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April 9, 1996

William F. Caton
Secretary
Federal Communications Commission
1919 M. Street, N.W.
Washington D.C. 20554

Re: Ex parte Contact in CC Docket No. 94-1
(Price Cap Performance Review for Local
Exchange Carriers).

Dear Mr. Caton:

On April 8, 1996, Dr. Lee L. Selwyn and the undersigned, on behalf of the Ad Hoc Telecommunications Users Committee, met with Dr. Joseph Farrell, FCC Chief Economist, and members of the Common Carrier Bureau to discuss the above-referenced docket. The substance of the discussion at the meeting is reflected in the enclosures hereto, which were distributed to Commission personnel at the meeting.

Sincerely,

James S. Blaszak
Counsel for the Ad Hoc
Telecommunications Users Committee

Enclosures

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ESTIMATING THE IMPLICIT X-FACTOR AS REVEALED BY LEC X-FACTOR ELECTIONS UNDER THE FCC LEC PRICE CAP PLAN

Price Cap Performance Review for Local Exchange Carriers

CC Docket 94-1

Ad Hoc Telecommunications Users Committee

April, 1996

Estimating the implicit X-factor

In both the original LEC Price Cap order in CC Docket 87-313 and in the Price Cap Review Order in CC Docket 94-1, the FCC relied heavily upon the so-called "Frentrup-Uretsky" analysis of the historic "implicit X-factor"

- The "implicit X-factor" is the value of X that, had it been in effect over an historic period, would have brought the LECs' earnings to the 11.25% authorized level.

- In the Price Cap Review Order, the Commission determined that the "implicit X-factor" for the 1985–92 period was approximately 5.0%.

  That is, had price caps been in effect with the X-factor set at 5.0% since 1985, the LECs would have realized a rate of return of 11.25%

But recent events and LEC earnings experience now provide strong evidence that the historic implicit X-factor is not indicative of current LEC productivity conditions.

Estimating the implicit X-factor

In its Price Cap Review Order issued in March, 1995, the Commission offered LECs a choice among three alternative combinations of X-factor and sharing/earnings caps:

X = 4.0%, 50/50 sharing at 12.25%, earnings capped at 13.25%

X = 4.7%, 50/50 sharing at 12.25%, earnings capped at 16.25%

X = 5.3%, no sharing, no earnings cap

In response to these choices, five of the seven RBOCs and a number of independent LECs elected the 5.3%, no sharing, no earnings cap option.

In their April 2, 1996 Annual Access Charge filings, six of the RBOCs and many independent LECs elected the 5.3%, no sharing, no earnings cap option.

These elections reveal considerable information as to the LECs' own earnings expectations both under the original and the current FCC Price Cap regimes

Estimating the implicit X-factor

If a LEC expects its interstate rate of return to fall below 13.35%, the LEC will be made financially better off by electing the 4.0% X-factor, 13.25% earnings cap option.

If a LEC expects its interstate rate of return to exceed 13.35%, the LEC will be made financially better off by electing the 5.3% X-factor, no sharing, no earnings cap option.

> ***There is no earnings level at which the 4.7% X-factor option would be superior to either of the other two choices.***

Since the 13.35% rate of return is a point of financial *indifference* between the 4.0% and 5.3% choices, one can readily conclude that the majority of LECs expect their interstate earnings to exceed 13.35%

> **The implicit X-factor that would bring this level of earnings back down to the authorized 11.25% level is 8.6%**

Thus, the ***minimum*** **value of the implicit X-factor is 8.6%**

FIGURE 1

RATE OF RETURN AND PRODUCTIVITY LEVELS UNDER THE CURRENT PRICE CAP PLAN

Implicit X	ROR at X = 4%, no sharing	ROR at X = 4% after sharing	ROR at X = 4.7% after sharing	ROR at X = 5.3%
4.00%	11.25%	11.25%	10.93%	10.65%
5.08%	11.75%	11.75%	11.43%	11.15%
6.16%	12.25%	12.25%	11.93%	11.65%
7.24%	12.75%	12.50%	12.34%	12.15%
8.32%	13.25%	12.75%	12.59%	12.65%
8.54%	**13.35%**	**12.75%**	**12.64%**	**12.75%**
10.48%	14.25%	12.75%	13.09%	13.65%
11.56%	14.75%	12.75%	13.34%	14.15%
12.64%	15.25%	12.75%	13.59%	14.65%
13.72%	15.75%	12.75%	13.84%	15.15%
14.80%	16.25%	12.75%	14.09%	15.65%
15.88%	16.75%	12.75%	14.25%	16.15%
16.96%	17.25%	12.75%	14.25%	16.65%

Estimating the implicit X-factor

Under the Docket 87-313 price cap rules, LECs were offered two choices:

X = 3.3%, 50/50 sharing at 12.25%, earnings capped at 16.25%

X = 4.3%, 50/50 sharing at 13.25%, earnings capped at 17.25%

Also, under those price cap rules, LECs were not required to "add back" their sharing offsets in computing the sharing amount for the subsequent year (they now are requred to do this). That is equivalent to an additional 160 basis points of realized earnings.

Most LECs elected the 3.3% X-factor option during most of the years under the original CC Docket 87-313 price cap regime

Estimating the implicit X-factor

Under the Docket 87-313 price cap rules:

> If a LEC had expected its interstate rate of return to fall below 14.77% (i.e., 13.17%+1.6% for the no "add back" requirement) the LEC would have been financially better off by electing the 3.3% X-factor option.
>
> If a LEC had expected its interstate rate of return to exceed 14.77% (i.e., 13.17%+1.6% for the no "add back" requirement), the LEC would have been financially better off by electing the 4.3% X-factor option.
>
> *The implicit X-factor that would have brought this level of earnings back down to the authorized 11.25% level, and adjusting for the effects of no "add back," is 10.9%.*

Since most LECs elected the 3.3% X-factor option in most of the years under the previous price cap regime, we can conclude that most LECs experienced an implicit X-factor below 10.9%

FIGURE 2

RATE OF RETURN AND PRODUCTIVITY LEVELS UNDER THE ORIGINAL PRICE CAP PLAN

Implicit X	ROR at X = 3.3%, no sharing	ROR at X = 3.3% after sharing	ROR at X = 4.3% after sharing
3.30%	11.25%	11.25%	10.79%
4.38%	11.75%	11.75%	11.29%
5.46%	12.25%	12.25%	11.79%
6.00%	12.50%	12.38%	12.04%
7.45%	13.17%	12.71%	12.71%
7.62%	13.25%	12.75%	12.79%
8.70%	13.75%	13.00%	13.27%
9.78%	14.25%	13.25%	13.52%
10.86%	14.75%	13.50%	13.77%
11.94%	15.25%	13.75%	14.02%
13.02%	15.75%	14.00%	14.27%
14.10%	16.25%	14.25%	14.52%
14.75%	16.55%	14.25%	14.67%
15.18%	16.75%	14.25%	14.77%
16.26%	17.25%	14.25%	15.02%

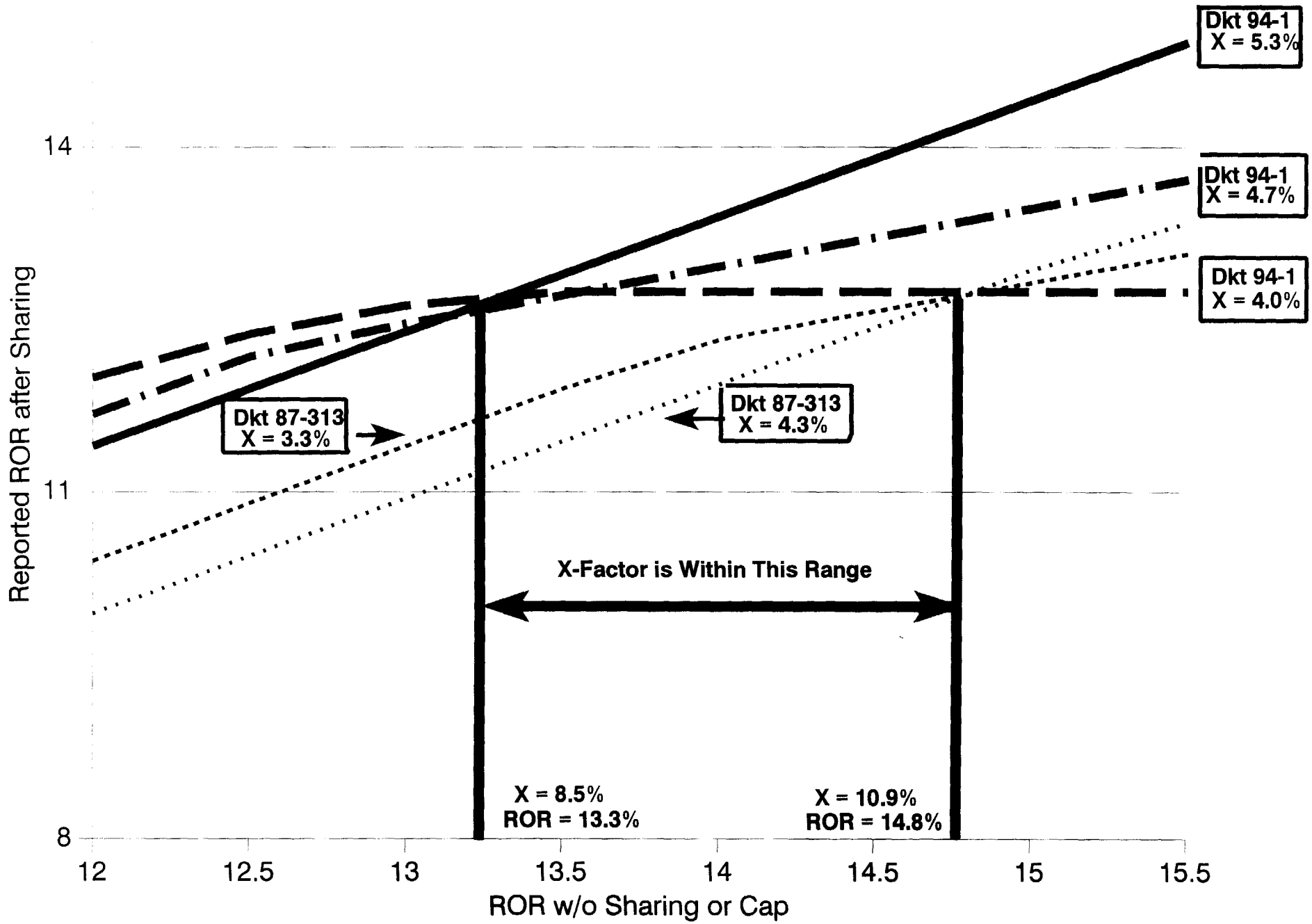
Estimating the implicit X-factor

From the X-factor choices revealed under the original and revised price cap rules, it appears that LEC earnings expectations have been in the range of 13.35% to 14.77%.

> ***Based upon the LEC elections and their revealed preferences, the implicit interstate X-factor is in the range of 8.6% to 10.9%.***

Significantly, this result is fully consistent with, and thus corroborates, the results of the interstate services Total Factor Productivity (TFP) analyses conducted by the Ad Hoc Committee and by AT&T as presented in ther Initial Comments in this proceeding.

The Implicit X-Factor for Interstate Services is Between 8.5% and 10.9%



ESTABLISHING THE X-FACTOR FOR THE FCC LONG-TERM LEC PRICE CAP PLAN

Price Cap Performance Review for Local Exchange Carriers

CC Docket 94-1

Ad Hoc Telecommunications Users Committee

March, 1996

ECONOMICS AND TECHNOLOGY, INC.

Empirical data requirements

At. para. 15 of the *Fourth Further Notice*, the Commission declared that:

> **Any party submitting studies, proposed methods for calculating an X-factor, or other empirical information must furnish promptly upon request by Commission staff or any party to this proceeding workpapers and any other data necessary to replicate the results submitted in this proceeding. If a party fails to do so, we will accord no weight to those studies, methods, or empirical information in our deliberations.**

The "Simplified" USTA/Christensen TFP study cannot satisfy this requirement:

- ✓ **The results for the nine company sample (1984 to 1993 study period) cannot be replicated except at a very high level – key pieces of information are missing**
- ✓ **The data provided for the nine company sample does not reconcile to the data used for the eleven company sample (1988 to 1993 study period)**
- ✓ **The data provided on LEC and US long-term input price results do not permit replication except at a very high level**

Interstate vs. Total Company TFP

A permanent X-factor for use in the interstate jurisdiction must reflect interstate productivity and other cost conditions.

- **The Christensen/USTA study calculates *total company* TFP.**
- **There is compelling evidence that those services that are disproportionately represented in the interstate jurisdiction are experiencing significantly above-average productivity growth.**
- **Higher rate of output growth for most interstate services.**
- **Greater gains from mechanization and technological advancement in services subject to interstate jurisdiction than for total company service mix**
- **Input growth in interstate jurisdiction can be reasonably (and conservatively) approximated by total company input growth**

Interstate vs. Total Company TFP

Sources of higher-than-average interstate services TFP growth:

- *Higher rate of demand growth for most interstate services.*

Individual subscriber access lines	3.0%
Total (local+toll, intrastate+interstate)	
Dial Equipment Minutes (DEMs)	3.7%
Interstate switched access minutes	10.0%

- *Differences in the input mix for individual services.* Subscriber access lines involve a highly stable technology and exhibit a relatively high labor component for installation, maintenance and retailing functions vis-a-vis switched services

- *Disproportionate presence of highly capital-intensive, switched services in the interstate jurisdiction.*

Switched services revenue shares:	
Interstate	80%
Intrastate	50%

Interstate vs. Total Company TFP

If FCC and state X-factors were based on *total company* TFP, the presence of interstate costs that are growing more slowly than those for state-regulated services will produce undesirable results:

- Interstate prices will increase at a faster rate than costs, leading to windfall earnings growth. LECs will tend to elect the X-factor option that eliminates sharing and an earnings cap (as five of the RBOCs have done) and will thus be able to amass and retain persistent, excessive interstate earnings.

- State prices will increase at a *slower* rate than costs, leading to persistent *underrecovery* and underearnings. The same LECs that are enjoying windfall interstate earnings will be able to invoke low-end earnings protection mechanisms or, potentially, seek to invoke fifth amendment protection against confiscation.

Even if combined state and interstate earnings are reasonable, the separate jurisdictional treatment of each will permit the same LEC to keep the interstate windfall while claiming poverty in the states.

Adjusting for LEC input price changes

The LEC input price differential (vis-a-vis GDP-PI) should be incorporated into the X-factor on the basis of an economically and statistically meaningful short term trend covering the entire post-divestiture period.

- **Statistical analysis consistently demonstrates structural break occurs at the time of divestiture**

- **USTA vacillates between reliance on the long-term input price differential trend (which is not relevant in a competitive input market environment) and reliance on an unreasonably truncated sample period (at odds with Christensen's own position that short-run year-to-year changes are subject to random variation)**

- **The post-divestiture LEC input price differential is itself understated because it relies upon asset price deflators that fail to capture hedonic effects and that suffer from other serious deficiencies.**

    - **Established in studies cited in ETI Report, e.g., Gordon, Flamm.**

Measurement of changes in LEC input quantity - Cost of Capital

Christensen incorrectly measures the cost of capital in his capital "rental price" formula by using as a proxy, the US economy cost of capital implicit in the US National Income and Products Accounts (NIPA)

- **The cost of capital used in the rental price formula should be the expected or *ex ante* rate of return**
- **Christensen's choice of proxy is a poor one:**
  - **No evidence that telephone industry cost of capital will necessarily follow year-to-year changes in US cost of capital**
  - **Incorrectly assumes away LEC/US input price differences**
  - **Inconsistent with BLS**
    - **BLS does not utilize economywide cost of capital in detailed industry productivity studies, but rather industry specific cost of capital**
    - **BLS employs method similar to Norsworthy**

Measurement of changes in LEC input quantity - Depreciation

Christensen did not use, but should have used, the depreciation rates prescribed by the Commission for LEC plant.

- The Commission's prescribed depreciation rates are more appropriate because they more accurately reflect plant lives applicable for LECs and are consistent with the RORR benchmark upon which the price cap paradigm is constructed.

- The Commission's prescribed rates have been set based upon studies conducted by the LECs themselves, relating specifically to the capital assets used by the LECs in providing telecommunications services.

The rates selected by Christensen are based upon a chain of studies conducted by various economists for business assets for the economy as whole and for a much earlier time period than the post-divestiture period.

Measurement of changes in LEC input quantity - Depreciation

The chain of studies:

- **The rates employed by Christensen were taken from a 1990 study conducted by D. W. Jorgenson**
- **The cited Jorgenson study indicates that it relies on "economic" depreciation rates from a 1990 Jorgenson and Yun study**
- **Further research finds the referenced economic depreciation rates in a related 1991 work by Jorgenson and Yun, *Tax Reform and the Cost of Capital***
- **The depreciation rates in the 1991 Jorgenson/Yun study were derived from a 1981 study by Hulten and Wykoff, *The Measurement of Economic Depreciation***
- **The Hulten and Wykoff study referenced in both the Jorgenson and Jorgenson/Yun studies estimates the form and rate of economic depreciation using an econometric technique as explained in yet another 1981 Hulten and Wykoff study, *The Estimation of Economic Depreciation Using Vintage Asset Prices: An Application of the Box-Cox Power Transformation*;**
- **The later-referenced Hulten and Wykoff study indicates that the regression technique was applied to empirical data taken from the 1956 to 1971 time period not involving assets used by telephone companies.**

Specific revisions quantified in the Ad Hoc study

- **Calculation of TFP for services subject to interstate jurisdiction;**
- **Calculation of LEC-US input price differential for entire post-divestiture period;**
- **Substitution of published BEA/BLS asset price deflator data for LEC TPI series (subsequently incorporated in Christensen revised study);**
- **Adjustment to the formula for the rental price of capital to include cost of capital that reflects LEC (vs. US) rate of return and differential tax effect of debt versus equity;**
- **Replacement of general, out-of-date economy-wide depreciation rates with current FCC-prescribed LEC depreciation rates; and**
- **Development of a sensitivity analysis for the effects of hedonic price changes for inputs used by the LECs.**

Results of the corrected X-factor analysis

SUMMARY OF RESULTS
INTERSTATE ONLY X-FACTOR
1984 to 1993 STUDY PERIOD

	TFP	Input Price Diff.	CPD	X-Factor
Corrected	6.0%	3.4%	0.5%	9.9%
Corrected Quality Adjusted	5.5%	4.3%	0.5%	10.3%