
T-Bill Rate/Dividend Yld. ^a	0.59	1.27	1.59	2.11
Int. Bond Yld./Dividend Yld. ^a	0.81	1.49	1.89	2.51
Long Bond Yld./Dividend Yld. ^a	0.84	1.47	1.94	2.57
Adj. Cash Flow Yld./T-Bill Rate ^b	7.81	2.89	2.29	2.12
Adj. Cash Flow Yld./Int. Bond Yld. ^b	4.03	2.34	1.86	1.73
Adj. Cash Flow Yld./Long Bond Yld. ^b	3.61	2.33	1.81	1.68

a. The ratio of the interest rate divided by the S&P 500 dividend yield.

b. The ratio of the adjusted cash flow yield of the S&P 400 divided by the interest rate.

wealth to charities. There are many people who are doing that same thing, but in your mind, anyone who accumulated wealth during the 1980s must have been a crook and you would like to hand out their sentences.

The wealth issue is the hardest to address, because your comments on the subject are irrational. Just about everyone on Wall Street dreams of accumulating enough capital to be financially independent. The secret is to hold down your cost of living, save a large portion of your income, pay a full tax load and then invest the proceeds in the areas of strongest opportunity, whether that is your own business, the capital markets or real estate. Wall Street attracts entrepreneurs, and most of the money-management firms are small, employee-owned operations started by people who were able to save or borrow their initial capital. But there is a world of difference between being an employee and an entrepreneur.

I had been working as a security analyst at Merrill Lynch from 1972 to 1976, when the founders of a small money-management firm, BEA Associates, invited me into their partnership. Over the next 12 years, I took out bank loans, a second mortgage and plowed back most of my bonuses in order to boost my stake in the firm. We built one of the top performance records of the 1970s, and with the rising stock and bond markets of the 1980s, as well as new products and

services related to the pension market, the firm grew 15-fold. Yes, we were in the right place at the right time, but so were thousands of others who identified opportunities, risked their capital and prospered.

It was more than the "Lottery winner" explanation you gave. Some of the biggest opportunities in the 1980s occurred in your backyard, the Bay Area. Professors from Stanford and the University of California, Berkeley, founded some of the leading quantitative pension-consulting businesses. Silicon Valley produced hundreds of success stories in the hardware, software and biotechnology industries. And Bay Area real estate probably produced more millionaires per capita than any other section of the country. Of course, the flip side of the Bay Area prosperity was Texas, where lower oil prices and a real estate glut made the 1980s a nightmare after the boom period of the 1970s.

I hope this answers your question "How do people get rich enough to support themselves and a family, if not by greed?" I can understand your envy, but you can't deny that there were numerous opportunities available to you during the past decade.

The greed that troubled you the most centered on the LBOs and corporate restructurings. On that, I think we are in agreement. Your letter could have been developed into an opinion piece on that subject, instead of de-

generating into a personal attack on me and the others mentioned in the article.

For your information, several of those retirements turned out to be sabbaticals, as three of the five people have re-entered the business, though on their own terms. Peter Solomon formed his own investment banking firm and Laszlo Birinyi launched his own market analysis group, which is often quoted in the *Wall Street Journal*. Robin Koskinen, the would-be musician and photographer, is now vice-chairman of First Chicago Capital Markets. Andrew Krieger tried a stint with George Soros, but the relationship did not work out and he may be teaching Sanskrit. I have been busy managing my portfolio and serving as Treasurer of the Discovery Museum in Bridgeport, Connecticut. Bridgeport is Connecticut's biggest city and it has a large population of minority youngsters. They have to become literate in math and science if they are going to have a chance in life. Part of my job is to line up corporate sponsors to fund the "hands on" science exhibits and "adopt" local school classes.

In sum, I reread "One Less Rat" and I couldn't find any villains. I can understand your anger over the human toll of the LBOs and your jealousy over the wealth of some on Wall Street. But you have no right to impugn my character and integrity in your letter.

From the Board concluded from page 13.

inflation and real interest rates individually, rather than nominal interest rates, that give a better indication of fair market value. Second, if historical market/interest rate relations are less binding, then more judgment has to be applied in interpreting valuation statistics. This is a little bit disconcerting; many of the variables that influence the market are

qualitative and not subject to quantification. Valuation was a variable more subject to quantification and less subject to judgment. This, we think, is changing.

One final point. None of the above is meant to suggest that valuation doesn't matter. It does. We simply believe that in estimating the fair value of the market, the relation between

shares and the inflation rate is likely the better guide to fair value and market prospects than the relation between shares and nominal interest rates (particularly when inflation is contained and moderate). Consistent with this, an emphasis on the share price/inflation relation will indicate when valuation poses a problem.

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DOCKET NO. I-00920020

OFFICE OF CONSUMER ADVOCATE
INTERROGATORIES SET IX FOLLOW-UP

IX-118. CTCo has not listed the separate types of transactions that are handled other than by check payment. In other words, please list all line items on CTCo's lead/lag study that are not paid by check.

Response: Items Not Paid By Check

Employment Benefits
Management Fees
Interest Expense

The line items, engineering fees, and other expenses are mostly paid by checks, however, some vendors require payment by wire transfer.

AUS CONSULTANTS

PA PUC V. COMMONWEALTH TELEPHONE COMPANY
DOCKET NO. I-00920020

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RESPONSE OF COMMONWEALTH TELEPHONE COMPANY
TO INTERROGATORIES OF THE OFFICE OF THE CONSUMER ADVOCATE, SET X
PA PUC V. CTCO
PA PUC DOCKET NO. I-00920020

17. The Pennsylvania Telecommunications Infrastructure Study provides information as to the additional revenue requirements necessary for Commonwealth and other LECs at page XII-87. The largest revenue requirement increase shown is for Commonwealth at 14.6% under the Aggressive scenario assuming a broadband capable network by 2010. Please provide the expenses, revenues and investment which support these results and explain how the Commonwealth revenue requirement projected is consistent with the complete migration to fiber by 2008.

ANSWER: In conjunction with Scenario B of the Pennsylvania Infrastructure Study, the company provided data relative to migrating to fiber and assuming a broadband capability by 2010 following general study guidelines set forth in the study. Conversely, the company has been aggressively installing fiber facilities throughout its inter-exchange and feeder cable system. It appears that through the company's aggressive program, it is exceeding the general timeframe estimated for upgrading such facilities, as compared to telecommunications industry estimates. The requested Scenario B revenues and expenses, along with summarizes of estimated investments, are contained on the eight (8) schedules accompanying this response.

The depreciation study was developed using several different dates for migration to fiber facilities (see response to OCA, Set X, Questions 7 and 8) within its metallic cable accounts. Those migration dates range from the year 2000 for inter-office cable to 2022 for the last portion of underground distribution cable resulting in a composite final migration date in the range of 2009 - 2010. Accordingly, the revenues and expenses are set forth on the accompanying schedules and are generally representative of the depreciation expense and rates set forth in the depreciation study.

PREPARED BY: Earl M. Robinson, President
AUS Consultants--Weber Fick & Wilson Division

TABLE 1

<u>Income Statement (\$ Millions)</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>
Local Network Service Revenues	23,161	24,269	25,636	27,055	28,528	30,055	31,640	33,283	34,987	36,753	38,584	40,482
Network Access Revenues												
Access Charges – Intrastate	25,876	27,015	28,366	29,784	30,594	31,888	32,750	33,630	34,545	35,485	36,550	37,647
Access Charges – Interstate	39,065	43,387	45,643	48,016	49,034	50,074	51,136	52,220	53,327	52,014	53,574	55,181
Long Distance Network Revenues												
Toll Service Rev–Intrastate	26,397	27,176	28,263	29,394	30,570	29,951	30,247	30,555	31,472	32,416	33,388	34,390
Toll Service Rev–Interstate	186	192	200	208	216	218	220	222	229	236	243	250
Other Regulated Revenues	4,289	4,526	4,451	4,745	4,950	4,879	5,088	5,308	5,639	5,851	6,074	6,305
Uncollectibles												
Rate Relief												
Total Regulated Revenues	118,974	126,565	132,559	139,202	143,891	147,066	151,081	155,218	160,198	162,755	168,413	174,256
Unregulated Revenue	7,880	8,019	8,077	8,397	8,793	8,984	9,713	10,741	12,307	14,682	18,237	22,797
Total Revenues	126,853	134,584	140,636	147,600	152,684	156,050	160,793	165,959	172,505	177,437	186,650	197,052
Plant Specific Expense	19,113	18,913	19,798	20,660	21,504	22,332	23,143	23,938	24,717	25,480	26,228	26,962
Plant Non-Specific Expense	16,012	16,330	17,094	17,838	18,567	19,282	19,902	20,669	21,341	22,000	22,646	23,279
Total Depreciation & Amort	24,719	26,725	26,725	27,908	29,067	30,203	31,317	32,408	33,477	34,525	35,552	36,559
Accelerated Depr & Amort.												
Other Depr & Amort.												
Other Regulated Expenses	24,154	23,445	23,914	24,392	24,880	25,378	25,885	26,403	26,931	27,470	28,019	28,579
Total Regulated Expenses	83,998	85,413	87,531	90,798	94,019	97,195	100,327	103,417	106,466	109,475	112,446	115,379
Net Unregulated Expenses	1,185	2,029	2,850	3,697	4,723	5,885	7,506	9,790	12,865	16,962	22,275	28,789
Total Expenses	85,183	87,442	90,381	94,495	98,742	103,080	107,833	113,208	119,331	126,438	134,721	144,167
Net Operating Revenues	41,671	47,142	50,254	53,105	53,942	52,970	52,960	52,751	53,174	50,999	51,929	52,885
Operating Taxes – Federal	8,747	10,281	12,179	12,926	13,050	12,616	12,413	12,071	11,820	10,669	10,295	9,778
Oper Taxes–State, Local & Other	4,030	4,659	5,001	5,307	5,358	5,180	5,097	4,958	4,853	4,381	4,227	4,014
Interest & All Other	8,777	9,105	9,433	9,778	10,201	10,684	11,354	12,293	13,555	15,238	17,423	20,118
Extraordinary Items	0	0	0	0	0	0	0	0	0	0	0	0
Net Income	20,118	23,096	23,642	25,092	25,333	24,490	24,096	23,431	22,945	20,711	19,984	18,977

SCENARIO: B

TABLE 1

<u>Income Statement (\$ Millions)</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Local Network Service Revenues	42,449	44,487	46,598	48,785	51,050	53,395	55,824	58,339	60,942	63,636	66,425
Network Access Revenues											
Access Charges – Intrastate	38,776	39,939	41,137	42,371	43,642	44,951	46,300	47,689	49,120	50,594	52,112
Access Charges – Interstate	56,838	58,541	60,297	62,106	63,969	65,888	67,865	69,901	71,998	74,158	76,383
Long Distance Network Revenues											
Toll Service Rev–Intrastate	35,422	36,485	37,580	38,707	39,868	41,064	42,296	43,565	44,872	46,218	47,605
Toll Service Rev–Interstate	258	266	274	282	290	299	308	317	327	337	347
Other Regulated Revenues	6,547	6,799	7,061	7,334	7,620	7,918	8,227	8,551	8,888	9,239	9,605
Uncollectibles											
Rate Relief											
Total Regulated Revenues	180,288	186,517	192,947	199,585	206,439	213,515	220,820	228,361	236,146	244,182	252,477
Unregulated Revenue	29,085	36,983	44,915	53,073	62,277	72,685	84,095	97,159	113,367	131,629	147,917
Total Revenues	209,372	223,499	237,862	252,658	268,715	286,400	304,915	325,520	349,514	375,811	400,394
Plant Specific Expense	27,680	28,384	29,074	29,751	30,413	31,063	31,699	32,323	32,934	33,533	34,120
Plant Non–Specific Expense	23,900	24,508	25,104	25,687	26,260	26,820	27,370	27,909	28,438	28,954	29,461
Total Depreciation & Amort	37,545	38,511	39,459	40,387	41,297	42,188	43,062	43,918	44,757	45,580	46,385
Accelerated Depr & Amort.											
Other Depr & Amort.											
Other Regulated Expenses	29,151	29,734	30,329	30,935	31,554	32,185	32,829	33,485	34,155	34,838	35,531
Total Regulated Expenses	118,276	121,137	123,966	126,760	129,524	132,256	134,960	137,635	140,283	142,905	145,501
Net Unregulated Expenses	36,691	44,830	52,190	59,251	66,416	74,075	82,583	92,255	103,465	116,378	129,191
Total Expenses	154,966	165,967	176,156	186,011	195,939	206,331	217,543	229,890	243,748	259,281	274,691
Net Operating Revenues	54,406	57,532	61,706	66,646	72,776	80,069	87,372	95,630	105,766	116,530	125,701
Operating Taxes – Federal	9,249	9,151	9,432	9,954	10,800	11,915	12,916	14,044	15,529	16,977	17,921
Oper Taxes–State, Local & Other	3,798	3,757	3,873	4,087	4,434	4,892	5,303	5,768	6,378	6,970	7,381
Interest & All Other	23,405	26,859	30,092	33,282	36,578	40,132	44,083	48,559	53,716	59,629	65,621
Extraordinary Items	0	0	0	0	0	0	0	0	0	0	0
Net Income	17,954	17,764	18,309	19,323	20,964	23,130	25,071	27,261	30,145	32,854	34,711

SCENARIO: 8

TABLE 1

<u>Income Statement (\$ Millions)</u>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Local Network Service Revenues	69,311	72,297	75,387	78,584	81,890	85,310	88,847	92,504	96,286	100,198	104,238
Network Access Revenues											
Access Charges – Intrastate	53,675	55,285	56,944	58,652	60,412	62,224	64,091	66,014	67,994	70,034	72,135
Access Charges – Interstate	78,674	81,034	83,465	85,969	88,548	91,204	93,940	96,758	99,681	102,651	105,731
Long Distance Network Revenues											
Toll Service Rev–Intrastate	49,033	50,504	52,019	53,580	55,187	56,843	58,548	60,304	62,113	63,976	65,895
Toll Service Rev–Interstate	357	368	379	390	402	414	428	439	452	468	480
Other Regulated Revenues	9,987	10,385	10,800	11,233	11,684	12,155	12,645	13,156	13,689	14,245	14,825
Uncollectibles											
Rate Relief											
Total Regulated Revenues	261,037	269,874	278,994	288,407	298,123	308,149	318,496	329,175	340,195	351,568	363,304
Unregulated Revenue	160,956	173,170	183,867	193,595	202,910	211,135	218,202	224,725	231,349	237,373	242,776
Total Revenues	421,993	443,043	462,861	482,002	501,033	519,284	536,698	553,900	571,544	588,940	606,080
Plant Specific Expense	34,696	35,260	35,812	36,354	36,884	37,404	37,914	38,414	38,903	39,383	39,853
Plant Non–Specific Expense	29,957	30,444	30,921	31,389	31,847	32,298	32,736	33,167	33,590	34,004	34,410
Total Depreciation & Amort	47,175	47,949	48,708	49,451	50,179	50,893	51,593	52,278	52,950	53,609	54,254
Accelerated Depr & Amort.											
Other Depr & Amort.											
Other Regulated Expenses	36,245	36,970	37,710	38,464	39,233	40,018	40,818	41,635	42,467	43,317	44,183
Total Regulated Expenses	148,074	150,623	153,151	155,657	158,144	160,612	163,061	165,494	167,911	170,312	172,700
Net Unregulated Expenses	140,035	148,940	156,058	161,553	165,806	168,983	171,235	172,694	173,475	173,679	173,419
Total Expenses	288,109	299,563	309,209	317,211	323,950	329,595	334,297	338,188	341,386	343,992	346,119
Net Operating Revenues	133,884	143,480	153,652	164,792	177,082	189,689	202,402	215,712	230,158	244,949	259,961
Operating Taxes – Federal	18,762	20,213	22,015	24,269	26,993	29,921	32,978	36,296	40,027	43,924	47,939
Oper Taxes–State, Local & Other	7,704	8,299	9,039	9,965	11,083	12,285	13,540	14,903	16,435	18,035	19,684
Interest & All Other	70,997	75,729	79,864	83,447	86,609	89,400	91,868	94,054	95,996	97,725	99,279
Extraordinary Items	0	0	0	0	0	0	0	0	0	0	0
Net Income	36,421	39,238	42,734	47,111	52,398	58,082	64,016	70,458	77,700	85,265	93,059

SCENARIO: B

TABLE 1

<u>Income Statement (\$ Millions)</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>
Local Network Service Revenues	108,417	112,736	117,200	121,813
Network Access Revenues				
Access Charges – Intrastate	74,299	76,528	78,824	81,189
Access Charges – Interstate	108,903	112,170	115,535	119,001
Long Distance Network Revenues				
Toll Service Rev–Intrastate	67,872	69,908	72,005	74,165
Toll Service Rev–Interstate	494	509	524	540
Other Regulated Revenues	15,428	16,058	16,715	17,399
Uncollectibles				
Rate Relief				
Total Regulated Revenues	375,413	387,909	400,803	414,108
Unregulated Revenue	247,515	252,301	257,113	261,216
Total Revenues	622,928	640,210	657,916	675,324
Plant Specific Expense	40,313	40,765	41,207	41,641
Plant Non–Specific Expense	34,808	35,198	35,580	35,954
Total Depreciation & Amort	54,886	55,506	56,114	56,709
Accelerated Depr & Amort.				
Other Depr & Amort.				
Other Regulated Expenses	45,067	45,968	46,887	47,825
Total Regulated Expenses	175,074	177,437	179,788	182,129
Net Unregulated Expenses	172,798	171,879	170,713	169,343
Total Expenses	347,873	349,316	350,501	351,472
Net Operating Revenues	275,055	290,894	307,414	323,852
Operating Taxes – Federal	52,021	56,361	60,934	65,510
Oper Taxes–State, Local & Other	21,359	23,141	25,019	26,898
Interest & All Other	100,692	101,986	103,176	104,278
Extraordinary Items	0	0	0	0
Net Income	100,982	109,406	118,284	127,166

2201

SCENARIO: B

TABLE 2												
Assets (\$ Millions)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Regulated Assets												
Current Assets	23,829	25,508	16,720	17,300	17,724	18,004	18,399	18,830	19,375	19,786	20,554	21,421
Temp. Cash Investments	51,700	49,200	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000
Total Current Assets	75,529	74,708	65,720	66,300	66,724	67,004	67,399	67,830	68,375	68,786	69,554	70,421
Deferred Charges	0	0	0	0	0	0	0	0	0	0	0	0
Other Noncurrent Assets	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570
Total Noncurrent Assets	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570
General Support	44,567	47,323	49,457	51,547	53,596	55,605	57,572	59,501	61,391	63,243	66,058	66,837
Central Office Switching	114,408	126,709	136,215	145,531	154,660	163,607	172,375	180,967	189,388	197,640	205,727	213,853
Operator Systems	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Equipment	42,610	45,066	46,965	48,825	50,649	52,436	54,187	55,903	57,585	59,234	60,849	62,432
Info Orig/Term Equipment	3,325	3,450	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575
Cable & Wire Facilities	185,316	192,746	198,859	204,850	210,721	216,474	222,113	227,639	233,054	238,361	243,562	248,658
Amortizable Assets	0	0	0	0	0	0	0	0	0	0	0	0
Intangible Assets	0	0	0	0	0	0	0	0	0	0	0	0
Total Plant In Service	390,226	415,294	435,070	454,328	473,201	491,697	509,822	527,585	544,993	562,053	578,771	595,155
Prop. Held for Future Use	725	725	725	725	725	725	725	725	725	725	725	725
Plant Under Construction	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300
Non-Operating Plant	325	325	325	325	325	325	325	325	325	325	325	325
Sub-Total Gross Plant	397,576	422,644	442,420	461,678	480,551	499,047	517,172	534,935	552,343	569,403	586,121	602,505
Depreciation Reserve	187,806	204,366	214,098	223,575	232,862	241,964	250,883	259,624	268,191	276,586	284,813	292,876
Accumulated Amortization	0	0	0	0	0	0	0	0	0	0	0	0
Total Regulated Net Plant	209,770	218,278	228,322	238,103	247,689	257,083	266,289	275,311	284,152	292,817	301,308	309,630
Net Unregulated Assets	11,310	18,404	25,093	31,737	39,715	48,562	61,138	79,132	103,452	135,923	177,931	228,938
Total Assets	306,179	320,960	328,705	345,710	363,698	382,219	404,396	431,843	465,550	507,096	558,363	618,559

502

2/11/2004

SCENARIO: B

TABLE 2

<u>Assets (\$ Millions)</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Regulated Assets											
Current Assets	22,448	23,625	24,822	26,055	27,393	28,867	30,410	32,127	34,126	36,318	38,366
Temp. Cash Investments	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000
Total Current Assets	71,448	72,625	73,822	75,055	76,393	77,867	79,410	81,127	83,126	85,318	87,366
Deferred Charges	0	0	0	0	0	0	0	0	0	0	0
Other Noncurrent Assets	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570
Total Noncurrent Assets	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570
General Support	68,580	70,289	71,963	73,604	75,212	76,787	78,332	79,845	81,328	82,782	84,208
Central Office Switching	221,420	229,031	236,491	243,801	250,965	257,985	264,866	271,608	278,216	284,692	291,038
Operator Systems	0	0	0	0	0	0	0	0	0	0	0
Transmission Equipment	63,983	65,504	66,994	68,454	69,885	71,287	72,661	74,008	75,328	76,621	77,889
Info Orig/Term Equipment	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575
Cable & Wire Facilities	253,653	258,548	263,345	268,046	272,653	277,168	281,593	285,929	290,179	294,343	298,424
Amortizable Assets	0	0	0	0	0	0	0	0	0	0	0
Intangible Assets	0	0	0	0	0	0	0	0	0	0	0
Total Plant In Service	611,212	626,947	642,367	657,480	672,289	686,803	701,027	714,968	728,626	742,013	755,132
Prop. Held for Future Use	725	725	725	725	725	725	725	725	725	725	725
Plant Under Construction	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300
Non-Operating Plant	325	325	325	325	325	325	325	325	325	325	325
Sub-Total Gross Plant	618,562	634,297	649,717	664,830	679,639	694,153	708,377	722,316	735,976	749,363	762,482
Depreciation Reserve	300,777	308,520	316,109	323,545	330,833	337,976	344,975	351,834	358,556	365,144	371,600
Accumulated Amortization	0	0	0	0	0	0	0	0	0	0	0
Total Regulated Net Plant	317,785	325,777	333,609	341,284	348,806	356,178	363,402	370,481	377,419	384,219	390,882
Net Unregulated Assets	290,230	351,012	402,085	448,007	492,505	539,042	590,642	649,845	719,616	800,906	877,036
Total Assets	689,032	758,984	819,086	873,916	927,274	982,656	1,043,023	1,111,023	1,189,731	1,280,012	1,364,854

SCENARIO: B

Assets (\$ Millions)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Regulated Assets											
Current Assets	40,166	41,920	43,572	45,167	46,753	48,274	49,725	51,158	52,629	54,078	55,507
Temp. Cash Investments	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000
Total Current Assets	89,166	90,920	92,572	94,167	95,753	97,274	98,725	100,158	101,629	103,078	104,507
Deferred Charges	0	0	0	0	0	0	0	0	0	0	0
Other Noncurrent Assets	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570
Total Noncurrent Assets	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570	9,570
General Support	85,602	86,970	88,310	89,624	90,912	92,173	93,410	94,622	95,809	96,973	98,114
Central Office Switching	297,257	303,352	309,325	315,179	320,915	326,537	332,046	337,445	342,736	347,921	353,003
Operator Systems	0	0	0	0	0	0	0	0	0	0	0
Transmission Equipment	79,131	80,348	81,542	82,711	83,856	84,979	86,090	87,158	88,215	89,251	90,266
Info Orig/Term Equipment	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575
Cable & Wire Facilities	302,424	306,343	310,184	313,949	317,638	321,253	324,796	328,268	331,671	335,005	338,273
Amortizable Assets	0	0	0	0	0	0	0	0	0	0	0
Intangible Assets	0	0	0	0	0	0	0	0	0	0	0
Total Plant In Service	767,989	780,589	792,936	805,037	816,896	828,517	839,907	851,068	862,006	872,725	883,230
Prop. Held for Future Use	725	725	725	725	725	725	725	725	725	725	725
Plant Under Construction	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300
Non-Operating Plant	325	325	325	325	325	325	325	325	325	325	325
Sub-Total Gross Plant	775,339	787,939	800,286	812,387	824,246	835,867	847,257	858,418	869,356	880,075	890,580
Depreciation Reserve	377,927	384,127	390,204	396,158	401,994	407,713	413,318	418,810	424,193	429,468	434,637
Accumulated Amortization	0	0	0	0	0	0	0	0	0	0	0
Total Regulated Net Plant	397,412	403,811	410,083	416,229	422,252	428,154	433,939	439,608	445,163	450,608	456,943
Net Unregulated Assets	931,165	964,286	978,399	975,566	959,754	932,863	896,607	852,484	801,793	745,657	685,291
Total Assets	1,427,313	1,468,588	1,490,623	1,495,532	1,487,328	1,467,861	1,438,841	1,401,820	1,358,155	1,308,913	1,255,311

2026

10/10/2024

SCENARIO: B

<u>Assets (\$ Millions)</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>
Regulated Assets				
Current Assets	58,911	58,351	59,826	61,277
Temp. Cash Investments	49,000	49,000	49,000	49,000
Total Current Assets	105,911	107,351	108,826	110,277
Deferred Charges	0	0	0	0
Other Noncurrent Assets	9,570	9,570	9,570	9,570
Total Noncurrent Assets	9,570	9,570	9,570	9,570
General Support	99,231	100,327	101,400	102,452
Central Office Switching	357,983	362,863	367,646	372,333
Operator Systems	0	0	0	0
Transmission Equipment	91,260	92,235	93,190	94,127
Info Orig/Term Equipment	3,575	3,575	3,575	3,575
Cable & Wire Facilities	341,475	344,614	347,690	350,704
Amortizable Assets	0	0	0	0
Intangible Assets	0	0	0	0
Total Plant In Service	893,525	903,614	913,502	923,191
Prop. Held for Future Use	725	725	725	725
Plant Under Construction	6,300	6,300	6,300	6,300
Non-Operating Plant	325	325	325	325
Sub-Total Gross Plant	900,875	910,964	920,852	930,541
Depreciation Reserve	439,703	444,668	449,534	454,302
Accumulated Amortization	0	0	0	0
Total Regulated Net Plant	461,172	466,296	471,318	476,239
Net Unregulated Assets	621,778	555,792	487,899	418,562
Total Assets	1,198,431	1,139,009	1,077,613	1,014,648

PA PUC V. COMMONWEALTH TELEPHONE COMPANY
DOCKET NO. I-00920020

OCA CROSS EXAMINATION EXHIBIT NO. 5

DATE ENTERED: 7/1/93
1/16/93 jar

DOCKETED

JUL 16 1993

RECEIVED
JUL 19 1993
PA. P. U. C.
INFO. CONTROL DIV.

**DOCUMENT
FOLDER**

RESPONSE OF COMMONWEALTH TELEPHONE COMPANY
TO INTERROGATORIES OF THE OFFICE OF CONSUMER ADVOCATE, SET I
PA PUC V. CTCO
PA PUC DOCKET NO. I-00920020

1. Please supply a chart showing all affiliate corporations. Please identify the principal lines of business and the gross revenues for each.

ANSWER: The attachment shows the operating structure of C-TEC Corporation, Commonwealth Telephone Company's parent, affiliated operating groups, their principal lines of business, and associated 1991 revenues.

PREPARED BY: SCOTT BURNSIDE

C-TEC Corporation Operating Structure

		<u>1991 Revenues (Thousands)</u>
Telephone Group	Local Exchange Carrier Northern and Eastern PA In Excess of 200,000 Access Lines	\$119,310
Commonwealth Long Distance	Long Distance Carrier/Reseller	\$9,062
C-TEC Corporation	Cable Television	
	NY, NJ, PA, MI In Excess of 220,000 Subscribers	\$76,128
Mobile Services	Cellular, Paging, Voice Mail, Telephone Answering Service Pennsylvania, Iowa Population Base 1.4 million	\$13,993
Communications Services	Consulting & Engineering Implementation Systems & Networks	\$14,325

RESPONSE OF COMMONWEALTH TELEPHONE COMPANY
TO INTERROGATORIES OF THE OFFICE OF CONSUMER ADVOCATE, SET I
PA PUC V. CTCO
PA PUC DOCKET NO. I-00920020

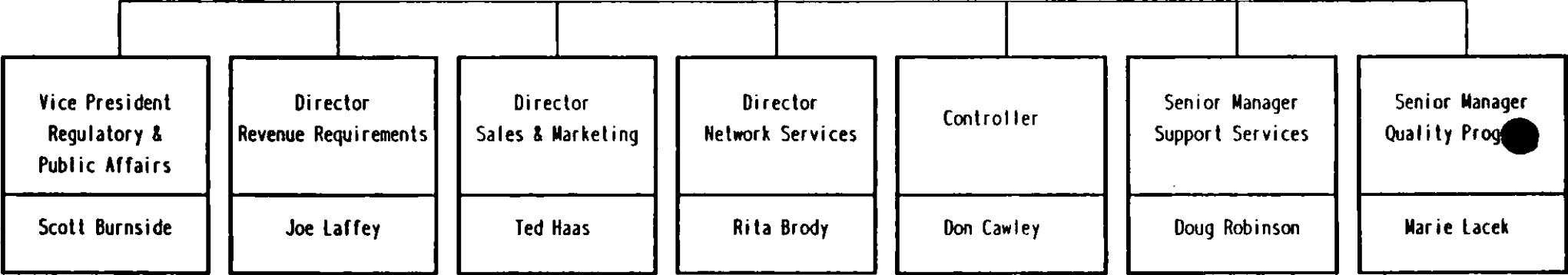
2. Please supply an organization chart for the management of Commonwealth Telephone Company.

ANSWER: Refer to the attachment.

PREPARED BY: SCOTT BURNSIDE

Executive
Vice President
Telephone
Paul W. Mazza

Executive Secretary
Sharon Norconk

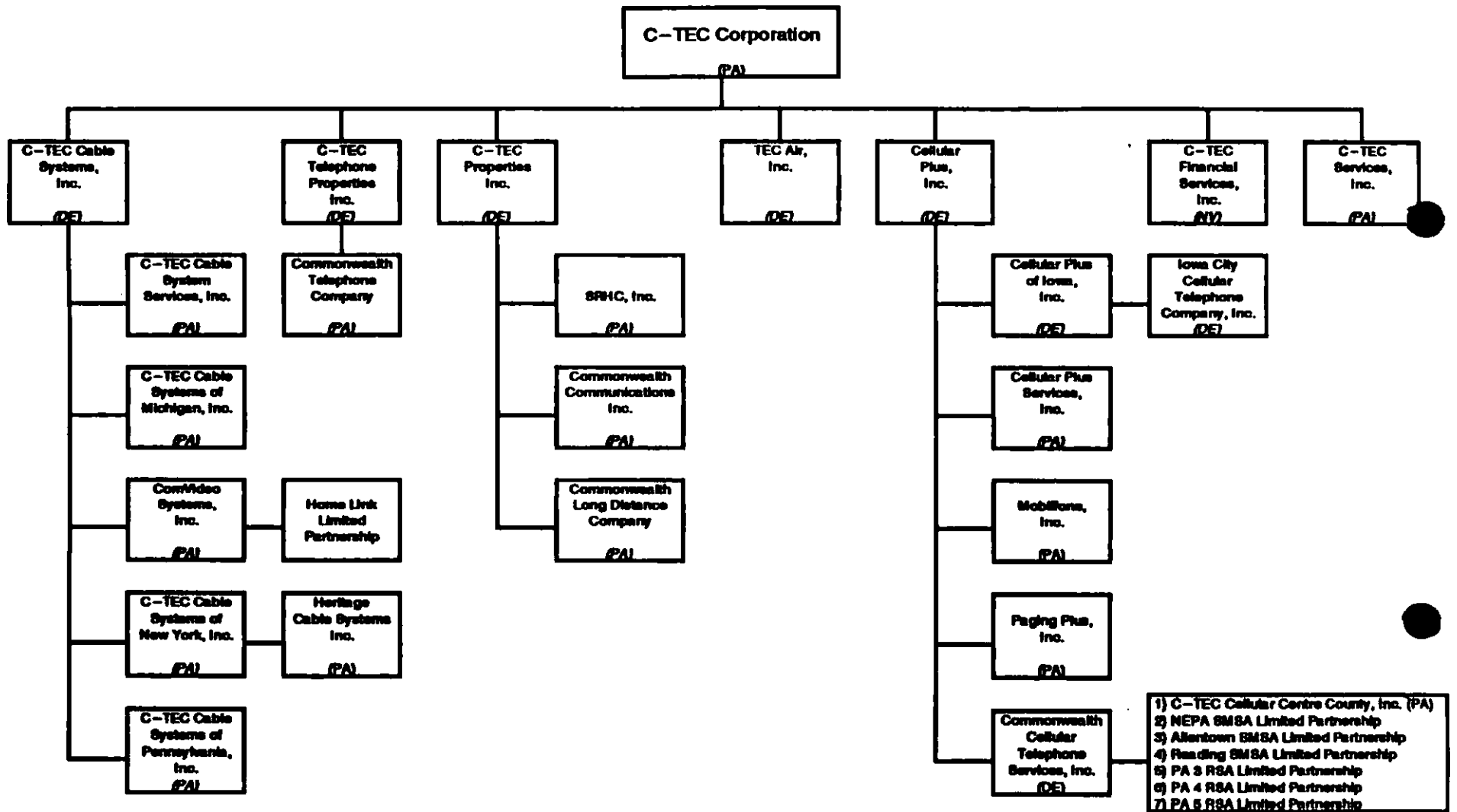


RESPONSE OF COMMONWEALTH TELEPHONE COMPANY
TO INTERROGATORIES OF THE OFFICE OF CONSUMER ADVOCATE, SET III
PA PUC V. CTCO
PA PUC DOCKET NO. I-00920020

5. Please provide an organizational chart of C-TEC, each group within C-TEC, and each individual company within the group. Please also provide the number of employees within each company.

ANSWER: See attached organization chart for C-TEC. Also attached is a breakdown showing the total number of employees within each company.

PREPARED BY: SCOTT BURNSIDE



Structure/fpb

AT&T CROSS EXH. I

I-00920020

RESPONSE OF COMMONWEALTH TELEPHONE COMPANY
TO INTERROGATORIES OF AT&T, SET I
PA PUC V. CTCO
PA PUC DOCKET NO. I-00920020

jav Hbg
7/1/93

69. Please provide a copy of all scripts, guidelines, advisory memos, policy statements, training materials, reference manuals, or any other material of any type whatsoever, that instruct Commonwealth's business office personnel in how to assist a customer with the selection of a long distance carrier.

ANSWER: The attached contains certain information distributed to Commonwealth Telephone Company business office representatives during employee meetings or contained in equal access employee training manuals on the subject of long distance carrier selection. This is the information which was readily available. It is not exhaustive.

PREPARED BY: SCOTT BURNSIDE

DOCKETED
JUL 16 1993

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PA. P. U. C.
INFO. CONTROL DIV.

DOCUMENT
FOLDER

CS19

DUE DATE INFORMATION

SERVICE ORDER NUMBER	N	448210	ORD CHG 00	ISSUE DATE	102092
TELEPHONE NUMBER		717 675		ISSUE TIME	14:35
SERVICE NAME	LAST	TEST		FIRST	

EFFECTIVE DATE
 DUE DATE
 ACTION
 STATUS
 PERM CONTACT NUMBER
 8 TO 5 CONTACT NUMBER

NO PREFERENCE N/A
 AM N/A
 PM N/A
 1ST AM APPOINTMENT N/A

PRIORITY ORDER

THANK YOU FOR YOUR ORDER. WELCOME TO COMMONWEALTH TELEPHONE COMPANY.

ACTION HOLD DATE STATUS ORIG BY VLS1382
 PF2=GI 3=EXIT 4=DIRINF 5=S&E 6=OCC 7=CRDIT 8=RMRK 9=DUE 10=CLEAR 11=MISC SEL

AT THE END OF EVERY NEWC CONTACT IN WHICH THE CUSTOMER DOES NOT CHOOSE COMMONWEALTH LONG DISTANCE, CLD WOULD LIKE AN OPPORTUNITY TO CHANGE THEIR MIND.

SUGGESTED DIALOGUE:

COMMONWEALTH TELEPHONE COMPANY IS AFFILIATED WITH COMMONWEALTH LONG DISTANCE. THEY MAY BE ABLE TO PROVIDE ADDITIONAL SAVINGS ON YOUR LONG DISTANCE CALLING. MAY I TRANSFER YOU TO CLD?

IF YES-TRANSFER TO _____, THANK THE CUSTOMER
 IF NO- THANK THE CUSTOMER

New customers are asked to select a carrier at time of application for service. There is no charge for this initial carrier selection. After conversion the Business office must offer all available I.C.'s - not just the carriers on the ballot. _____ will be changing the PIC selection screen to accommodate all I.C.'s currently providing F.G.D. services.

The Service Representatives must request new customers or customers who become eligible for Equal Access, to select a long distance carrier at the time of application for service. The Service Representatives will offer to read the list of participating long distance carriers and their telephone number to the customer. The Service Representatives will each have access to an on-line list with the long distance carriers listed in random order so that each long distance carrier will have the opportunity to be listed first. If the customer selects a long distance carrier at that time, the carrier (PIC) designation will be entered on the service order. There is no charge for the selection. If the customer does not choose a carrier at that time, the "NO PIC" designation is entered on the service order.

The FCC has ruled that the customer may make an unlimited number of carrier changes at no charge prior to Activation. After a long distance carrier selection has been made, all new customers must be referred to their carrier to discuss services offered by that carrier (operator services, 800, I.D.D.D).

The purpose of the Confirmation Notice is to ensure that every eligible customer is given the opportunity to obtain a ballot (on-line service order) and select the carrier that is best suited to his/her long distance needs.

When a customer contacts the Business Office during Interim Activation to establish/change telephone service, the Service Representative will request the customer to select a carrier.

If the customer requests to know who the carriers are that serve the area, the Service Representative will read a list of the names of carriers and their associated telephone numbers. These lists will identify the carriers in random order, similar to the rotation method used on the ballots.

The on-line system will mail a Confirmation Notice (Thank You Letter) indicating the carrier selected, to those customers who verbally select a carrier at the time of application for service.

As a result of this media attention, the Business Office is likely to receive questions from confused customers. It is important that you remain impartial when answering these concerns.

We share the responsibility to treat competing long distance companies equally. We must refrain from offering specific details about any carrier's rates or services. This is especially applicable to employees who experience a great deal of public contact while on the job. Service Representatives, Repair Clerks, Installation/Repair Technicians should expect to receive numerous customer inquiries.

fairness and maintain an impartial position when discussing Equal Access with customers.

Company employees, both on and off the job, are CTC's most effective customer educators. That is why it is a company priority to keep employees as up-to-date as possible about Equal Access and its impact on specific areas.

We have asked that all employees remain impartial and refrain from recommending (or criticizing) individual carriers or offering specific evaluative details about any carrier's rates, service or other related policies. When on the job acting in official capacity as a company representative, we should provide only the following information when asked about various long distance companies.

- Provide names of companies and their associated telephone numbers.
- Explain customers will have an option to select a primary interexchange carrier.