Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of	)	
	)	
Price Cap Performance Review for Local Exchange Carriers	)	CC Docket No. 94-1
	)	

REPLY COMMENTS OF SPRINT CORPORATION

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Respectfully submitted,

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SUMMARY

In these Reply comments Sprint Corporation strongly urges the Commission to utilize the direct approach to develop a fixed PCI reduction to replace the existing GDP-PI minus X-Factor formula: to adopt fixed PCI reductions for a four year plan; and to reevaluate the rolling average methodology at the end of that period. The PCI reductions should include two PCI adjustment factors, one at 1.1% with sharing and one at 2.1% without sharing. The 2.1% PCI reduction is derived from the 1.1% baseline PCI reduction with the addition of a .5% interstate growth differential and a transitional .5% Consumer Productivity Dividend to be phased out over four years.

In support of this recommendation, Sprint submits Dr. Frank Cronin's report, "Examining the Appropriate Role of Prices in Price Regulation." Dr. Cronin demonstrates why the direct approach is the correct methodology to follow in making price cap adjustments and why an economically meaningful TFP approach must include a measure of LEC input prices and cannot assume that either an economy-wide measure of input price changes or GDP-PI is a reasonable estimator of LEC input price changes.

The Cronin study identifies substantial biases in the current price cap formula and in USTA's proposed approach. Sprint also demonstrates the flaws with the AT&T model, including specifically the incorrect and misplaced reliance by AT&T on an interstate-specific productivity factor. Sprint recalculates USTA's and AT&T's TFP with appropriate corrections to demonstrate that both are not substantially different from the results derived by Cronin's direct approach.

Finally, consistent with Sprint's Comments in this proceeding, Sprint urges the Commission to use a separate Common Line adjustment formula on a per-line basis and to maintain the exogenous cost recovery rules in their present form.

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REPLY COMMENTS OF SPRINT CORPORATION

Sprint Corporation ("Sprint"), on behalf of the United and Central Telephone Companies (the "Sprint LECs") and Sprint Communications Company, L.P., hereby respectfully submits its Reply to Comments filed in response to the September 27, 1995 Fourth Further Notice of Proposed Rulemaking ("X-Factor NPRM") in the above-referenced docket (FCC 95-406).[1]

I. INTRODUCTION

In the X-Factor NPRM, the Commission requested comment regarding the long-term LEC price cap plan. In particular the Commission sought comments on: the method for calculating the productivity adjustment -- the X-Factor; whether the X-Factor should be reviewed and modified periodically or set on a permanent basis; the number of X-Factors to be included in the LEC price cap plan; and the sharing requirements, if any, to be associated with each X-Factor. The Commission also sought comment on possible changes to the common line formula and to the exogenous cost rules.

In its Comments, Sprint agreed with the Commission's tentative conclusion that annual price cap adjustments should be made using a LEC industry-specific, TFP-based adjustment.

[1] Additionally, Sprint provides its Comments on Issues 19 and 20 from the Second Further Notice of Proposed Rulemaking (FCC 95-393, "LEC Pricing Flexibility NPRM") as requested by the Commission in

Sprint also argued that the Commission should adopt a direct approach (LEC input inflation minus LEC TFP growth) in making LEC price cap adjustments, rather than utilizing either the Commission's current LEC price cap formula or the USTA-supported/Christensen-developed modified differential TFP approach. Sprint informed the Commission that it had engaged an economic consultant to analyze LEC input inflation and that Sprint would supplement the record with this additional analysis.[2]

With these Reply Comments, Sprint submits Dr. Frank Cronin's report, "Examining the Appropriate Role of Prices in Price Cap Regulation" (attached hereto as Attachment A). Dr. Cronin demonstrates why the direct approach is the correct methodology to follow in making LEC price cap adjustments and why an economically meaningful TFP approach must include a measure of LEC input prices, and cannot assume that either an economy-wide measure of input price changes or GDP-PI is a reasonable estimator of LEC input price changes. Dr. Cronin conclusively demonstrates that LEC input prices have increased at a significantly lower rate than either economy-wide input prices or GDP-PI. The differential between GDP-PI and LEC input price changes, for example, averaged 1.79% a year over the period 1985-1993, and 1.17% for the period 1990-1993.[3] Dr. Cronin also describes additional flaws in USTA's proposed approach.

Sprint has also reviewed the empirical studies filed by USTA, AT&T, and Ad Hoc with their initial Comments. Based on that review, Sprint has concluded that none of them provide a simple, defensible, and economically meaningful methodology that can be annually

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its Order on Motion for Extension of Time, CC Docket 94-1 released November 13, 1995 (DA 95-2340).

[2] Sprint Comments at 9.

[3] Attachment A at 46.

updated and used in a rolling average approach to price cap rate adjustments. Therefore, Sprint recommends that the Commission adopt, for a four year period, a fixed PCI adjustment factor, based on historical results using the direct approach.

Finally, in its Comments Sprint supported use of a multiple X-Factor option with retention of a voluntary no-sharing option, use of a separate Common Line adjustment formula based on a per-line basis, and maintenance of the exogenous cost recovery rules in their present form. Sprint maintains that its positions on these issues are correct and in this Reply, Sprint addresses Comments filed on these issues.

II. THE DIRECT APPROACH -- LEC INPUT INFLATION MINUS LEC TFP GROWTH -- IS THE BEST FORMULA FOR CALCULATING LEC PCI ADJUSTMENTS.

A. The Cronin study finds substantial biases in the current price cap formula as well as USTA's proposed approach and identifies significant advantages in using a direct approach.

In its Comments, Sprint noted that "it has found it impossible to reconcile a lower X-Factor in the existing [price cap formula] with actual performance of the [LEC] industry" and that it "has significant practical concerns with the results reached by applying the [USTA-supported/Christensen-developed] approach to the existing price cap formula."[4] Sprint identified, in addition to problems in the development of the X-Factor, the use of GDP-PI as a potential source of the "variance between Commission-expected and price cap LEC-achieved returns." [5] Sprint suggested the use of a direct approach -- LEC input inflation minus LEC TFP growth -- in the Commission's long-term price cap plan.[6] Sprint did so because use of a

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[4] Sprint Comments at 5 and 7.
[5] Id at 7. At the same time, Sprint emphasized that rate of return levels should not be the focus of price cap regulation.
[6] Id at 8.

direct approach would obviate the need for GDP-PI and because a direct approach is simpler and relies solely on industry-specific information.[7] Dr. Cronin's study supports Sprint's views.

The differential approaches proposed by USTA, AT&T and Ad Hoc require five components to determine the PCI adjustment. From an economy-wide measure of inflation -- GDP-PI -- the formula subtracts the sum of the differences between LEC TFP and economy-wide TFP and LEC input prices and economy-wide input prices. While acknowledging the theoretical validity of a full differential approach, Dr. Cronin notes that "the differential approach requires substantially more information [than the direct approach] – all of it subject to various forms of potential error."[8] Dr. Cronin also notes that the existing formula and USTA's proposed plan are not full differential approaches. Rather in developing price caps the Commission adopted simplifying assumptions, thus making the formula a "modified differential approach."[9]

Most significantly, Dr. Cronin conclusively demonstrates that it is critical, in any economically meaningful price cap formula, to include a measurement of LEC input price changes, and that neither GDP-PI nor economy-wide input price changes can reasonably be used as approximations of LEC input price growth. Given the absolute necessity of measuring LEC input price changes, the direct approach -- LEC input price changes less LEC TFP growth -- represents the simplest and most straightforward approach. Using the full differential methodology would produce identical results, but would require the measurement of the additional variables of economy-wide TFP and economy-wide input price changes. The

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[7] Id. Commission staff has noted that the current formula can be simplified by adopting a direct approach. See Appendix F, Price Cap Performance Review of Local Exchange Carriers, CC Docket No. 94-1, First Report and Order, 10 FCC Rcd 8961, 9214-9216 (1995).
[8] Attachment A at 4.
[9] Id.

result would be increased complexity and the potential for error if any of those variables are misspecified.

Dr. Cronin identifies three biases common to both the existing formula and to USTA's proposed regime: (1) use of an aggregate inflation measure as a proxy for the price changes in a given sector of the economy; (2) selection of GDP-PI as the measure of aggregate inflation; and (3) exclusion of a measure of the input price differential between telecommunications and the general economy based on the assumption that the differential is zero.[10] As to use of an aggregate inflation factor, Dr. Cronin notes:

> the chief danger in using external price indices is that they may not be capable of reflecting accurately the input price index of the regulated firm and thereby may increase the exogenous deviations.[11]

As to use of GDP-PI, Dr. Cronin notes that:

> GDP-PI neither represents the market for factors of production, nor does it represent economy-wide output prices.... Two-thirds of the total economy representing all non-capital business to business transactions are excluded from the GDP-PI. <u>The use of GDP-PI compared with the correct economy-wide index of output based on measured economy-wide transactions would result in a substantial upward bias in the rate of estimated LEC price changes</u>.[12]

Regarding the implicit assumption that there is no input price differential between the LEC industry and the economy as a whole, Dr. Cronin says:

> Such an assumption ignores the inherent input differences of the economy as a whole and the telecommunications sector and the empirical evidence that the telecommunications sector has over a thirty-year period been supplied, on average, by sectors whose own TFP have substantially exceeded the economy-wide rate of productivity growth.[13]

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[10] Attachment A at ES-1 & 4-5

[11] Attachment A at 5, quoting F. Kiss "Constant and Variable Productivity Adjustments for Price-Cap Regulation" in M.A. Einhorn, "Price Caps and Incentive Regulation in Telecommunications", Boston MA: Kluwer Academic Publishers, (1991) at 99.

[12] Attachment A at 5-6, emphasis added.

[13] Attachment A at 6; citation omitted.

Dr. Cronin concludes that the:

> operational validity of a LEC price cap regime could [] be greatly improved by the adoption of a correctly specified approach to price cap calculations. Since the direct approach to price cap calculation is simpler, requires less information and would be subject to fewer potential biases in implementation, this approach would appear to have significant advantages [].[14]

Sprint believes the significant advantages of Dr. Cronin's proposed direct approach are self-evident and urges the Commission to adopt it in developing its long term price cap plan.

B. Other support for a direct approach.

There is support in the Comments for the direct approach consistent with Sprint's arguments. Ameritech states:

> While Ameritech supports the TFP methodology, it also believes that the Commission should give serious consideration to the elimination of the X-Factor entirely and instead directly calculate a PCI adjustment based on the difference between the percentage change of LEC input prices and LEC TFP.
>
> * * *
>
> As indicated above, Ameritech would consider the direct method (growth of LEC input prices minus the rate of LEC TFP growth) to account for LEC input price changes.
>
> * * *
>
> Application of the direct method would simplify the calculation of the PCI Adjustment Factor since it would eliminate economy wide data on inflation and productivity from the price cap formula.[15]

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[14] Id at 49.
[15] Ameritech Comments at 4 and 5.

Similarly, GTE notes that the direct method (LEC input inflation minus LEC TFP growth) is the correct method.[16]

Finally, the Commission Staff has noted that the five component full differential formula can be simplified to the two component direct approach.[17] In this regard, Staff notes, "[t]his means that using this approach is equivalent to basing LEC output prices on LEC input prices and LEC productivity, without the need for any US aggregate data for prices or productivity."[18]

III. ALL OF THE PRODUCTIVITY STUDIES FILED IN THIS PROCEEDING CONTAIN SERIOUS FLAWS.

AT&T and USTA submitted models to support their X-Factor proposals and Ad Hoc submitted a study that made adjustments to the original USTA/Christensen study. The X-Factor recommendations derived from these studies deviate significantly not only among those studies, but also from the X-Factors adopted by the Commission in its interim price cap plan. The wide variance in proposed X-Factors is primarily due to differences in the calculation and treatment of input price changes, interstate vs. intrastate output growth differentials, and application of a consumer productivity dividend ("CPD"). The following Table compares the components that make up each of these parties proposed X-Factors:

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[16] GTE Comments at 8. GTE also argues that using a LEC-specific inflation index eliminates any perceived need for an input price differential.

[17] See Appendix F, Price Cap Performance Review for Local Exchange Carriers, CC Docket No. 94-1, First Report and Order, 10 FCC Rcd 8961, 9214-6. (1995)

[18] Id at 9216.

Table 1

Comparison of X-Factor Proposals			
	USTA	**AT&T**	**Ad Hoc**
TFP Differential	2.8%	2.9%	3.2%
Input Price Differential	0.0%	2.5%	3.4%
Interstate Adjustment	0.0%	1.9%	2.8%
CPD	0.0%	1.5%	0.5%
X-Factor	2.8%	8.8%	9.9%

Sprint has evaluated the USTA and AT&T models and has found significant errors, omissions, and model misspecifications in each of those studies. Sprint has made, to the extent possible, corrections for the more salient errors in each of these studies.[19] Sprint's consultant in this proceeding, Dr. Cronin, focused on the input price differential and the appropriate methodology for measuring inputs and input prices, and did not produce a total factor productivity study. However, Dr. Cronin's work provides the basis for many of Sprint's modifications to the AT&T and USTA studies.

This section will address the total company results (i.e., total company TFP and input prices) of the AT&T and USTA studies. The following sections will address the issues of the interstate productivity differential and the CPD.

The AT&T/Norsworthy model contains two fundamental errors in the measurement of output that cause significant overstatements of both interstate and intrastate output growth. First, the model erroneously derives interstate traffic sensitive output by dividing traffic sensitive revenue requirement by residential access lines instead of minutes. Clearly the

[19] Attachments B and C provide a detailed description of these modifications for, respectively, the AT&T and USTA studies. Attachment D provides the year by year results of these analyses. The Ad Hoc Comments did not provide sufficient data or documentation for Sprint to undertake a quantitative analysis of that study.

author's intent was to use switched minutes of use since the column where this calculation was performed is labeled "TS per min rev req."[20] The result of this error is an overstatement of aggregate interstate output growth of 1.6%. Second, the model includes intraLATA toll revenue, but omits intraLATA usage in calculating state toll output. The result is an overstatement of aggregate intrastate output growth of 0.9%. On the input side, the model produces an extremely erratic capital input price series and the author applies a highly subjective "hedonic" adjustment, which is intended to reflect changes in the quality of capital inputs. The hedonic adjustment has no impact on results of the direct model[21]. The hedonic adjustment decreases the measure of input prices, but it also decreases the TFP result by exactly the same amount. Thus, incorporating a hedonic adjustment in a direct approach is superfluous. However, removing this adjustment from the AT&T study is useful for the purpose of comparing that study with both the USTA study and the Cronin input price series. Removing this adjustment does not smooth the price series but does bring the average aggregate input price changes more in line with the independent Cronin input price findings.

While USTA did not explicitly provide input prices, its model provides sufficient data to calculate the underlying input prices for the three input components (capital, labor, and materials). Each of the input components contain flaws that result in an overstatement of LEC input prices. For capital inputs, the model uses inappropriate depreciation rates and also uses a definition of capital cost that causes a significant overweighting of capital input prices. For labor input, the model overstates labor input price changes by using booked expenses that are influenced by changes in accounting practices and employment composition, neither of

[20] Comments of AT&T, Appendix A, Statement of Dr. John R. Norsworthy (hereinafter Norsworthy Statement), backup data filed with the Commission, filename: "Interrev.xls", cells AP136 through AP 146.
[21] See Attachment B, Scenario 3

which should be included in a measurement of labor prices. For materials inputs, the USTA model uses GDP-PI which, as demonstrated by Dr. Cronin, is not an accurate surrogate for LEC materials input prices USTA also uses common line minutes as the measure of interstate carrier common line (CCL) output, and access lines as the measure of interstate SLC output. Since both the CCLC and SLC are charges for the same output, the local loop, it is inconsistent to use different measures of output for what is functionally the same service. Sprint has restated the USTA interstate CCL output using access lines, rather than minutes.

The results of Sprint's corrections in the two studies are summarized in Table 2 below. The Table provides both the original (unadjusted) and corrected (adjusted) input price and TFP results as well as Dr. Cronin's independently derived input price series. The results of the AT&T (Norsworthy) and USTA (Christensen) studies are presented in the context of the direct approach--i.e., the PCI adjustments that would have resulted each year by using the direct formula of LEC input price changes minus LEC TFP growth. While Sprint cannot represent that it has fully verified or substantiated all of the data and the methodology underlying those studies, it does believe that its corrections significantly improve their accuracy and reliability.

There are two important conclusions that can be derived from the adjusted study results provided in Table 2 First, the results of the two studies, expressed as the PCI change that results from applying the direct approach, are extremely close. Looking at the averages over various time periods (1990-1994, 1991-1994, and the full time periods covered by the two studies), the Christensen results range around a 1% PCI reduction, and the Norsworthy results range around 1.5% The differences between the studies for the 1990-1994 and 1991-1994 periods are, respectively, only .77% and .37%. Thus, both studies, as corrected, produce

very similar results in terms of their economic measurements of the direct approach on a total company basis.

Second, the corrected results closely approximate the results produced by the Commission's current price cap formula. For instance, the PCI adjustment for the lowest productivity factor in the 1995 tariff filing was a 1.1% reduction, excluding exogenous costs (i.e., a GDP-PI of 2.9% less a 4.0% X-Factor). Using either a four year or five year rolling average for the USTA adjusted direct model results would have yielded the same level of reduction. The results of the AT&T study for the same period would have produced somewhat greater rate reductions (1.5% and 1.9%), but even those reductions are significantly lower than the 2.4% reductions effected for LECs that chose the 5.3% no sharing option.

Table 2

Comparison of TFP and Input Price Studies

	Unadjusted			Corrected			
	IP	TFP	PCI Adj	IP	TFP	PCI Adj	Cronin Input Prices
Norsworthy							
1985	13.44%	12.39%	1.05%	13.82%	11.29%	2.53%	
1986	5.38%	2.85%	2.53%	6.36%	3.17%	3.19%	2.04%
1987	-0.32%	1.40%	-1.72%	1.32%	2.11%	-0.79%	1.01%
1988	-6.54%	-2.65%	-3.89%	-4.89%	-2.46%	-2.43%	1.98%
1989	0.72%	5.90%	-5.18%	1.98%	5.59%	-3.61%	1.94%
1990	-4.15%	1.15%	-5.30%	-3.26%	0.37%	-3.63%	2.84%
1991	1.00%	4.26%	-3.26%	1.77%	4.13%	-2.36%	1.85%
1992	1.78%	3.45%	-1.67%	2.55%	3.73%	-1.18%	2.72%
1993	5.80%	7.31%	-1.51%	6.64%	7.07%	-0.43%	2.64%
1994	0.49%	3.44%	-2.95%	0.95%	2.77%	-1.82%	
91 - 94 Avg	2.27%	4.62%	-2.35%	2.98%	4.43%	-1.45%	
90 - 94 Avg	0.98%	3.92%	-2.94%	1.73%	3.62%	-1.89%	
85 - 94 Avg	1.76%	3.95%	-2.19%	2.72%	3.78%	-1.06%	
Christensen							
1989	-2.93%	1.75%	-4.68%	2.30%	0.98%	1.32%	1.94%
1990	3.69%	3.80%	-0.11%	3.18%	4.46%	-1.28%	2.84%
1991	3.54%	1.98%	1.56%	2.00%	2.08%	-0.08%	1.85%
1992	5.39%	3.56%	1.83%	2.40%	5.20%	-2.80%	2.72%
1993	5.14%	3.70%	1.44%	2.89%	4.61%	-1.72%	2.64%
1994	2.80%	2.45%	0.35%	2.59%	2.32%	0.27%	
91 - 94 Avg	4.22%	2.92%	1.30%	2.47%	3.55%	-1.08%	
90 - 94 Avg	4.11%	3.10%	1.01%	2.61%	3.73%	-1.12%	
89 - 94 Avg	2.94%	2.87%	0.07%	2.56%	3.28%	-0.72%	

IV. THE COMMISSION SHOULD REJECT THE AT&T AND AD HOC INTERSTATE PRODUCTIVITY FACTOR PROPOSALS

A number of parties advocate the use of an interstate-specific productivity factor, as opposed to a total company productivity factor. The reasoning behind this position is twofold. First, AT&T and Ad Hoc contend[22] that the Commission, under the *Smith v. Illinois Bell*[23] standard, is legally obligated to consider only the interstate productivity of LECs in

[22] AT&T Comments at 14-16; Ad Hoc Comments at 6-7.
[23] 282 U.S. 133 (1930).

determining the productivity offset used for interstate services. Second, these parties contend that the LECs' interstate productivity exceeds intrastate productivity, largely due to the higher growth rates of interstate services. They argue that using the total company productivity factor for interstate services would understate the real level of productivity of this subset of services, and would result in excessive rate and earnings levels in the interstate jurisdiction.

A. The Commission is not legally constrained from using total company productivity in its interstate price cap formula.

As noted above, AT&T and Ad Hoc argue that the use of total company productivity contravenes the Communications Act of 1934 and the Supreme Court *Smith v. Illinois Bell* decision, which, they contend, require a separation between the state and federal jurisdictions. This argument is without merit.[24] First, the use of a total company productivity factor in no way impinges on, or burdens, the state jurisdiction or on the FCC's obligation to provide for interstate compensation for use of local plant. The Commission's Part 36 Rules establish the procedure for jurisdictionally separating LECs' revenues, expenses, and investment. Whether the Commission uses a total company or an interstate-only productivity factor in its price cap formula in no way alters these jurisdictional allocations. Correspondingly, the ratemaking authority of state commissions is not in any way affected by the choice of productivity factors for interstate ratemaking purposes. The use of a total company productivity factor would not

[24] In addition to being meritless, AT&T and Ad Hoc have waived any right to raise such an argument. Use of TFP has been an integral part of the Commission's price cap regime since the beginning of the Commission's price cap regime. The initial LEC X-Factor was based in substantial part on LEC TFP. See Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786 (1990). Both AT&T and Ad Hoc were active participants in the proceeding. They did not raise these purportedly significant statutory concerns. Its particularly disingenuous for AT&T to assert such a claim. When it was subject to FCC price cap regulation, AT&T did not assert that *Smith v. Illinois Bell* and the Communications Act mandated use of an interstate-only X-Factor for the AT&T price cap plan. See, Policy and Rules Concerning Rates for Dominant Carriers, CC Docket 87-313, Report and Order, 4 FCC Rcd 2873 (1989).

necessitate any adjustments in intrastate rates, or impede in any way the existing authority of state commissions over intrastate rates.

Second, there is ample precedent for considering total company statistics in setting interstate rates. Most prominently, the Commission has historically relied on total company data in measuring the cost of capital and determining the allowable rate of return for interstate services alone. This is directly analogous to the use of a total company productivity factor for interstate ratemaking purposes. And, just as the Commission's use of a total company cost of capital has, in the past, not impacted or constrained a state commission's intrastate ratemaking authority, the use of a total company productivity factor will not impact or constrain a state commission's intrastate ratemaking authority. More directly, the Commission in its previous price cap decisions has relied, in part, on total company productivity studies.

B. The higher growth rate of interstate output is largely an artifact of regulatory price structure and price trend.

AT&T and Ad Hoc submitted interstate-specific productivity studies. Both parties used the same methodology, based on direct measures of interstate access output growth and the assumption that interstate input growth is equal to total company input growth.[25] In addition to the objection that an interstate only productivity measurement is not economically meaningful,[26] there are other substantive reasons to be cautious in equating differing growth rates between service categories with differences in productivity. Further, the interstate "productivity" adjustments proposed by AT&T and Ad Hoc, 1.9% and 2.8% respectively, far exceed any reasonable approximation of the contribution of interstate access to TFP.

[25] AT&T Comments at 13-14 and Appendix A, at 23-30 and 72-77; Ad Hoc Comments at 46-47.
[26] See USTA Comments at 27-31.

In the first instance, LEC rate structures were not historically developed to reflect the marginal or incremental costs of outputs. From an economic perspective, the vast preponderance of network assets are fixed (e.g., General Support Facilities) and a direct function of subscriber access (including the line card in the switch as well as the loop). Approximately 87% of the investment of the BOCs is in fixed or customer access assets, and only 13% in truly usage sensitive assets.[27] However, rate structures do not follow economics. For example, for the Sprint LECs, flat rate customer access revenues (basic local service and Subscriber Line charges) account for only about 37% of total revenues. In the access arena, in particular, rates have been set in excess of economic costs to generate a subsidy to keep customer access (i.e., basic local service) affordable. Measuring aggregate output changes based on revenues or (allocated) revenue requirements has the effect of overstating the usage (as opposed to customer access) component of output, thereby overstating the interstate contribution to TFP.

Of probably greater significance in evaluating the productivity studies placed on the record in this proceeding, changes in rate structures have, over the past decade, significantly distorted relative output growth. Since divestiture, the combination of jurisdictional separations changes and the implementation of interstate Subscriber Line Charges (SLCs) have dramatically decreased interexchange carrier interstate access costs. Together with the growth in interLATA toll competition, the result was to significantly stimulate the growth in access, and particularly interstate access, usage. The reduction in access charges have slowed in recent years in the absence of further SLC increases or separations changes, and interstate access growth rate have moved closer to the overall growth rates of other services.

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[27] See Attachment E.

The narrowing difference between interstate and intrastate output growth in recent years is evidenced in the following table:

Table 3

Norsworthy Model Analysis Output Growth					
Per Norsworthy Model					
	Interstate	State Toll	Local	Total Intrastate	Total Co
85-94	6.83%	6.78%	3.03%	4.22%	4.90%
90-94	5.41%	6.85%	3.42%	4.45%	4.69%
Norsworthy Model Corrected*					
	Interstate	State Toll	Local	Total Intrastate	Total Co
85-94	5.23%	3.89%	3.03%	3.31%	3.81%
90-94	4.32%	4.08%	3.42%	3.62%	3.79%
* Corrected for:					
	(1) Incorrect quantity used to develop price series for Interstate Traffic Sensitive (2) Omission of IntraLATA MOU for Intrastate quantity (Revenue included)				

Based on the output growth data provided by Dr. Norsworthy, the annual growth in interstate output for 1985-1994 was 6.83%, but dropped to 5.41% for 1990-1994. The second portion of Table 3 displays the Norsworthy output measures corrected for the overstatements of both interstate and state toll output growth rates (as previously discussed). In the corrected table, the interstate output growth rate drops from 5.23% for 1985-1994 to 4.32% for 1990-1994. The differential between interstate and total company output growth correspondingly drops from 1.42% to .53% respectively for the two time periods. The declining interstate output growth and interstate-state differential reflect the diminution of the largely Commission rule-driven decreases in interstate access rates.

The evidence does not support the contention that there is a substantial and permanent output growth differential between interstate and state services, and certainly not a differential of the magnitude proposed by AT&T and Ad Hoc. The unreasonableness of the AD Hoc and AT&T X-Factors proposals is illustrated in Table 4 below. Had those proposals been applied from the beginning of LEC Price Caps, the results would have been irreconcilable with economic and financial reality, and are clear indications of the unreasonableness of both proposals.

Table 4

	Price Cap LEC ROR			
	1991	**1992**	**1993**	**1994**
Actual 492	**11.67%**	**12.34%**	**12.92%**	**13.75%**
AT&T 8.8% X-Factor	**10.67%**	**9.17%**	**7.48%**	**5.69%**
Ad Hoc 9.9% X-Factor	**10.47%**	**8.54%**	**6.40%**	**4.07%**

Further, with the potential for the Telecommunications Act of 1996 to open the local and intraLATA toll markets to competition, it would not be surprising to see intrastate market output growth increase, due to both lower prices and new products, at rates equal to or exceeding interstate output growth rates.

Sprint does not oppose the incorporation of an interstate productivity contribution additive, as discussed below, into the Commission's interstate price cap plan. To the extent that the Commission adopts a rolling average approach, based on annual updates of LEC TFP and input price changes, Sprint would recommend that the Commission incorporate an interstate "productivity" adjustment only insofar as the output quantities in that approach are weighted by marginal or incremental costs, and not by revenues or allocated revenue

requirements.[28] This will ensure that state and interstate productivity differences reflect economically meaningful differences and are not the artifact of uneconomic rate structures. In addition, Sprint supports the development of an interstate productivity differential based only on output growth variances. Sprint agrees with USTA that there is no valid basis today for disaggregating assuming input growth between state and interstate services.[29]

V. THE COMMISSION SHOULD ADOPT A FIXED INTERSTATE PRICE REDUCTION FOR A FOUR YEAR PERIOD.

Although Sprint believes that use of a rolling average, updated annually for the components of the price cap adjustment formula, has theoretical merit, Sprint's review of the record in this proceeding finds little evidence that such an approach is either practical or useful. This should not be construed to mean that Sprint does not believe it is possible, with considerable further effort, to develop a simplified methodology for updating productivity and input prices on an annual basis. However, given the Commission's far-reaching and critical responsibilities in implementing the Telecommunications Act of 1996, Sprint suggests that it would not be unreasonable for the Commission to elect to focus its resources on that effort rather than on the production of productivity and input price indices. The record in this docket is sufficient to prescribe a new fixed interstate productivity offset, which, as with its previous plan, the Commission can adopt for a four year period, and update or revise as appropriate at that time.

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[28] Dr. Norsworthy, states "the economic theory of production clearly specifies that the correct weights to use for this purpose are[**marginal cost weights**]." AT&T Comments, Norsworthy Statement at 59. However, Dr. Norsworthy himself uses revenue requirement, which he alleges ". . . represent the long-term marginal costs of the respective services." Id, at 23. The contention that revenue requirements represent long-term marginal costs for interstate access services is totally without merit. Not only do those revenue requirements incorporate arbitrary allocations of overhead or fixed costs, they also include costs that are clearly uneconomic (e.g., the transport RIC).

[29] See USTA Comments at 28-29.

A. **The record evidence indicates that a rolling average adjustment is neither practical nor necessary.**

Based on its review of the TFP studies filed in this proceeding, Sprint believes that considerable work still remains to be done to develop a practical approach for developing annual updates to LEC TFP and input prices. As a base of reference, Table 2 above summarizes the components of the two productivity studies that were fully documented (Norsworthy's study for AT&T and Christensen's study for USTA) as well as Dr. Cronin's input price study done for Sprint. These studies are presented in the context of the direct model, in which the price cap indices (PCIs) would be adjusted each year by the difference between LEC input price changes and LEC TFP growth. The data reflect total company results. As discussed in detail in Sections II and III above, Sprint found numerous specification and data errors in both the Norsworthy and Christensen studies, and Table 2 provides Sprint modifications or corrections to those study results.

In examining these results from the perspective of a rolling average approach, Sprint focused on two issues: the volatility of the year over year results, and the overall trends. As displayed in Table 2, both of the productivity studies, but more particularly the AT&T study, exhibit considerable year over year volatility in their measurements of both input prices and TFP. For instance, Dr. Norsworthy's input price changes range from -6.54% to 13.44%, a spread of 19.98% over 10 years. Looking at the underlying components of the input price and TFP measures reveals even greater variances. For instance, Dr. Norsworthy's capital price changes range from -28% to 39% over that same year period (see Attachment D).

Sprint's modifications to the studies dampen the volatility considerably, especially for the Christensen study. Although this is a step in the right direction, considerable work

remains to refine these studies and to develop procedures and data sources in order to update them annually. In the interim, Sprint is concerned that any attempt to utilize a rolling average approach based on methodologies that produce such volatile results will only make the annual update proceeding more complex and controversial than the pre-price cap annual rate of return tariff filings.

More significantly, none of the studies on the record, even as modified by Sprint, evidence any pronounced trends in TFP, input prices, or the resulting PCI adjustment under the direct approach. As shown in Figures 1 and 2 (based on the corrected data from Table 2), neither study shows any clear trends in either the components of the direct model or the results in terms of PCI changes. The only advantage to the use of the rolling average method is to capture significant trends in input prices and TFP. For example, if input prices were constant or declining, and TFP was increasing, the rolling average would be valuable as a means of flowing those gains to end users. However, the historic data displayed in Figures 1 and 2 reveal almost random fluctuations around a relatively flat trend line. Whether future trends will differ from the recent past is not clear, but, based on the evidence available, it is not apparent that the rolling average approach has any significant advantage over use of a fixed price offset factor, at least for the next four years.