As noted below, calculations were done using alternate assumptions and methods to estimate the X-Factor. These resulted in estimates ranging from 5.0% to 5.2% for the unitary balanced 50/50 X-Factor when the 1984/85 data point is excluded, with our best estimate being 5.0%. This leads us to believe that during the post-divestiture pre-price cap period the cost differential between the LEC industry and the economy as a whole was about 5%. Averaging this short-term X-Factor with the long-term X-Factor of 2.1% produced by the Spavins-Lande study and adding a 0.5% consumer productivity dividend, as the Commission did in the LEC Price Caps Order, produces an X-Factor of 4.05%, which we will round down to 4.0%.

II. ESTIMATION PROCEDURES

The study begins by estimating a trend of LEC access prices using 6 data points, corresponding to post-divestiture tariff review periods. A trend line is used to smooth variations in the data over time and to prevent undue influence on the results from the first and last periods. The average rate-of-change in these prices is then compared with changes in prices in the general economy (as measured by GNP-PI), and an X-Factor is estimated, using price-cap methodology, that would yield the same differential between GNP-PI and the LEC access price trend as observed from the data.

The calculations begin by estimating separately X-Factors for the common line basket and the traffic sensitive basket. (The special access basket was excluded due to the lack of reliable data for much of the pre-price-cap period, and the interexchange basket was excluded because the AT&T X-Factor was applied to that basket.) The X-Factors are determined so as to yield beginning and ending values of the access charge equal to the trend values. In the case of the common line basket, two separate estimates are made, one using the balanced 50/50 approach currently in use, and the other using a per-line approach, where g/2 is replaced by g in the price-cap formulas. For the balanced 50/50 approach, the common line X-Factor is chosen so that the CCL rate in the final period is the same as the CCL rate from the per-line formula. A unitary X-Factor is then computed for each of these two cases (balanced 50/50 and per-line) as a weighted average of the common line and traffic sensitive X-Factors. This is accomplished by choosing a unitary X-Factor that would result in there being no difference between the total revenue generated using that factor for both baskets, at the beginning and end of the observation period, and the total revenue generated by using the separately estimated individual X-Factors for the two baskets. The results of these calculations are summarized in Attachment A.

The differences between the methodology of this study and the Frentrup-Uretsky study are in the details of how the X-Factor is estimated from the historical data. These include: (1) This study used trend values for common line minutes of use per line, whereas Frentrup-Uretsky used actual values. Thus the g-factor in the price-cap formulas is constant over time in this study, but varied from year to year in the Frentrup-Uretsky study. (2) This study used trend values for GNP-PI, whereas Frentrup-Uretsky used actual values. Thus the GNP-PI factor in the price-cap formulas is constant over time in this study, but varied from year to year in the Frentrup-Uretsky study. The rationale for these two changes is that we are trying to determine the X-Factor associated with a trend of LEC

access prices. (3) This study uses actual average subscriber line charges, whereas Frentrup-Uretsky assumed that subscriber line charges were 61.38% of common line revenues in all years. Actual SLCs were used because they were substantially different from the 61.38% assumption, which seemed arbitrary. (4) This study computes the unitary X-Factor by finding the value that will result in the same total revenue for the sum of the common line and traffic sensitive baskets that would result from using the individual X-Factors. The Frentrup-Uretsky study, on the other hand, determined the unitary X-Factor as the value that would equate a weighted average of the percentage changes in the PCIs using the unitary X-Factor with a weighted average of the percentage changes in the PCIs using the individual X-Factors. The rationales for this change are that we decided that it was important that the X-Factor chosen be revenue neutral, and that the weights used in the Frentrup-Uretsky study are based on the arbitrary assumption of constant subscriber line charges.

To test the sensitivity of the results to various assumptions and methods, calculations were also done using alternative assumptions or methods. The results of these calculations are summarized in Attachment B. In general, the alternative assumptions resulted in estimates that were approximately equal to those shown in Attachment A, although there were small differences in the X-Factor estimates, the maximum of which was about 0.3%. The alternate assumptions and methods tried were: (1) The actual SLCs were replaced with constant $4 SLCs, the average level that was prevailing in 1994. This had no effect on the X-Factors. Thus the SLC assumption is not crucial to the estimates. (2) Instead of using the ending values of the access charges (in the cases of the non-unitary X-Factors) or total revenues (in the cases of the unitary X-Factors), a net present value of the differences of the access charges or total revenues over all the periods was computed, and the X-Factor was determined as the factor that would make the net present value equal to zero. This had no effect on the unitary, traffic sensitive, and per line common line X-Factors, but it reduced the common line balanced 50/50 X-Factor slightly. Using the net present value, the balanced 50/50 common line X-Factor was 4.9% (0.1% lower than the base case estimate) for the period excluding the 1984/85 data point. (3) The trend values of GNP-PI were replaced by actual values. This had the effect of increasing all of the X-Factors computed from the period including the 1984/85 data point by 0.3% (except the traffic sensitive X-Factor, which increased by 0.2%), and increasing all of the X-Factors computed from the period excluding the 1984/85 data point by 0.2%. The balanced 50/50 unitary X-Factor was 5.2% when the 1984/85 data point was excluded.

Attachment C contains the workpapers showing the calculations used to determine the X-Factors for the base case.

Belinfante-Uretsky
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Attachment A

X-Factors
From Staff Revision to
FCC Short-Term Study

	Original Study	New Study		
		Including 1984	Excluding 1984	Difference
Unitary Balanced 50/50	3.5%	3.4%	5.0%	1.6%
Unitary Per Line	3.0%	2.5%	4.0%	1.5%
Common Line - Balanced 50/50	3.3%	3.5%	5.0%	1.5%
Common Line - Per Line	2.3%	1.6%	3.0%	1.4%
Traffic Sensitive	3.6%	3.4%	5.0%	1.6%

X-Factors
Using Alternate Methods
FCC Short-Term Study

Including 1984

	Base Case	Constant SLCs	NPV Closure	Actual GNP-PI
Unitary Balanced 50/50	3.4%	3.4%	3.4%	3.7%
Unitary Per Line	2.5%	2.5%	2.5%	2.8%
Common Line - Balanced 50/50	3.5%	3.5%	3.4%	3.8%
Common Line - Per Line	1.6%	1.6%	1.6%	1.9%
Traffic Sensitive	3.4%	3.4%	3.4%	3.6%

Excluding 1984

	Base Case	Constant SLCs	NPV Closure	Actual GNP-PI
Unitary Balanced 50/50	5.0%	5.0%	5.0%	5.2%
Unitary Per Line	4.0%	4.0%	4.0%	4.2%
Common Line - Balanced 50/50	5.0%	5.0%	4.9%	5.2%
Common Line - Per Line	3.0%	3.0%	3.0%	3.2%
Traffic Sensitive	5.0%	5.0%	5.0%	5.2%

Difference

	Base Case	Constant SLCs	NPV Closure	Actual GNP-PI
Unitary Balanced 50/50	1.6%	1.6%	1.6%	1.5%
Unitary Per Line	1.5%	1.5%	1.6%	1.5%
Common Line - Balanced 50/50	1.6%	1.6%	1.5%	1.5%
Common Line - Per Line	1.4%	1.4%	1.4%	1.4%
Traffic Sensitive	1.7%	1.7%	1.7%	1.6%

WORKPAPERS

Belinfante–Uretsky
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Path1T computes X factors using Period 6 closure and historical SLCs.
It computes the non–unitary per line and balanced 50/50 X's and the traffic sensitive X's as well as the unitary X's for per line and balanced 50/50 formula.
It uses trend GNP–PI.
To print entire chart, invoke macro by keying {Alt m}
However, first make sure that your printer is initialized to landscape.

```
:prcrs{CE}          \M          A:C6..A:C6
A:A1..A:H
64
~
g:prcrs{CE}
B:A1..B:K
54
~
g:prs{CE}
B:A56..B:
H85~
g:prs{CE}
B:A86..B:
K123~
g:prs{CE}
B:A124..B
:H168~
g:prcrs{CE}
C:A1..C:L
61
~
g:prs{CE}
C:A62..C:
H121~
g:prs{CE}
C:A122..C
:H179~
g:prcrs{CE}
D:A1..D:L
61
~
g:prs{CE}
D:A62..D:
H121~
g:prs{CE}
D:A122..D
:H179~
g:prcrs{CE}
E:A1..E:F
107
~
copqg:prs
{CE}
E:A106..E
:M177~
colqg:prs
{CE}
E:A178..E
:K244~
g:prs{CE}
E:A245..E
:K304~g
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UNITARY X–FACTOR FOR PLX–1
Assumes (1) per line formula; (2) historical SLC; (3) CL/MOU iteration; and (4) close to Period 6 revenue.

Unitary X–Factor	2.5%
CL X–Factor	1.6%
TS X–Factor	3.4%

	Revenue
Period 6 Trend Rev	$18,053,734,777
Period 6 Non–Unitary Rev	$18,053,734,777
Period 6 Unitary Rev	$18,053,734,777
Delta of Non–U and U	($0)
%Delta	–0.00%

TREND LINE ESTIMATES

TREND	CL/MOU	TS/MOU	Tot SW/MOU	CL MOU/Line	CL Rev	CL MOU	Sub Lines	TS Rev	TS MOU
7	$0.033451	$0.026361	$0.059799	1.8379	$6,732,610	201,270,167	109,511,003	$4,885,929	185,344,888
19	$0.032831	$0.026423	$0.059089	1.9220	$7,083,714	217,083,083	112,948,924	$5,390,249	204,000,029
32	$0.031766	$0.026490	$0.058289	2.0174	$7,484,766	235,618,882	116,795,236	$5,995,503	226,334,707
50	$0.030807	$0.026582	$0.057225	2.1573	$8,077,831	263,924,367	122,338,076	$6,947,334	261,352,275
63.5	$0.029765	$0.026652	$0.056440	2.2687	$8,553,287	287,363,855	126,667,160	$7,759,121	291,127,098
80	$0.028767	$0.026738	$0.055495	2.4125	$9,172,520	318,856,903	132,166,839	$8,881,214	332,163,187

TREND DATA FROM REGRESSIONS:

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
CL/MOU	$0.033451	$0.032831	$0.031766	$0.030807	$0.029765	$0.028767
CL MOU	201,270,166,812	217,083,083,072	235,618,882,556	263,924,366,644	287,363,855,226	318,856,903,283
CL Revenue	$6,732,609,882	$7,083,714,084	$7,484,766,869	$8,077,830,857	$8,553,286,923	$9,172,520,454
TS/MOU	$0.026361	$0.026423	$0.026490	$0.026582	$0.026652	$0.026738
TS MOU	185,344,888,272	204,000,029,350	226,334,707,343	261,352,274,797	291,127,097,737	332,163,186,928
TS Revenue	$4,885,929,185	$5,390,249,178	$5,995,503,424	$6,947,333,801	$7,759,121,440	$8,881,214,323
Total Revenue	$11,618,539,066	$12,473,963,262	$13,480,272,313	$15,025,164,658	$16,312,368,363	$18,053,734,777

DATA FROM NON–UNITARY PLX1

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	109,511,003	112,948,924	116,795,236	122,338,076	126,667,160	132,166,839
SLC Revenue	$1,290,747,267	$2,476,603,862	$3,669,936,550	$4,589,327,058	$5,687,174,696	$6,030,545,461
CCL Rate	$0.027036	$0.021223	$0.016191	$0.013218	$0.009974	$0.009654
CL MOU	201,270,166,812	217,083,083,072	235,618,882,556	263,924,366,644	287,363,855,226	318,856,903,283
CCL Revenue	$5,441,882,595	$4,607,110,222	$3,814,832,339	$3,488,503,799	$2,866,092,227	$3,141,974,993
Total CL Revenue	$6,732,609,882	$7,083,714,084	$7,484,766,869	$8,077,830,857	$8,553,286,923	$9,172,520,454
TS/MOU	$0.026361	$0.026423	$0.026490	$0.026582	$0.026652	$0.026738
TS MOU	185,344,888,272	204,000,029,350	226,334,707,343	261,352,274,797	291,127,097,737	332,163,186,928
TS Revenue	$4,885,929,185	$5,390,249,178	$5,995,503,424	$6,947,333,801	$7,759,121,440	$8,881,214,323
Total Revenue	$11,618,539,066	$12,473,963,262	$13,480,272,313	$15,025,164,658	$16,312,368,363	$18,053,734,777

DATA FROM UNITARY PLX1

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	109,511,003	112,948,924	116,795,238	122,338,076	126,667,160	132,166,839
SLC Revenue	$1,290,747,287	$2,476,603,862	$3,669,936,550	$4,589,327,058	$5,687,174,696	$6,030,545,461
CCL Rate	$0.027038	$0.020934	$0.015608	$0.012258	$0.008753	$0.008339
CL MOU	201,270,166,812	217,083,063,072	235,618,662,556	263,924,366,644	287,363,655,226	318,856,903,283
CCL Revenue	$5,441,862,595	$4,544,406,673	$3,677,465,645	$3,235,199,616	$2,515,420,356	$2,659,029,052
Total CL Revenue	$6,732,609,882	$7,021,010,535	$7,347,402,196	$7,824,526,674	$8,202,595,052	$8,689,574,513
TS/MOU	$0.026361	$0.026654	$0.026974	$0.027424	$0.027767	$0.028191
TS MOU	185,344,688,272	204,000,029,350	226,334,707,343	261,352,274,797	291,127,097,737	332,163,186,928
TS Revenue	$4,885,929,185	$5,437,372,501	$6,105,217,841	$7,167,439,605	$8,083,718,846	$9,364,160,264
Total Revenue	$11,618,539,068	$12,458,383,037	$13,452,620,037	$14,991,966,279	$16,286,313,898	$18,053,734,777

DELTA BETWEEN NON–UNITARY AND TREND

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
CL Revenue	$0	($0)	($0)	($0)	($0)	($0)
TS Revenue	$0	($0)	($0)	($0)	($0)	($0)
Total Revenue	$0	($0)	($0)	($0)	($0)	($0)

DELTA BETWEEN UNITARY AND NON–UNITARY

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
SLC Revenue	$0	$0	$0	$0	$0	$0
CCL Revenue	$0	($62,703,549)	($137,366,693)	($253,304,183)	($350,671,871)	($482,945,941)
TS Revenue	$0	$47,123,323	$109,714,417	$220,105,804	$324,597,406	$482,945,941
Total Revenue	$0	($15,580,226)	($27,652,276)	($33,198,379)	($26,074,465)	$0

UNITARY X-FACTOR FOR BFX1

Assumes (1) balance 50/50 formula; (2) historical SLC; (3) CL/MOU iteration; and (4) close to Period 6 revenue.

Unitary X-Factor	3.4%
CL X-Factor	3.5%
TS X-Factor	3.4%

	Revenue
Period 6 Trend Rev	$18,053,734,777
Period 6 Non-Unitary Rev	$18,053,734,777
Period 6 Unitary Rev	$18,053,734,777
Delta of Non-U and U	($0)
%Delta	-0.00%

TREND LINE ESTIMATES

TREND	CL/MOU	TS/MOU	Tot SW/MOU	CL MOU/Line	CL Rev	CL MOU	Sub Lines	TS Rev	TS MOU
7	$0.033451	$0.026361	$0.059799	1.8379	$6,732,610	201,270,167	109,511,003	$4,865,929	185,344,666
19	$0.032631	$0.026423	$0.059069	1.9220	$7,083,714	217,083,083	112,948,924	$5,390,249	204,000,029
32	$0.031766	$0.026490	$0.058269	2.0174	$7,484,769	235,618,663	116,795,236	$5,995,503	226,334,707
50	$0.030607	$0.026592	$0.057225	2.1573	$8,077,831	263,924,367	122,338,076	$6,947,334	261,352,275
63.5	$0.029765	$0.026652	$0.056440	2.2887	$8,553,267	287,363,655	126,667,160	$7,759,121	291,127,098
80	$0.028767	$0.026736	$0.055495	2.4125	$9,172,520	318,856,903	132,166,839	$8,881,214	332,163,187

TREND DATA FROM REGRESSIONS:

	Period 1 6/84 - 5/85	Period 2 6/85 - 5/86	Period 3 7/86 - 6/87	Period 4 1988	Period 5 4/89 - 12/89	Period 6 7/909 - 6/91
CL/MOU	$0.033451	$0.032631	$0.031766	$0.030607	$0.029765	$0.028767
CL MOU	201,270,166,812	217,083,083,072	235,618,662,556	263,924,366,644	287,363,655,226	318,856,903,263
CL Revenue	$6,732,609,862	$7,083,714,094	$7,484,768,869	$8,077,830,857	$8,553,266,823	$9,172,520,454
TS/MOU	$0.026361	$0.026423	$0.026490	$0.026592	$0.026652	$0.026736
TS MOU	185,344,666,272	204,000,029,350	226,334,707,343	261,352,274,797	291,127,097,737	332,163,186,928
TS Revenue	$4,865,929,185	$5,390,249,178	$5,995,503,424	$6,947,333,801	$7,759,121,440	$8,881,214,323
Total Revenue	$11,618,539,066	$12,473,963,262	$13,480,272,313	$15,025,164,658	$16,312,388,363	$18,053,734,777

DATA FROM NON-UNITARY PLX1

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	109,511,003	112,948,924	116,795,238	122,338,076	126,667,160	132,166,839
SLC Revenue	$1,290,747,287	$2,476,603,862	$3,669,936,550	$4,589,327,058	$5,687,174,696	$6,030,545,461
CCL Rate	$0.027038	$0.021076	$0.016032	$0.012996	$0.009942	$0.009854
CL MOU	201,270,166,812	217,083,063,072	235,618,662,556	263,924,366,644	287,363,655,226	318,856,903,283
CCL Revenue	$5,441,862,595	$4,575,175,616	$3,777,542,945	$3,429,910,651	$2,856,900,215	$3,141,974,993
Total CL Revenue	$6,732,609,882	$7,051,779,478	$7,447,479,495	$8,019,237,709	$8,544,074,911	$9,172,520,454
TS/MOU	$0.026361	$0.026423	$0.026490	$0.026582	$0.026652	$0.026738
TS MOU	185,344,688,272	204,000,029,350	226,334,707,343	261,352,274,797	291,127,097,737	332,163,186,928
TS Revenue	$4,885,929,185	$5,390,249,178	$5,995,503,424	$6,947,333,801	$7,759,121,440	$8,881,214,323
Total Revenue	$11,618,539,068	$12,442,028,656	$13,442,982,919	$14,966,571,510	$16,303,196,351	$18,053,734,777

DATA FROM UNITARY PLX1

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	109,511,003	112,948,924	116,795,238	122,338,076	126,667,160	132,166,839
SLC Revenue	$1,290,747,287	$2,476,603,862	$3,669,936,550	$4,589,327,058	$5,687,174,696	$6,030,545,461
CCL Rate	$0.027038	$0.021095	$0.016072	$0.013061	$0.010026	$0.009959
CL MOU	201,270,166,812	217,083,063,072	235,618,662,556	263,924,366,644	287,363,655,226	318,856,903,283
CCL Revenue	$5,441,862,595	$4,579,364,280	$3,786,799,389	$3,447,186,227	$2,881,033,001	$3,175,578,671
Total CL Revenue	$6,732,609,882	$7,055,968,142	$7,456,735,940	$8,036,513,285	$8,568,207,697	$9,206,124,132
TS/MOU	$0.026361	$0.026406	$0.026455	$0.026523	$0.026574	$0.026636
TS MOU	185,344,688,272	204,000,029,350	226,334,707,343	261,352,274,797	291,127,097,737	332,163,186,928
TS Revenue	$4,885,929,185	$5,386,891,266	$5,987,724,880	$6,931,837,917	$7,736,389,392	$8,847,610,645
Total Revenue	$11,618,539,068	$12,442,859,408	$13,444,460,820	$14,968,351,202	$16,304,597,089	$18,053,734,777

DELTA BETWEEN NON-UNITARY AND TREND

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
CL Revenue	$0	($31,934,606)	($37,289,394)	($58,593,148)	($9,192,012)	($0)
TS Revenue	$0	($0)	($0)	($0)	($0)	($0)
Total Revenue	$0	($31,934,606)	($37,289,394)	($58,593,148)	($9,192,012)	($0)

DELTA BETWEEN UNITARY AND NON-UNITARY

	Period 1 6/84 – 5/85	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
SLC Revenue	$0	$0	$0	$0	$0	$0
CCL Revenue	$0	$4,188,664	$9,256,445	$17,275,576	$24,132,786	$33,603,678
TS Revenue	$0	($3,357,912)	($7,778,544)	($15,495,884)	($22,732,048)	($33,603,678)
Total Revenue	$0	$830,752	$1,477,901	$1,779,692	$1,400,738	$0

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March 29, 1995

UNITARY X

This spreadsheet calculates the per line and balanced 50/50 CL X–factor as well as the TS X–Factor
Chart PLX1 calculates the per line X, given beginning and
ending CL/MOU rates from trend. Chart PLX1 also calculates an ending CCL rate, which
is needed as input to balanced 50/50 chart
Chart BFX1 calculates the balanced
50/50 X, given beginning CL/MOU rate, the ending CCL rate from Chart PLX1, and the
SLCs from Chart PLX1.

TREND LINE ESTIMATES

TREND	Annualization Factors	CL/MOU	TS/MOU	Tot SW/MOU	CL MOU/Line	CL Rev	CL MOU	Sub Lines	TS Rev	TS MOU
7	NA	$0.033451	$0.026391	$0.059799	1.637999	$6,732,610	201,270,167	109,511,003	$4,865,929	165,344,666
19	1.0000	$0.033531	$0.026483	$0.059969	1.621666	$7,083,714	217,083,069	112,949,924	$5,360,249	204,000,029
32	1.0293	$0.031765	$0.026460	$0.058289	2.017365	$7,484,769	235,616,666	116,765,238	$5,898,603	229,334,707
50	1.0000	$0.030557	$0.026662	$0.057225	2.157339	$8,077,631	259,924,367	122,338,076	$6,947,334	261,352,275
63.5	1.1259	$0.029765	$0.026662	$0.056440	2.289652	$8,553,297	287,383,665	128,667,160	$7,769,121	291,127,066
80	1.3750	$0.029767	$0.026738	$0.056465	2.412533	$9,172,560	318,856,908	132,166,639	$8,661,214	332,163,167

ACTUALS

TREND	Unadjusted CL Rev	Unadjusted SLC Rev	Actual Lines	SLCs
7	$6,333,273	$1,298,104	109,995,469	$0.66
19	$7,141,552	$2,494,666	113,316,244	$1.83
32	$8,049,472	$3,846,946	116,063,662	$2.62
50	$8,280,317	$4,563,679	121,654,374	$3.13
63.5	$8,666,394	$5,676,620	128,432,061	$3.74
80	$9,663,314	$6,069,004	133,009,705	$3.80

Calculation of Annual Change in GNPPI

	GNPPI	Change In GNPPI	Estimated GNP–PI	
4Q/83	227.6		105.5	
4Q/84	237.1	0.0417	109.3	0.0360
4Q/84	110		109.3	
4Q/85	113.8	0.0345	113.3	0.0360
2Q/86	114.7		115.3	
2Q/87	118.6	0.0340	119.5	0.0360
3Q/87	119.7		120.5	
3Q/88	124.9	0.0434	124.9	0.0360
4Q/88	128.2		128.0	
4Q/89	131.4	0.0412	130.5	0.0360

ANNUAL FACTORS

PERIOD	Change In GNPPI	g–factor
1	NA	NA
2	3.6036%	4.5736%
3	3.6036%	4.5736%
4	3.6036%	4.5736%
5	3.6036%	4.5736%
6	3.6036%	4.5736%

CHART PLX1

1	CL X-FACTOR	2.5%					
2	Beginning CL/MOU rate from trend	$0.03345					
3	Ending CL/MOU Rate from trend	$0.02877					
4	Ending CL/MOU Rate for Chosen X	$0.02725					
5	Delta for Ending CL/MOU	$0.00151					
6	% Delta	5.27%					
7							
8	PARAMETERS						
9	Growth in CL MOU	7.8566%					
10	Growth in Subscriber Lines	3.1393%					
11	Growth in MOU/Line: g-factor	4.5736%					
12							
13	CALCULATIONS						
14		Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
15		6/84 - 5/85	6/85 - 5/86	7/86 - 6/87	1988	4/89 - 12/89	7/909 - 6/91
16	Step 1: Factors						
17	GNP-PI percent change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
18	CL X-Factor	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
19	g-factor	4.57%	4.57%	4.57%	4.57%	4.57%	4.57%
20	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
21	Step 2: Calculating CL/MOU(t) from PCI						
22	CL/MOU (t-1)	NA	$0.033451	$0.032343	$0.031183	$0.029647	$0.028544
23	PCI (t-1)	NA	100.00	96.69	93.22	88.63	85.33
24	1 + % Change in PCI	NA	96.69%	96.42%	95.07%	96.28%	95.47%
25	PCI (t)	100.00	96.69	93.22	88.63	85.33	81.47
26	CL/MOU (t)	$0.033451	$0.032343	$0.031183	$0.029647	$0.028544	$0.027252
27	Step 3: Calc of SLC/MOU(t)						
28	Monthly SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
29	CL MOU per line per month	153.2	160.2	166.1	179.6	189.1	201.0
30	Lagged CL MOU/line/month * (1+g)	153.2	160.2	166.1	179.6	189.1	201.0
31	SLC/MOU(t)	$0.006413	$0.011409	$0.015576	$0.017389	$0.019791	$0.018913
32	Step 4: Calc CCL Rate	$0.027038	$0.020934	$0.015608	$0.012258	$0.008753	$0.008339
33							
34							
35	CHART TS						
36							
37	TS X-FACTOR	2.5%					
38	Beginning TS/MOU rate from trend	$0.026361					
39	Ending TS/MOU Rate from trend	$0.026736					
40	Ending TS/MOU Rate for Chosen X	$0.026191					
41	Delta for Ending TS/MOU	($0.001454)					
42	% Delta	-5.436%					
43							
44							
45	CALCULATIONS	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
46		6/84 - 5/85	6/85 - 5/86	7/86 - 6/87	1988	4/89 - 12/89	7/909 - 6/91
47	Step 1: Factors						
48	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
49	GNP-PI Percentage Change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
50	TS X-Factor	NA	2.5%	2.5%	2.5%	2.5%	2.5%
51	Step 2: Calculate TS/MOU						
52	TS/MOU (t-1)	NA	$0.026361	$0.026654	$0.026974	$0.027424	$0.027767
53	PCI (t-1)	NA	100.00	101.11	102.33	104.03	105.33
54	1 + % Change in PCI	NA	101.109%	101.202%	101.669%	101.249%	101.529%
55	PCI (t)	100.00	101.11	102.33	104.03	105.33	106.94
56	TS/MOU (t)	$0.026361	$0.026654	$0.026974	$0.027424	$0.027767	$0.028191

CHART BFX1

1	CL X–Factor	3.4%					
2	Begining CL/MOU rate from trend	$0.03345					
3	Ending CCL/MOU Rate from PLX1 Non–Unitary	$0.00985					
4	Ending CCL/MOU rate for chosen X	$0.00996					
5	Delta for Ending CL/MOU	($0.00011)					
6	% Delta	–1.07%					
7							
8	PARAMETERS						
9	Growth in CL MOU	7.8566%					
10	Growth in Subscriber Lines	3.1393%					
11	Growth in MOU/Line: g–factor	4.5736%					
12							
13	CALCULATIONS						
14		Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
15		6/84 – 5/85	6/85 – 5/86	7/86 – 6/87	1988	4/89 – 12/89	7/909 – 6/91
16	Step 1: Factors						
17	GNP–PI percent change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
18	CL X–Factor	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
19	g–factor	4.57%	4.57%	4.57%	4.57%	4.57%	4.57%
20	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
21	Step 2: Calculating CL/MOU(t) from PCI						
22	CL/MOU (t–1)	NA	$0.033451	$0.032759	$0.032025	$0.031036	$0.030315
23	PCI (t–1)	NA	100.00	97.93	95.74	92.78	90.63
24	1 + % Change in PCI	NA	97.93%	97.76%	96.91%	97.68%	97.17%
25	PCI (t)	100.00	97.93	95.74	92.78	90.63	88.06
26	CL/MOU (t)	$0.033451	$0.032759	$0.032025	$0.031036	$0.030315	$0.029456
27	Step 3: Calc of SLC/MOU(t)						
28	Monthly SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
29	CL MOU per line per month	153.2	160.2	168.1	179.8	189.1	201.0
30	Lagged CL MOU/line/month * (1+g/2)	153.2	156.7	164.1	173.9	184.4	195.0
31	SLC/MOU(t)	$0.006413	$0.011684	$0.015953	$0.017975	$0.020289	$0.019497
32	Step 4: Calc CCL Rate	$0.027038	$0.021095	$0.016072	$0.013061	$0.010026	$0.009959
33							
34							
35	CHART TS						
36							
37	TS X–FACTOR	3.4%					
38	Beginning TS/MOU rate from trend	$0.026361					
39	Ending TS/MOU Rate from trend	$0.026736					
40	Ending TS/MOU Rate for Chosen X	$0.026636					
41	Delta for Ending TS/MOU	$0.000101					
42	% Delta	0.378%					
43							
44							
45	CALCULATIONS	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
46		6/84 – 5/85	6/85 – 5/86	7/86 – 6/87	1988	4/89 – 12/89	7/909 – 6/91
47	Step 1: Factors						
48	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
49	GNP–PI Percentage Change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
50	TS X–Factor	NA	3.4%	3.4%	3.4%	3.4%	3.4%
51	Step 2: Calculate TS/MOU						
52	TS/MOU (t–1)	NA	$0.026361	$0.026406	$0.026455	$0.026523	$0.026574
53	PCI (t–1)	NA	100.00	100.17	100.36	100.61	100.81
54	1 + % Change in PCI	NA	100.171%	100.185%	100.256%	100.192%	100.235%
55	PCI (t)	100.00	100.17	100.36	100.61	100.81	101.04
56	TS/MOU (t)	$0.026361	$0.026406	$0.026455	$0.026523	$0.026574	$0.026636

Belinfante-Uretsky
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March 29, 1995

NON-UNITARY X
This spreadsheet calculates the per line and balanced 50/50 CL X-factor as well as the TS X-Factor
Chart PLX1 calculates the per line X, given beginning and
ending CL/MOU rates from trend. Chart PLX1 also calculates an ending CCL rate, which
is needed as input to balanced 50/50 chart.
Chart BFX1 calculates the balanced
50/50 X, given beginning CL/MOU rate, the ending CCL rate from Chart PLX1, and the
SLCs from Chart PLX1.

TREND LINE ESTIMATES

TREND	Annualization Factors	CL/MOU	TS/MOU	Tot SW/MOU	CL MOU/Line	CL Rev	CL MOU	Sub Lines	TS Rev	TS MOU
7	NA	$0.033451	$0.026361	$0.059799	1.837899	$6,732,610	201,270,167	109,511,003	$4,665,929	185,344,688
19	1.0000	$0.032831	$0.026423	$0.059089	1.921958	$7,083,714	217,083,083	112,948,924	$5,390,249	204,000,029
32	1.0833	$0.031768	$0.026490	$0.058289	2.017365	$7,464,769	235,618,683	116,795,236	$5,895,503	228,334,707
50	1.5000	$0.030807	$0.026562	$0.057285	2.157336	$8,077,631	263,924,367	122,339,078	$6,947,334	261,352,275
63.5	1.1250	$0.028765	$0.026652	$0.058440	2.288652	$8,553,287	287,383,655	128,667,160	$7,759,121	291,127,098
80	1.3750	$0.028767	$0.026736	$0.055495	2.412533	$9,172,520	318,656,803	132,166,839	$8,881,214	332,163,167

ACTUALS

TREND	Unadjusted CL Rev	Unadjusted SLC Rev	Actual Lines	SLCs
7	$6,333,273	$1,298,104	109,965,483	$0.98
19	$7,141,592	$2,484,888	113,316,244	$1.83
32	$8,049,472	$3,646,949	116,083,662	$2.62
50	$8,220,317	$4,563,679	121,654,374	$3.13
63.5	$8,528,394	$5,676,620	126,432,081	$3.74
80	$8,863,314	$6,089,004	133,009,705	$3.80

Calculation of Annual Change in GNPPI

		GNPPI	Change in GNPPI	Estimated GNP-PI	
-5.5	4Q/83	227.6		105.5	
6.5	4Q/84	237.1	0.0417	109.3	0.0360
6.5	4Q/84	110		109.3	
18.5	4Q/85	113.8	0.0345	113.3	0.0360
24.5	2Q/86	114.7		115.3	
36.5	2Q/87	118.6	0.0340	119.5	0.0360
39.5	3Q/87	119.7		120.5	
51.5	3Q/88	124.9	0.0434	124.9	0.0360
54.5	4Q/88	126.2		126.0	
66.5	4Q/89	131.4	0.0412	130.5	0.0360

ANNUAL FACTORS

PERIOD	Change in GNPPI	g-factor
1	3.6036%	NA
2	3.6036%	4.5736%
3	3.6036%	4.5736%
4	3.6036%	4.5736%
5	3.6036%	4.5736%
6	3.6036%	4.5736%

CHART PLX1

1	CL X-FACTOR			1.6%			
2	Beginning CL/MOU rate from trend			$0.03345			
3	Ending CL/MOU Rate from trend			$0.02877			
4	Ending CL/MOU Rate for Chosen X			$0.02877			
5	Delta for Ending CL/MOU			$0.00000			
6	% Delta			0.00%			
7							
8	PARAMETERS						
9	Growth in CL MOU			7.6666%			
10	Growth in Subscriber Lines			3.1363%			
11	Growth in MOU/Line: g-factor			4.5736%			
12							
13	CALCULATIONS						
14		Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
15		6/84 - 5/85	6/85 - 5/86	7/86 - 6/87	1988	4/89 - 12/89	7/909 - 6/91
16	Step 1: Factors						
17	GNP-PI percent change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
18	CL X-Factor	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
19	g-factor	4.57%	4.57%	4.57%	4.57%	4.57%	4.57%
20	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
21	Step 2: Calculating CL/MOU(t) from PCI						
22	CL/MOU (t-1)	NA	$0.033451	$0.032831	$0.031766	$0.030807	$0.029765
23	PCI (t-1)	NA	100.00	97.55	94.97	91.50	88.98
24	1 + % Change in PCI	NA	97.55%	97.35%	96.35%	97.26%	96.65%
25	PCI (t)	100.00	97.55	94.97	91.50	88.98	86.00
26	CL/MOU (t)	$0.033451	$0.032831	$0.031766	$0.030807	$0.029765	$0.028767
27	Step 3: Calc of SLC/MOU(t)						
28	Monthly SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
29	CL MOU per line per month	153.2	160.2	168.1	179.8	189.1	201.0
30	Lagged CL MOU/line/month * (1+g)	153.2	160.2	168.1	179.8	189.1	201.0
31	SLC/MOU(t)	$0.006413	$0.011409	$0.015576	$0.017389	$0.019791	$0.018913
32	Step 4: Calc CCL Rate	$0.027038	$0.021223	$0.016191	$0.013218	$0.009974	$0.009854
33							
34							
35	CHART TS						
36							
37	TS X-FACTOR			3.4%			
38	Beginning TS/MOU rate from trend			$0.026361			
39	Ending TS/MOU Rate from trend			$0.026738			
40	Ending TS/MOU Rate for Chosen X			$0.026738			
41	Delta for Ending TS/MOU			$0.000000			
42	% Delta			0.000%			
43							
44							
45	CALCULATIONS	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
46		6/84 - 5/85	6/85 - 5/86	7/86 - 6/87	1988	4/89 - 12/89	7/909 - 6/91
47	Step 1: Factors						
48	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
49	GNP-PI Percentage Change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
50	TS X-Factor	NA	3.4%	3.4%	3.4%	3.4%	3.4%
51	Step 2: Calculate TS/MOU						
52	TS/MOU (t-1)	NA	$0.026361	$0.026423	$0.026490	$0.026562	$0.026652
53	PCI (t-1)	NA	100.00	100.23	100.49	100.84	101.10
54	1 + % Change in PCI	NA	100.233%	100.253%	100.350%	100.262%	100.321%
55	PCI (t)	100.00	100.23	100.49	100.84	101.10	101.43
56	TS/MOU (t)	$0.026361	$0.026423	$0.026490	$0.026562	$0.026652	$0.026738

CHART BFX1

1	CL X-Factor	3.5%
2	Begining CL/MOU rate from trend	$0.03345
3	Ending CCL/MOU Rate from PLX1	$0.00985
4	Ending CCL/MOU rate for chosen X	$0.00985
5	Delta for Ending CL/MOU	$0.00000
6	% Delta	0.00%
7		
8	PARAMETERS	
9	Growth in CL MOU	7.8566%
10	Growth in Subscriber Lines	3.1393%
11	Growth in MOU/Line: g-factor	4.5736%
12		
13	CALCULATIONS	

		Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
14							
15		6/84 – 5/85	6/85 – 5/86	7/86 – 6/87	1988	4/89 – 12/89	7/909 – 6/91
16	Step 1: Factors						
17	GNP-PI percent change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
18	CL X-Factor	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
19	g-factor	4.57%	4.57%	4.57%	4.57%	4.57%	4.57%
20	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
21	Step 2: Calculating CL/MOU(t) from PCI						
22	CL/MOU (t-1)	NA	$0.033451	$0.032739	$0.031986	$0.030971	$0.030231
23	PCI (t-1)	NA	100.00	97.87	95.82	92.59	90.36
24	1 + % Change in PCI	NA	97.87%	97.70%	96.83%	97.61%	97.09%
25	PCI (t)	100.00	97.87	95.82	92.59	90.36	87.74
26	CL/MOU (t)	$0.033451	$0.032739	$0.031986	$0.030971	$0.030231	$0.029351
27	Step 3: Calc of SLC/MOU(t)						
28	Monthly SLC	$0.98	$1.83	$2.62	$3.13	$3.74	$3.80
29	CL MOU per line per month	153.2	160.2	168.1	179.8	189.1	201.0
30	Lagged CL MOU/line/month * (1+g/2)	153.2	156.7	164.1	173.9	184.4	195.0
31	SLC/MOU(t)	$0.006413	$0.011664	$0.015953	$0.017975	$0.020289	$0.019497
32	Step 4: Calc CCL Rate	$0.027038	$0.021076	$0.016032	$0.012986	$0.009942	$0.009854
33							
34							
35	CHART TS						
36							
37	TS X-FACTOR	3.4%					
38	Beginning TS/MOU rate from trend	$0.026361					
39	Ending TS/MOU Rate from trend	$0.026736					
40	Ending TS/MOU Rate for Chosen X	$0.026736					
41	Delta for Ending TS/MOU	$0.000000					
42	% Delta	0.000%					
43							
44							
45	CALCULATIONS	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
46		6/84 – 5/85	6/85 – 5/86	7/86 – 6/87	1988	4/89 – 12/89	7/909 – 6/91
47	Step 1: Factors						
48	Annualization Factor	NA	1.000	1.083	1.500	1.125	1.375
49	GNP-PI Percentage Change	NA	3.6%	3.6%	3.6%	3.6%	3.6%
50	TS X-Factor	NA	3.4%	3.4%	3.4%	3.4%	3.4%
51	Step 2: Calculate TS/MOU						
52	TS/MOU (t-1)	NA	$0.026361	$0.026423	$0.026490	$0.026582	$0.026652
53	PCI (t-1)	NA	100.00	100.23	100.49	100.84	101.10
54	1 + % Change in PCI	NA	100.233%	100.253%	100.350%	100.262%	100.321%
55	PCI (t)	100.00	100.23	100.49	100.84	101.10	101.43
56	TS/MOU (t)	$0.026361	$0.026423	$0.026490	$0.026582	$0.026652	$0.026736

Beinlarto–Uretsky
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March 29, 1995

CALCULATION OF "TREND" VARIABLE for middle of each access period:

10 Oct 1	1993	−7	
11 Nov 1	1993	−6	
12 Dec 1	1993	−5	
1 Jan 1	1994	−4	
2 Feb 1	1994	−3	
3 Mar 1	1994	−2	
4 Apr 1	1994	−1	
5 May 1	1994	0	
6 June 1	1994	1	
7 July 1	1994	2	1
8 Aug 1	1994	3	2
9 Sep 1	1994	4	3
10 Oct 1	1994	5	4
11 Nov 1	1994	6	5
12 Dec 1	1994	7	end of 6
1 Jan 1	1995	8	
2 Feb 1	1995	9	
3 Mar 1	1995	10	
4 Apr 1	1995	11	
5 May 1	1995	12	
6 June 1	1995	13	
7 July 1	1995	14	1
8 Aug 1	1995	15	2
9 Sep 1	1995	16	3
10 Oct 1	1995	17	4
11 Nov 1	1995	18	5
12 Dec 1	1995	19	end of 6
1 Jan 1	1996	20	
2 Feb 1	1996	21	
3 Mar 1	1996	22	
4 Apr 1	1996	23	
5 May 1	1996	24	
6 June 1	1996	25	
7 July 1	1996	26	
8 Aug 1	1996	27	1
9 Sep 1	1996	28	2
10 Oct 1	1996	29	3
11 Nov 1	1996	30	4
12 Dec 1	1996	31	5
1 Jan 1	1997	32	end of 6
2 Feb 1	1997	33	
3 Mar 1	1997	34	
4 Apr 1	1997	35	
5 May 1	1997	36	
6 June 1	1997	37	
7 July 1	1997	38	
8 Aug 1	1997	39	
9 Sep 1	1997	40	
10 Oct 1	1997	41	
11 Nov 1	1997	42	
12 Dec 1	1997	43	
1 Jan 1	1998	44	
2 Feb 1	1998	45	1
3 Mar 1	1998	46	2
4 Apr 1	1998	47	3
5 May 1	1998	48	4
6 June 1	1998	49	5
7 July 1	1998	50	end of 6
8 Aug 1	1998	51	
9 Sep 1	1998	52	
10 Oct 1	1998	53	
11 Nov 1	1998	54	
12 Dec 1	1998	55	
1 Jan 1	1999	56	
2 Feb 1	1999	57	
3 Mar 1	1999	58	
4 Apr 1	1999	59	
5 May 1	1999	60	1
6 June 1	1999	61	2
7 July 1	1999	62	3
8 Aug 1	1999	63	4
		63.5	end of 4.5
9 Sep 1	1999	64	
10 Oct 1	1999	65	
11 Nov 1	1999	66	
12 Dec 1	1999	67	
1 Jan 1	1990	68	
2 Feb 1	1990	69	
3 Mar 1	1990	70	
4 Apr 1	1990	71	
5 May 1	1990	72	
6 June 1	1990	73	
7 July 1	1990	74	
8 Aug 1	1990	75	1
9 Sep 1	1990	76	2
10 Oct 1	1990	77	3
11 Nov 1	1990	78	4
12 Dec 1	1990	79	5
1 Jan 1	1991	80	end of 6
2 Feb 1	1991	81	
3 Mar 1	1991	82	
4 Apr 1	1991	83	
5 May 1	1991	84	
6 June 1	1991	85	
7 July 1	1991	86	
8 Aug 1	1991	87	
9 Sep 1	1991	88	
10 Oct 1	1991	89	
11 Nov 1	1991	90	
12 Dec 1	1991	91	

INPUT DATA FOR REGRESSION ANALYSIS FOR FRENTRUP–URETSKY STUDY
(000 MOU; tariff periods annualized)

	A	B	C	D	E	F	G	H	I	J	K
	TREND	Adj CL Rev	Adj CL MOU	CL/MOU	Adj TS Rev	TS MOU	TS/MOU	Tot Sw/MOU	Adj CL MOU	Sub Lines	CL MOU/Line
6/84–5/85	7	$6,333,273	207,772,422	$0.03048	$4,553,364	166,783,368	$0.02438	$0.0549	207,772,422	109,895,463	1.8894
6/85–5/86	19	$7,141,522	215,343,094	$0.03316	$5,804,779	201,168,517	$0.02886	$0.0810	215,343,094	113,316,244	1.9004
7/86–6/87	32	$8,049,472	224,625,813	$0.03584	$6,129,746	225,136,070	$0.02723	$0.0631	224,625,813	116,083,682	1.9354
1988	50	$8,220,317	265,823,867	$0.03092	$7,229,553	263,972,845	$0.02739	$0.0563	265,823,867	121,854,374	2.1851
4/89–12/89	63.5	$8,528,394	291,716,955	$0.02924	$8,001,639	295,351,330	$0.02709	$0.0563	291,716,955	126,432,061	2.3073
7/90–6/91	80	$8,863,314	319,439,082	$0.02775	$8,353,356	327,697,269	$0.02548	$0.0532	319,439,082	133,009,705	2.4016

NOTE: This data agrees with Chart RATE and Chart DATA in LEC Price Cap Order
SOURCES:
Col A: Midpoint of tariff period, using June 1, 1984 as 1.
Cols B and C: Chart RATE, LEC Price Cap Order.
Col D: B/C
Cols E and F: Chart RATE, LEC Price Cap Order.
Col G: E/F
Col H: D+G
Cols I and J: Chart RATE, LEC Price Cap Order.
Col K: I/J

REGRESSION TREND FOR CL/MOU

Intercept Dummy	TREND	CL/MOU	Ln(CL/MOU)	Estimated Ln(CL/MOU)	Estimated CL/MOU	Regression Output:		
1	7	0.030481779	−3.49062819	−3.39766525	0.03346061	Constant		0
1	19	0.033163461	−3.40630669	−3.42248170	0.03293135	Std Err of Y Est		0.07930379
1	32	0.035635027	−3.32662947	−3.44934452	0.03176845	R Squared		0.39360784
1	50	0.030923924	−3.47622516	−3.48653919	0.03060861	No. of Observations		6
1	63.5	0.029235167	−3.53238293	−3.51443520	0.02976461	Degrees of Freedom		4
1	80	0.027746492	−3.58464585	−3.54853032	0.02876669			
						X Coefficient(s)	−3.36322066	−0.00206837
						Std Err of Coef.	0.06275080	0.00126240
						t−value	−53.91516162	−1.61133216
						Annual growth rate		−2.45%

REGRESSION TREND FOR TS/MOU

Intercept Dummy	TREND	TS/MOU	Ln(TS/MOU)	Estimated Ln(TS/MOU)	Estimated TS/MOU	Regression Output:		
1	7	0.02437776	−3.71408317	−3.63665779	0.02636131	Constant		0
1	19	0.02765634	−3.58662274	−3.63362652	0.02642279	Std Err of Y Est		0.05737636
1	32	0.02722665	−3.60355169	−3.63100515	0.02646665	R Squared		0.01082344
1	50	0.02738752	−3.59766789	−3.62751125	0.02656226	No. of Observations		6
1	63.5	0.02709193	−3.60851920	−3.62499062	0.02665201	Degrees of Freedom		4
1	80	0.02547553	−3.67003695	−3.62166606	0.02673750			
						X Coefficient(s)	−3.63721653	0.00019411
						Std Err of Coef.	0.04540027	0.00092782
						t−value	−80.11442100	0.20920681
						Annual growth rate		0.23%

REGRESSION TREND FOR Tot SW/MOU

Intercept Dummy	TREND	Tot SW/MOU	Ln(Tot SW/MOU	Ln(Tot SW/MOU	Estimated Tot SW/MOU	Regression Output:		
1	7	0.05485656	−2.90297882	−2.81677147	0.05976669	Constant		0
1	19	0.06102181	−2.79652401	−2.82904826	0.05908805	Std Err of Y Est		0.06479166
1	32	0.06306166	−2.76363887	−2.84234612	0.05828664	R Squared		0.19246556
1	50	0.05831144	−2.84195694	−2.88076331	0.05722606	No. of Observations		6
1	63.5	0.05632710	−2.87657947	−2.87457470	0.05644014	Degrees of Freedom		4
1	80	0.05322202	−2.93326304	−2.89145526	0.05549539			
						X Coefficient(s)	−2.80961001	−0.00102307
						Std Err of Coef.	0.05126793	0.00104773
						t−value	−54.80248920	−0.97645680
						Annual growth rate		−1.22%

REGRESSION TREND FOR Tot CL MOU/Line

Intercept Dummy	TREND	Tot CL MOU/Line	Ln(CL MOU/Line)	Estimated Ln(CL MOU/Line)	Estimated CL MOU/Line
1	7	1.89943309	0.63627683	0.60962309	1.837899
1	19	1.90037259	0.64204997	0.65334434	1.921958
1	32	1.93536727	0.66026711	0.70179237	2.017365
1	50	2.18507447	0.78164991	0.76887424	2.157336
1	63.5	2.30730170	0.83607875	0.81918565	2.268652
1	80	2.40162236	0.87614449	0.89067737	2.412533

Regression Output:

Constant		0
Std Err of Y Est		0.02776369
R Squared		0.94513430
No. of Observations		6
Degrees of Freedom		4
X Coefficient(s)	0.58253570	0.00372677
Std Err of Coef.	0.02196860	0.00044896
t-value	26.51673671	8.30092168
Annual growth rate		4.59%

NOTES:
This data agrees with Chart REG and Chart TREND in LEC Price Cap Order.
Constant toggle in LOTUS is set to zero in order to force LOTUS to compute
constant as coefficient of dummy variable. Otherwise, LOTUS will not output stnd error associate with constant.
SOURCES:
Chart RATE and Chart DATA in LEC Price Cap Order

REGRESSION TREND FOR CL Rev ($000)

Intercept Dummy	TREND	CL Rev	Ln(CL Rev)	Estimated Ln(CL Rev)	Estimated CL Rev
1	7	$6,333,273	15.6613	15.7225	$6,732,610
1	19	$7,141,522	15.7814	15.7733	$7,083,714
1	32	$8,049,472	15.9011	15.8284	$7,484,769
1	50	$8,220,317	15.9221	15.9046	$8,077,831
1	63.5	$8,528,394	15.9589	15.9618	$8,553,267
1	80	$8,863,314	15.9974	16.0317	$9,172,520

Regression Output:

Constant		0
Std Err of Y Est		0.05144305
R Squared		0.86637006
No. of Observations		6
Degrees of Freedom		4
X Coefficient(s)	15.69281939	0.00423829
Std Err of Coef.	0.04070540	0.00083187
t-value	385.52179720	5.09248581
Annual growth rate		5.20%

REGRESSION TREND FOR CL MOU (000 MOU)

Intercept Dummy	TREND	CL MOU	Ln(CL MOU)	Estimated Ln(CL MOU)	Estimated CL MOU
1	7	207,772,422	19.1520	19.1202	201,270,167
1	19	215,343,084	19.1877	19.1958	217,083,063
1	32	224,625,813	19.2299	19.2777	235,618,863
1	50	265,823,867	19.3983	19.3912	263,924,367
1	63.5	291,716,955	19.4913	19.4763	287,383,655
1	80	319,439,082	19.5821	19.5803	318,856,903

Regression Output:

Constant		0
Std Err of Y Est		0.030163415
R Squared		0.97660356
No. of Observations		6
Degrees of Freedom		4
X Coefficient(s)	19.07604005	0.006302662
Std Err of Coef.	0.023867439	0.000487764
t-value	799.24955856	12.92153954
Annual growth rate		7.8310%

7.8566%

REGRESSION TREND FOR Lines

Intercept Dummy	TREND	Lines	Ln(Lines)	Estimated Ln(Lines)	Estimated Lines
1	7	109,965,483	18.5157	18.5115	109,511,003
1	19	113,316,244	18.5457	18.5424	112,948,924
1	32	116,063,662	18.5696	18.5759	116,795,238
1	50	121,654,374	18.6167	18.6223	122,338,076
1	63.5	126,432,081	18.6552	18.6571	126,667,160
1	80	133,009,705	18.7059	18.6996	132,106,839

Regression Output:

Constant		0
Std Err of Y Est		0.005967546
R Squared		0.994417563
No. of Observations		6
Degrees of Freedom		4
X Coefficient(s)	18.49350435	0.002575891
Std Err of Coef.	0.004721946	0.000096499
t-value	3916.50020017	26.69331238
Annual growth rate		3.14%

REGRESSION TREND FOR TS Rev

Intercept Dummy	TREND	TS Rev	Ln TS Rev	Estimated Ln TS Rev	Estimated TS Rev
1	7	$4,553,364	15.33137666	15.40167004	$4,885,929
1	19	$5,604,779	15.53913018	15.50010217	$5,390,249
1	32	$6,129,746	15.62866367	15.60652032	$5,995,503
1	50	$7,229,553	15.78366777	15.75398652	$6,947,334
1	63.5	$8,001,639	15.89515695	15.88437967	$7,759,121
1	80	$8,353,356	15.93617393	15.99944885	$8,861,214

Regression Output:

Constant		0
Std Err of Y Est		0.057598266
R Squared		0.95076588
No. of Observations		6
Degrees of Freedom		4
X Coefficient(s)	15.34456796	0.008166011
Std Err of Coef.	0.045575844	0.000931405
t-value	336.6620361	8.766663307
inst. annual growth rate		10.2776%
yr/yr annual growth rate		10.3219%

REGRESSION TREND FOR TS MOU

Intercept Dummy	TREND	TS MOU	Ln TS MOU	Estimated Ln TS MOU	Estimated TS MOU
1	7	166,783,366	19.04546003	19.03772783	185,344,666
1	19	201,166,517	19.11975292	19.13363070	204,000,029
1	32	225,136,070	19.23221553	19.23762547	226,334,707
1	50	263,972,545	19.39135566	19.36137977	261,352,275
1	63.5	295,351,330	19.50367615	19.46927049	291,127,096
1	80	327,897,259	19.60821066	19.62113663	332,163,187

Regression Output:

Constant		0
Std Err of Y Est		0.013735666
R Squared		0.996919706
No. of Observations		6
Degrees of Freedom		4
X Coefficient(s)	18.98178449	0.007991906
Std Err of Coef.	0.010866617	0.000222119
t-value	1746.444316	35.98024621
inst. annual growth rate		10.0233%
yr/yr annual growth rate		10.0652%

REGRESSION TREND FOR GNP-PI

Intercept Dummy	TREND	GNP-PI	Ln GNP-PI	Estimated Ln GNP-PI	Estimated GNP-PI
1	-5.5	105.6	4.65656607	4.65913739	105.5
1	6.5	110	4.70048037	4.69453974	109.3
1	18.5	113.8	4.73444252	4.72994209	113.3
1	24.5	114.7	4.74232002	4.74764327	115.3
1	36.5	118.6	4.77575649	4.78304562	119.5
1	39.5	119.7	4.78466961	4.79186621	120.5
1	51.5	124.9	4.82751342	4.82729957	124.9
1	54.5	126.2	4.83766795	4.83614915	126.0
1	66.5	131.4	4.87924611	4.87155151	130.5

Regression Output:

Constant		0
Std Err of Y Est		0.005766275
R Squared		0.994021212
No. of Observations		9
Degrees of Freedom		7
X Coefficient(s)	4.675363467	0.002950196
Std Err of Coef.	0.003404956	0.000066479

TREND LINE ESTIMATES

TREND	CL/MOU	TS/MOU	Tot SW/MOU	CL MOU/Line	CL Rev	CL MOU	Sub Lines	TS Rev	TS MOU
7	0.03345061	0.02636131	0.05979669	1.837669	$6,732,610	201,270,167	109,511,003	$4,885,929	185,344,666
19	0.03263135	0.02642279	0.05906905	1.921956	$7,083,714	217,083,063	112,948,924	$5,390,249	204,000,029
32	0.03176645	0.02646955	0.05823664	2.017365	$7,484,769	235,618,663	116,785,236	$5,995,503	226,334,707
50	0.03060661	0.02656226	0.05722506	2.157336	$8,077,631	263,924,367	122,336,076	$6,947,334	261,352,275
63.5	0.02976461	0.02665201	0.05644014	2.289652	$8,553,267	287,383,655	126,667,160	$7,759,121	291,127,096
80	0.02876669	0.02673750	0.05549539	2.412533	$9,172,520	318,856,903	132,166,839	$8,861,214	332,163,187

Belinfante–Uretsky
c:\pc\pathxt
March 29, 1995

Pathxt computes X factors excluding the 1984–85 data point.
Pathxt computes X factors using Period 6 closure and historical SLCs.
It computes the non–unitary per line and balanced 50/50 X's and the traffic sensitive X's as well as the unitary X's for per line and balanced 50/50 formula.
It uses trend value of GNP–PI
To print entire chart, invoke macro by keying {Alt m}
However, first make sure that your printer is initialized to landscape.

```
:prcrs{CE}          \M          A:C14..A:C14
A:A1..A:H
65
~
g:prcrs{CE}
B:A1..B:K
54
~
g:prs{CE}
B:A55..B:
H85~
g:prs{CE}
B:A86..B:
K123~
g:prs{CE}
B:A124..B
:H166~
g:prcrs{CE}
C:A1..C:L
61
~
g:prs{CE}
C:A62..C:
H121~
g:prs{CE}
C:A122..C
:H179~
g:prcrs{CE}
D:A1..D:L
61
~
g:prs{CE}
D:A62..D:
H121~
g:prs{CE}
D:A122..D
:H179~
g:prcrs{CE}
E:A1..E:F
104
~
copqg:prs
{CE}
E:A105..E
:M174~
colqg:prs
{CE}
E:A175..E
:K241~
g:prs{CE}
E:A242..E
:K301~g
```

Bellinfante–Uretsky
c:\pc\pathxt
March 29, 1995

UNITARY X–FACTOR FOR PLX–1
Assumes (1) per line formula; (2) historical SLC; (3) CL/MOU iteration; and (4) close to Period 6 revenue.

Unitary X–Factor	4.0%
CL X–Factor	3.0%
TS X–Factor	5.0%

	Revenue
Period 6 Trend Rev	$17,640,901,803
Period 6 Non–Unitary Rev	$17,640,901,800
Period 6 Unitary Rev	$17,640,901,800
Delta of Non–U and U	$0
%Delta	0.00%

TREND LINE ESTIMATES

TREND	CL/MOU	TS/MOU	Tot SW/MOU	CL MOU/Line	CL Rev	CL MOU	Sub Lines	TS Rev	TS MOU
19	$0.034924	$0.027977	$0.062909	1.8835	$7,407,332	212,098,552	112,607,890	$5,675,125	202,860,880
32	$0.033277	$0.027546	$0.060855	1.8897	$7,717,084	231,903,285	116,553,885	$6,210,546	225,461,548
50	$0.031124	$0.026860	$0.058122	2.1466	$8,167,466	262,414,197	122,246,888	$7,036,287	260,987,809
63.5	$0.029902	$0.026529	$0.056153	2.2724	$8,522,424	287,903,986	126,698,156	$7,726,874	291,280,121
80	$0.027841	$0.026012	$0.053837	2.4361	$8,977,275	322,444,300	132,359,585	$8,663,627	333,068,160

TREND DATA FROM REGRESSIONS:

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
CL/MOU	$0.034924	$0.033277	$0.031124	$0.029902	$0.027841
CL MOU	212,098,552,042	231,903,284,970	262,414,198,835	287,903,985,594	322,444,300,286
CL Revenue	$7,407,331,886	$7,717,083,561	$8,167,466,196	$8,522,424,024	$8,977,275,069
TS/MOU	$0.027977	$0.027546	$0.026860	$0.026529	$0.026012
TS MOU	202,860,880,408	225,461,548,235	260,987,809,423	291,280,120,674	333,068,159,797
TS Revenue	$5,675,125,370	$6,210,546,434	$7,036,286,800	$7,726,873,867	$8,663,626,734
Total Revenue	$13,082,457,235	$13,927,630,015	$15,203,754,997	$16,249,297,889	$17,640,901,803

DATA FROM NON–UNITARY PLX1

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
SLC	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	112,607,890	116,553,885	122,246,888	126,698,156	132,359,585
SLC Revenue	$2,469,121,717	$3,682,346,501	$4,585,898,007	$5,686,586,406	$6,039,340,149
CCL Rate	$0.023283	$0.017485	$0.013649	$0.009843	$0.009111
CL MOU	212,098,552,042	231,903,284,970	262,414,198,835	287,903,985,594	322,444,300,286
CCL Revenue	$4,938,210,149	$4,054,737,080	$3,581,570,191	$2,833,857,618	$2,937,934,919
Total CL Revenue	$7,407,331,886	$7,717,083,561	$8,167,466,196	$8,522,424,024	$8,977,275,068
TS/MOU	$0.027977	$0.027546	$0.026860	$0.026529	$0.026012
TS MOU	202,860,880,408	225,461,548,235	260,987,809,423	291,280,120,674	333,068,159,797
TS Revenue	$5,675,125,370	$6,210,546,434	$7,036,286,799	$7,726,873,866	$8,663,626,732
Total Revenue	$13,082,457,235	$13,927,630,015	$15,203,754,997	$16,249,297,889	$17,640,901,800

DATA FROM UNITARY PLX1

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
SLC	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	112,607,690	116,553,685	122,246,668	126,698,156	132,359,585
SLC Revenue	$2,469,121,717	$3,662,346,501	$4,585,898,007	$5,688,566,406	$6,039,340,149
CCL Rate	$0.023283	$0.017117	$0.012835	$0.008738	$0.007697
CL MOU	212,098,552,042	231,903,284,970	262,414,196,835	287,903,965,594	322,444,300,286
CCL Revenue	$4,938,210,149	$3,969,457,167	$3,367,986,188	$2,515,767,346	$2,481,832,940
Total CL Revenue	$7,407,331,866	$7,631,803,668	$7,953,884,195	$8,204,333,752	$8,521,173,089
TS/MOU	$0.027977	$0.027849	$0.027672	$0.027541	$0.027381
TS MOU	202,850,880,408	225,461,548,235	260,987,809,423	291,260,120,674	333,068,159,797
TS Revenue	$5,675,125,370	$6,278,826,404	$7,222,162,688	$8,021,560,450	$9,119,728,711
Total Revenue	$13,082,457,235	$13,910,630,072	$15,176,046,883	$16,225,894,203	$17,640,901,800

DELTA BETWEEN NON–UNITARY AND TREND

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
CL Revenue	$0	($0)	($0)	($0)	($0)
TS Revenue	$0	($0)	($1)	($1)	($2)
Total Revenue	$0	($0)	($1)	($2)	($3)

DELTA BETWEEN UNITARY AND NON–UNITARY

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/909 – 6/91
SLC Revenue	$0	$0	$0	$0	$0
CCL Revenue	$0	($85,279,913)	($213,584,003)	($318,090,271)	($456,101,980)
TS Revenue	$0	$68,279,970	$185,875,889	$294,686,585	$456,101,980
Total Revenue	$0	($16,999,943)	($27,708,114)	($23,403,687)	$0

UNITARY X-FACTOR FOR BFX1

Assumes (1) balance 50/50 formula; (2) historical SLC; (3) CL/MOU iteration; and (4) close to Period 6 revenue.

Unitary X-Factor	5.0%
CL X-Factor	5.0%
TS X-Factor	5.0%

	Revenue
Period 6 Trend Rev	$17,640,901,803
Period 6 Non-Unitary Rev	$17,640,901,799
Period 6 Unitary Rev	$17,640,901,799
Delta of Non-U and U	$0
%Delta	0.00%

TREND LINE ESTIMATES

TREND	CL/MOU	TS/MOU	Tot SW/MOU	CL MOU/Line	CL Rev	CL MOU	Sub Lines	TS Rev	TS MOU
19	$0.034924	$0.027977	$0.062909	1.8835	$7,407,332	212,096,552	112,607,690	$5,675,125	202,850,880
32	$0.033277	$0.027546	$0.060855	1.9697	$7,717,084	231,903,285	116,553,685	$6,210,546	225,461,548
50	$0.031124	$0.026960	$0.058122	2.1466	$8,167,468	262,414,197	122,246,668	$7,036,287	260,987,809
63.5	$0.029602	$0.026529	$0.056153	2.2724	$8,522,424	287,903,966	126,698,156	$7,726,874	291,260,121
80	$0.027841	$0.026012	$0.053837	2.4361	$8,977,275	322,444,300	132,359,585	$8,663,627	333,068,160

TREND DATA FROM REGRESSIONS:

	Period 2 6/85 - 5/86	Period 3 7/86 - 6/87	Period 4 1988	Period 5 4/89 - 12/89	Period 6 7/90 - 6/91
CL/MOU	$0.034924	$0.033277	$0.031124	$0.029602	$0.027841
CL MOU	212,096,552,042	231,903,284,970	262,414,196,835	287,903,965,594	322,444,300,286
CL Revenue	$7,407,331,866	$7,717,083,581	$8,167,468,196	$8,522,424,024	$8,977,275,069
TS/MOU	$0.027977	$0.027546	$0.026960	$0.026529	$0.026012
TS MOU	202,850,880,408	225,461,548,235	260,987,809,423	291,260,120,674	333,068,159,797
TS Revenue	$5,675,125,370	$6,210,546,434	$7,036,286,800	$7,726,873,867	$8,663,626,734
Total Revenue	$13,082,457,235	$13,927,630,015	$15,203,754,996	$16,249,297,891	$17,640,901,803

DATA FROM NON-UNITARY PLX1

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
SLC	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	112,607,690	116,553,685	122,246,668	126,698,156	132,359,585
SLC Revenue	$2,469,121,717	$3,662,346,501	$4,585,898,007	$5,688,566,406	$6,039,340,149
CCL Rate	$0.023283	$0.017217	$0.013351	$0.009786	$0.009111
CL MOU	212,098,552,042	231,903,284,970	262,414,196,835	287,903,965,594	322,444,300,286
CCL Revenue	$4,938,210,149	$3,992,572,018	$3,503,478,812	$2,817,418,726	$2,937,934,918
Total CL Revenue	$7,407,331,866	$7,654,918,518	$8,089,376,818	$8,505,985,132	$8,977,275,067
TS/MOU	$0.027977	$0.027546	$0.026960	$0.026529	$0.026012
TS MOU	202,850,880,408	225,461,548,235	260,987,809,423	291,260,120,674	333,068,159,797
TS Revenue	$5,675,125,370	$6,210,546,434	$7,036,286,799	$7,726,873,866	$8,663,626,732
Total Revenue	$13,082,457,235	$13,865,464,952	$15,125,663,617	$16,232,858,998	$17,640,901,799

DATA FROM UNITARY PLX1

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
SLC	$1.83	$2.62	$3.13	$3.74	$3.80
Lines	112,607,690	116,553,685	122,246,668	126,698,156	132,359,585
SLC Revenue	$2,469,121,717	$3,662,346,501	$4,585,898,007	$5,688,566,406	$6,039,340,149
CCL Rate	$0.023283	$0.017218	$0.013353	$0.009789	$0.009116
CL MOU	212,098,552,042	231,903,284,970	262,414,196,835	287,903,965,594	322,444,300,286
CCL Revenue	$4,938,210,149	$3,992,825,853	$3,504,123,862	$2,818,389,926	$2,939,346,152
Total CL Revenue	$7,407,331,866	$7,655,172,354	$8,090,021,868	$8,506,956,332	$8,978,686,301
TS/MOU	$0.027977	$0.027545	$0.026958	$0.026526	$0.026007
TS MOU	202,850,880,408	225,461,548,235	260,987,809,423	291,260,120,674	333,068,159,797
TS Revenue	$5,675,125,370	$6,210,330,823	$7,035,704,304	$7,725,955,654	$8,662,215,498
Total Revenue	$13,082,457,235	$13,865,503,177	$15,125,726,173	$16,232,911,986	$17,640,901,799

DELTA BETWEEN NON-UNITARY AND TREND

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
CL Revenue	$0	($62,165,062)	($78,091,380)	($16,438,892)	($2)
TS Revenue	$0	($0)	($1)	($1)	($2)
Total Revenue	$0	($62,165,063)	($78,091,381)	($16,438,893)	($4)

DELTA BETWEEN UNITARY AND NON-UNITARY

	Period 2 6/85 – 5/86	Period 3 7/86 – 6/87	Period 4 1988	Period 5 4/89 – 12/89	Period 6 7/90 – 6/91
SLC Revenue	$0	$0	$0	$0	$0
CCL Revenue	$0	$253,836	$645,050	$971,200	$1,411,234
TS Revenue	$0	($215,611)	($582,495)	($918,212)	($1,411,234)
Total Revenue	$0	$38,225	$62,555	$52,988	($0)