

Federal Communications Commission (Amendment of Part 90 of the commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems) PR docket No. 93-61 on behalf of PacTel Teletrac, "The Economics of Co-Channel Separation for Wideband Pulse Ranging Location Monitoring Systems," (with William E. Taylor), filed June 29, 1993.

Federal Communications Commission (CC Docket 94-1) on behalf of the United States Telephone Association: "Comments on the USTA Pricing Flexibility Proposal," filed as Attachment 4 to the United States Telephone Association Comments, May 9, 1994, "Reply Comments: Market Analysis and Pricing Flexibility for Interstate Access Services," filed as Attachment 3 to the United States Telephone Association Reply Comments, June 29, 1994 (with William E. Taylor).

*Thompson Everett, Inc. v. National Cable Advertising, L.P., Cable Networks, Inc., and Cable Media Corporation*, U.S. District Court (E.D. Va.). (Expert report (with Linda McLaughlin), March 11, 1994 and deposition testimony, March 24, 1994 on behalf of defendants concerning the competitive effect of exclusive cable advertising representation contracts and their impact on plaintiff.)

U.S. Federal Energy Regulatory Commission, *Revisions to Oil Pipeline Regulation Pursuant to the Energy Policy Act of 1992*, Docket No. RM93-11-000. (Paper entitled "An Economic Analysis of Oil Pipeline Markets" submitted on behalf of Sinclair Oil Corporation, January, 1994).

U.S. District Court for the District of Columbia, *United States of America v. Western Electric Co., Inc. and American Telephone and Telegraph Company*, Civil Action No. 82-0192. (Statement on permitting RBOC entry into interLATA markets submitted on behalf of four RBOCs, July 6, 1994.)

Florida Public Utilities Commission, Docket Nos. 930548-EG, 930549-EG, 930550-EG and 930551-EG. (Prepared direct testimony on environmental adders for the Center for Energy on Economic Development, Filed May 19, 1994.)

U.S. District Court for the Northern District of Illinois Eastern Division, *In re: Brand Name Prescription Drugs Antitrust Litigation*, (Deposition, Testimony on class certification, September 18, 1994.)

Connecticut Department of Public Utilities, Docket No. 99-07-02. ("Economic Principles For Classifying Telecommunications Services As Competitive Or Emerging Competitive," testimony submitted on behalf of Southern New England Telephone on October 17, 1994).

U.S. District Court (Southern District of New York), Federal Trade Commission v. B.A.T. Industries P.L.C., et al. 94 Civ 7849 (MP). Deposition and Trial (December 14, 1994) testimony on effects of a merger for American Tobacco.

U.S. District Court (Southern District of New York), Union Carbide Corporation v. Himont U.S.A., Inc., et al. 95 Civ. 0134. Deposition (February 1, 1995) and trial (February 15-16, 1995) testimony for plaintiff on effects of injunctive relief.)

U.S. District Court (Northern District of Alabama, Southern Division), Southtrust Corporation v. Plus System, Inc., Network, Inc., and Southeast Switch, Inc. Civil Action No. CV-93-P-2291-S. Telephone Deposition, April 18, 1995.

**INCENTIVE REGULATION AND COMPETITION:  
REPLY COMMENTS**

**Prepared for Pacific Bell**

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## I. INTRODUCTION

The opening comments and testimonies of parties in this proceeding reveal one area of fundamental agreement and one area of fundamental disagreement with Pacific's proposal. All parties agree with Pacific that when competition is effective, the market should replace regulation as the source of price protection and other consumer benefits. On the other hand, with the exception of Dr. Cornell for MCI, intervening parties seem to argue that the current price cap formula is the *only* means of price protection for services still in need of regulation. In fact, some parties advocate changes to the current regime that would have the effect of increasing the amount of regulation. Retention of the current unfocused price reductions required by the formula, let alone increasing the regulatory burden, is inconsistent with the Commission's goal of open competition in all markets by 1997 and with the state of competition in California's telecommunications industry.

The remainder of the report is organized as follows. We first explain why elimination of the formula coupled with Commission-enforced price protection is superior to retention of the across-the-board application of the formula advocated by several parties. Next, we explain why the complication to the formula (quality and barriers-to-entry factors advocated by the CCTA witnesses) and the rate true-up proposed by Dr. Selwyn are inconsistent with efficient regulation in an environment of increasing competition. We then explain why Dr. Selwyn's simplistic interpretation of recent experience with the FCC price cap plan is of no relevance to possible modifications to California's incentive regulation plan. Next, we concur with Dr. Christensen (and disagree with Dr. Selwyn) that if a productivity factor is retained, the appropriate level is the difference between telecommunications industry and U.S. total factor productivity (TFP), because the best estimate of the difference in input inflation rates is zero. The following section discusses Professor Mayo's proposed criteria for assessing effective competition and the last section summarizes the paper.

## **II. PACIFIC'S PROPOSAL IS SUPERIOR TO RETENTION OF THE CURRENT PRICE CAP FORMULA**

### **A. Proposals to Retain the Price Cap Formula Are Misguided**

For the most part, intervening parties advocate retaining the formula for Category I and II services.<sup>1</sup> For example, DRA states:

To immediately eliminate the formula would certainly leave most customers in local exchange markets in the worst of both worlds: no effective competitive alternatives and no ability to benefit from further productivity improvements likely to occur due to continuing technological advancements and the effects of developing local competition. (p. 2-3)

Similarly, TURN opines:<sup>2</sup>

The Commission designed NRF to achieve several important goals. These include the provision of high quality universal service, the promotion of economic efficiency, and the encouragement of technological advance. As the CPUC's infrastructure report made clear, the Commission's intent is to ensure that all Californians benefit from the pursuit of these goals. The productivity factor is the element of NRF that assures all Californians can benefit from innovation and efficiency in the telecommunications industry. (p. 8, emphasis in original)

Our interpretation of what the Commission's goal of open competition in all markets (the main theme of the infrastructure report) requires is quite different. This laudable objective means

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<sup>1</sup>Most parties incorrectly seem to equate elimination of the formula with price deregulation. In fact, Pacific's proposal to eliminate the formula substitutes Commission-imposed stable prices for the formula, a mechanism that is better focused than the current across-the-board application of the formula.

<sup>2</sup>Other parties favoring retention of the formula for Category I and II services include the Department of the Army and Professor Mayo (on behalf of AT&T). Dr. Collins and Professor Wolak (on behalf of CCTA) and Dr. Selwyn (on behalf of CCLTC) not only advocate keeping the formula, but they would modify price caps in ways that would substantially increase the regulatory burden.

that the market, rather than across-the-board application of a regulatory formula, becomes the main vehicle for providing customers the benefits of a dynamic, productive industry. Regulation in the form of price protection is focused only where it is needed.

Attempts to provide the across-the-board sharing of productivity gains are almost unheard of in other industries, including those supplying essential consumer goods and services such as food, housing, and transportation. With the increased competition that the Commission is promoting, attempts to artificially distribute benefits are not only problematic, but can be counterproductive to the extent that the incentives for efficiency and innovation for major industry participants are stifled in the process.

Pacific's proposal does provide the benefits of competition to all Californians. Consumers of competitive services will receive the price protection and other benefits from competition itself. Consumers of services subject to Commission-imposed stable prices or price ceilings (Category I and II) will receive both price protection *and* productivity gains equal to the rate of inflation, i.e., stable nominal prices mean that real prices fall at the rate of inflation. While such real price reductions are likely to be smaller than those required by the current formula, they are in line with the expected level of productivity achievement that Dr. Christensen has identified.

#### **B. Certain Elements of Dr. Cornell's "True Price Caps" Would Provide Price Protection that is Similar to Pacific's Proposal**

Dr. Cornell's "true price caps" proposal presents a vision in which competition replaces regulation and the regulatory burden on other services is reduced accordingly. In this regard, she shares a similar vision of the end-state and the necessary transitional steps that we outlined in our opening comments. Her "true price caps" plan has the following elements.

- Set rates for essential inputs at cost
- Cap rates for non-competitive services at current levels
- Eliminate all remaining ties to rate-of-return regulation
- Eliminate price regulation for competitive services

- **Eliminate periodic updates to cost studies**

Although we are concerned about the first two elements, as we discuss below, we note that Dr. Cornell's plan is similar to Pacific's in two important ways: (1) it eliminates the current price cap index and replaces it with stable rates and (2) it substantially reduces the regulation of competitive services. In addition, by eliminating cost studies and the last vestiges of rate-of-return regulation, the plan would reduce the regulatory burden.

However, Dr. Cornell's plan incorporates issues that are currently being addressed in parallel proceedings. Indeed, her first requirement of pricing essential inputs at cost, which accounts for a substantial part of her testimony,<sup>3</sup> must be addressed in the pricing phase of the OAND proceeding. Consequently, including it here amounts to holding the necessary reforms she identifies here hostage to a favorable outcome for interconnecting carriers in the parallel proceeding.

Because interconnection prices are currently above their costs, the insistence that they be lowered to cost coupled with the second requirement that other rates be capped at current levels amounts to a forced revenue reduction for the LECs and a corresponding benefit for interconnecting competitors. There are two major problems with such a revenue reduction. First, there is no guarantee that the resulting rates would cover the LECs' forward-looking costs, let alone the historical costs that they still should have the opportunity to recover. Second, although the recent IRD decision moved prices *toward* economic levels, that decision did not complete the job. Along with universal service funding reform, efficient starting prices for LEC services subject to competitive entry are a prerequisite for efficient competition in all markets.

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<sup>3</sup>We understand that Pacific has moved to strike a substantial portion of this part of the testimony on the grounds that it is beyond the scope of this investigation.

### **III. NEW COMPLICATIONS TO THE PRICE CAP PROCESS ARE UNWARRANTED**

Both CCTA's witnesses (Dr. Collins and Professor Wolak) and Dr. Selwyn would exacerbate the problems with the current formula by their proposals to add significant complications to the formula. We discuss each of these proposals in turn.

#### **A. Accounting for Barriers to Entry and Quality Should Not be Part of the Price Protection for Category I and II Services**

Professor Wolak has proposed two mechanistic adjustments to the current price cap formula. These adjustments would tie the LECs' prices to artificial quality standards and to progress in reducing barriers to entry. In effect, Pacific would be rewarded by being able to charge higher prices if certain quantitative targets were met. Professor Wolak has not justified this approach and it should be accordingly rejected, as we discuss in detail below.

The quality adjustment is based on Dr. Collins's detailed proposal to add quality measures to the current list of the quality measures that the Commission monitors. Dr. Collins's analysis is inconsistent with efficient regulation and provides no basis for improving customer value. Efficient regulation requires that quality monitoring not be expanded without justification. In fact, Dr. Collins provides no support that the quality standards he proposes are related to the value customers receive from telecommunications services and he fails to establish a quantitative relationship between increases in his quality measures and increased customer value.

Explicit quality incentives in an environment of increasing competition are bad for two reasons. First, given the difficulty of tying quality measures to consumer value, the measures that are actually included in the formula are inherently arbitrary. As such, they would provide the LECs artificial and essentially meaningless incentives that may have nothing to do with reducing costs or increasing customer value. Second, in light of the increasing competition that the LECs face, the

market itself becomes the vehicle for bringing consumers the quality they demand.<sup>4</sup> In such an environment, the reputation for quality for *all* of its services (competitive or otherwise) becomes a critical competitive factor. LECs would be irrational and in danger of harming their shareholders if they let quality slip below the standards demanded by the market. Accordingly, CCTA's proposal to embellish the price cap formula with a quality factor should be rejected.

Professor Wolak also identifies certain barriers to entry, e.g., availability of number portability and network unbundling, that he would incorporate into the price cap formula. Under his proposal, the X factor (but apparently not the index itself) could be eliminated no sooner than five years from now if the LEC met certain Commission-imposed time tables.<sup>5</sup> While we favor elimination of *artificial* entry barriers<sup>6</sup> and understand that this is precisely what the Commission is investigating in its local competition and other proceedings, we fail to see why the elimination of these barriers should be tied to the prices the LECs can charge, nor should a time horizon of at least five years be imposed on the process. The presence or absence of these entry barriers is a legitimate consideration in assessing the competitiveness of particular markets. When the LECs satisfy the Commission's requirements for removal of such barriers, they should no longer face any price regulation for those competitive services.

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<sup>4</sup>Certain minimal quality standards associated with carrier (and/or carrier-of-last-resort) status may be imposed on all competitors. In addition, standards for interconnecting networks may emerge. Beyond these minimal, universally applicable, standards, the market should replace regulation as the arbiter of quality.

<sup>5</sup>Professor Wolak's proposal calls for a permanent reduction in the productivity factor of one percent per year if all of the Commission's entry barrier reduction targets are met. Therefore, it would take at least five years to erode the current productivity target of five percent. Professor Wolak offers no justification for the quantitative aspects of his proposal.

<sup>6</sup>Professor Wolak identifies other barriers such as advertising and the need to build networks. Such "barriers" are pervasive in unregulated markets and Professor Wolack presents no evidence that they pose particular problems here. In addition, as the LEC expand into new areas, e.g., when they obtain interLATA authority, they will face similar barriers. In neither case should regulators attempt to facilitate entry, under any sort of "infant company" justification. In a limited number of situations, there may be an infant company justification for regulatory advantages or handicaps. Infant company conditions clearly do not describe the firms that compete in California. These firms include the "big three" IXCs, with combined annual revenues of over \$60 billion, as well as Time Warner, which is affiliated with U.S. West.

## **B. Dr. Selwyn's Proposal to Reset Rates Should be Rejected**

Dr. Selwyn proposes numerous changes to the current plan, all of which would substantially reduce the LECs' rates. Dr. Christensen addresses those changes related to increasing the productivity factor. In addition to these changes, Dr. Selwyn advocates resetting prices based on (1) substituting a total service long run incremental cost valuation of the LEC's assets for their book value and (2) using a rate-of-return of 10 percent to produce the annual expenditures associated with these assets.

Turning first to Dr. Selwyn's second adjustment, we simply note that the Commission has already rejected a true-up of rates to reflect changes in the cost of capital. Referring to NERA's work in the previous review, the Commission concluded:

We concur with Dr. Taylor's testimony in Exhibit 1:  
'Adjusting Pacific's rates for changes in specific input prices (e.g., a change in the cost of capital) is no different conceptually than using an annual Z factor adjustment to reflect changes in an individual input factor price. In general such treatment is inconsistent with the proper working of price cap regulation because it removes the firm's incentive to bargain vigorously in its input markets. The prices for many inputs have undoubtedly changed (in real and relative terms) since price caps began. There is no basis for singling out the cost of capital. Adjustment for any and all such changes would be *a return to the old days of [cost of] service regulation.*' (D.94-06-011, pp. 58-59, emphasis and bracketed material added)

In other words, current rates reflect the proper cost of capital. Dr. Selwyn's second adjustment is yet another attempt to return to cost-of-service regulation.

Dr. Selwyn's call for revaluing the LECs' asset base raises the fundamental issue of whether utilities are afforded the opportunity to continue to recover the historical costs reflected in the book value of the plant. We note that this Commission has provided for that opportunity in establishing the start-up revenue requirement in D.89-10-031, in the revenue-neutrality philosophy

that guided the IRD rate-rebalancing<sup>7</sup>, and in ordering evidentiary hearings on whether the rules for local exchange competition would impair the LECs' ability to earn a fair return.

In addition, Dr. Selwyn's asset revaluation would be a time-consuming and potentially contentious exercise that would substantially delay the resolution of issues in this case. The Commission is already overseeing cost studies for the limited purpose of costing and pricing unbundled elements. The process is still in the development stage and results are a number of months away. Complete valuation of assets with the resulting models would be a major complication that would delay progress even further.

We finally note that Dr. Selwyn's apparent expectation of lower rates would not necessarily emerge from the study he proposes. Dr. Selwyn seems to expect that the forward-looking valuation would be lower than the book value. This is just another way of saying that regulatory depreciation rates have been too low. Using the appropriate economic depreciation rates in calculating the annual cost associated with capital assets could well offset the effect of a lower asset base.

#### **IV. DR. SELWYN'S ANALYSIS OF RECENT FCC PRICE CAP EXPERIENCE IS FLAWED**

Dr. Selwyn looks to recent events in the interstate jurisdiction to provide guidance on issues related to sharing. In particular, he argues that the 1.3 percent spread between the minimum option (4.0 percent) and the maximum option (5.3 percent, no sharing) should be added to the stretch factor in the event that the Commission eliminates sharing. He also argues that the Commission should view Pacific's recent selection of the 5.3 percent X factor as a measure of the productivity Pacific is likely to experience. We disagree with both assertions.

The particular spread the FCC selected was designed to encourage carriers to select a high productivity target *on an annual basis*, and in the process, eliminate sharing as part of the price cap

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<sup>7</sup>Despite the revenue-neutrality philosophy that guided IRD, the demand stimulation that the Commission expected from the toll and carrier access price reductions has not materialized.

plan.<sup>6</sup> There is a fundamental difference between proposing options for *annual* choices on the part of the RBOCs and *mandatory* elimination of sharing. The year-to-year productivity of an individual firm can vary considerably. With annual choice, the objective would be to provide an incentive to stretch to a higher level in otherwise above-average years. In contrast, a productivity target fixed over a number of years would have a correspondingly lower "stretch," because the variation in the average over a number of years is smaller than annual variations. In summary, because the FCC's plan provides sharing as an annual option, its design provides no meaningful guidance for the establishment of a "stretch" in the intrastate jurisdiction.

Turning to Dr. Selwyn's evaluation of Pacific's recent choice, we first point out that the claim that the choice reflected Pacific's belief that it would earn at least a 14.55 percent in the interstate jurisdiction is absolutely incorrect. Rather, the correct cross-over point is 12.55 percent. Dr. Selwyn notes that the selection of the 5.3 percent over a 4.7 percent target initially lowers after-tax return by about 30 basis points. He then adds those 30 basis point to the maximum earning under the 4.7 percent plan (14.25 percent) to derive his estimate. What Dr. Selwyn has failed to recognize is that at a much lower return (12.25 percent for the 4.7 percent option), the initial gap begins to narrow, because of sharing. In fact, the initial gap of 30 basis points is erased when the before sharing earnings are 12.85 percent and the after sharing earnings are 12.55 percent. So in Dr. Selwyn's own terms, Pacific was sacrificing about \$10 million in revenues (\$6 in net income) to keep open the option of earning above the fairly modest return of 12.55 percent.

An analysis of the choices Pacific faced before its recent decision is represented in Table 1. As a base case, the first column lists alternative earnings forecasts under the 4 percent X factor without sharing. The remaining three columns show Pacific's earnings under each of the options.

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<sup>6</sup>Ironically, Dr. Selwyn advocates retention of sharing, yet he turns to the FCC's action that was based on the desire to eliminate sharing.

**Table 1. Pacific's Expected Interstate Return Under the FCC Price Cap Options**

<b>4% X, no sharing</b>	<b>FCC's 4% Option</b>	<b>FCC's 4.7% Option</b>	<b>FCC's 5.3% Option</b>
11.25	11.25	10.95	10.70
11.75	11.75	11.45	11.20
12.25	12.25	11.95	11.70
12.55	12.40	12.25	12.00
12.75	12.50	12.35	12.20
13.25	12.75	12.60	12.70
13.75	12.75	12.85	13.20
14.25	12.75	13.10	13.70
14.75	12.75	13.35	14.20
15.25	12.75	13.60	14.70
15.75	12.75	13.85	15.20
16.25	12.75	14.10	15.70
16.55	12.75	14.25	16.00
16.75	12.75	14.25	16.20
17.25	12.75	14.25	16.70

The table shows that:

- The maximum return under the 4 percent option is capped at 12.75 percent.
- The 4.7 percent option is *never* the best under any earnings scenario (row of Table 1).

Therefore, absent unusual earnings uncertainty, the annual choices presented to Pacific by the FCC boiled down to the 4 percent option, which is no better than traditional regulation during years of above-average productivity or the highest option, with the possibility of keeping superior earnings.

In addition, the FCC's decision to lower the prices of the RBOCs that had chosen the lower (3.3 percent) option under the initial plan carries with it the signal that choice of a lower option may well be penalized in the future. Irrespective of the basis for the FCC's decision for recalculating prices, any regulatory regime that changes future prices based on past management decisions become little more than traditional regulation with a lag.

There are two additional considerations in evaluating Pacific's recent choice. First, sharing (or not sharing) is based on *accounting* rather than economic costs. Accordingly, the RBOCs' choices are, at best, only an indirect indicator of expected productivity. Second, as discussed earlier, the choice reveals the *annual* expected productivity, not the long-run expectation that should guide the establishment of a productivity factor.

## **V. IF THE PRICE CAP FORMULA IS RETAINED, THERE SHOULD BE NO ADJUSTMENTS FOR INPUT PRICE INFLATION**

Dr. Selwyn advocates an adjustment for input price inflation rates, a recommendation he made in the last review that the Commission quite rightly rejected. In justifying his recommendation, he criticizes NERA's previous work on the subject, which is generally consistent with that provided by Drs. Christensen and Duncan in their opening testimonies.

Central to the interpretation of the productivity offset in the price cap formula is the assumption that input price growth for the U.S. economy is the same as that for the LEC industry. If these input price growth rates are expected to differ, that difference must be included as part of the productivity offset. Drs. Christensen and Duncan have conclusively demonstrated that although economy-wide and LEC input price inflation rates may differ over short periods of time, the long-run pattern is that there is no difference in the respective rates. Further, the simple average difference for a short period, such as that proposed by Dr. Selwyn, is an unreliable forecast of future input price inflation rates, because of the large year-to-year variability in the measured differences in these inflation rates. Therefore, we concur that the most reliable forecast is the long-run average difference of zero percent.

A major reason for the year-to-year variability comes from the fact that input prices, particularly the component associated with capital, are difficult to measure. In contrast, standard price indices are easily understood in concept. One merely samples the relevant goods, observes their prices, applies the appropriate weights and calculates the index. In particular, such indices are

based on goods and prices that can be observed and measured. These quantities and prices, in turn, are based on actual market outcomes.

The input price indices—constructed as a by-product of TFP studies—are very different.<sup>9</sup> In a TFP study, input prices are used only to calculate the relative weights of different inputs used in construction of the quantity index of aggregate input. These weights are expenditure weights, where expenditure is the product of price and quantity. While calculation of labor and materials prices and expenditures is straightforward, the estimation of capital expenditure and the price of capital is quite complex.<sup>10</sup> Moreover, for purposes of a TFP study, capital expenditures do not have to be measured with a significant level of precision: even though there are a number of ways to calculate such expenditures, the capital share of the input quantity index tends to be around 50 percent for LECs. And since it is the *level* that is important, fluctuations around 50 percent do not matter much in the estimate of the input quantity index.

In contrast, when the same formulas are used to calculate an input price index, the year to year *change* becomes very important. It is elementary that accurate calculation of changes is much more difficult than accurate calculation of levels.

Additional insight into the problem can be gained from observing how capital prices are calculated. Ignoring the effects of taxation on capital expenditures, the capital price index ( $c_t$ ) equals the price index of new equipment ( $J_t$ ) multiplied by the sum of return on capital ( $r_t$ ) plus depreciation ( $d$ ) less the inflation rate for new equipment ( $I_t$ ): i.e.,

$$c_t = J_t (r_t + d - I_t) .$$

This formula is the answer to the following question: how much does it cost to hold an investment in telephone plant for one year. The answer is the lost opportunity of tying up funds (rate of return), the loss in value of the asset (depreciation), offset by nominal changes in equipment price.

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<sup>9</sup>None of this discussion should be taken as a criticism of TFP studies—input price indices in a TFP study have a very limited purpose in its traditional use, and variations in these prices have only a small effect on the input quantity index used to calculate TFP growth.

<sup>10</sup>The capital expenditures of a TFP study can be very different (numerically) from the capital components of a revenue requirement.

Examination of this equation reveals the difficulties in precise measurement of the price of capital. First, none of the variables is readily observable. In fact, measuring rates of return on capital and economic depreciation is difficult and highly contentious. Developing price indices for telephone plant and equipment (TPIs) is not an easy task.

Second, the variables are not determined independently in the market; rather, they are inherently related. For example, both equipment inflation and return will change together with the underlying rate of inflation in the economy. Similarly, the price of new equipment and depreciation are intimately linked in that changes in the price of new equipment determines how much economic depreciation has occurred. While measuring these variables independently will have little effect on the relative size of capital expenditures—which is the only use that a TFP study makes of the price of capital—interactions among these variables can produce large variability in the estimates of year-to-year capital price changes.

Third, small changes in equipment prices can produce large swings in capital prices, so extremely precise measurement of equipment prices would be required if the resulting capital price index were to be useful.

Table 2. Small Changes in Equipment Prices Cause Large Changes in Capital Price Estimates

Year	Return	Depreciation	Equipment Price	Capital Price	Annual Change
1	10%	7%	1.00	0.170	
2	10%	7%	0.98	0.186	9.2%
3	10%	7%	1.01	0.141	-27.7%
4	10%	7%	0.99	0.188	28.6%
5	10%	7%	1.03	0.134	-33.7%
6	10%	7%	1.01	0.192	35.5%

Using the above capital price equation, Table 2 illustrates this phenomenon, assuming a return of 10 percent, depreciation of 7 percent, and equipment prices that fluctuate slightly around a normalized value of 1.0, a pattern exhibited by recent TPIs produced by some LECs. Despite the modest changes in equipment prices, the resulting annual capital price changes are in the double digit range, both positive and negative.

Dr. Selwyn (p. 45) makes the erroneous claim that input quantities are derived by dividing expenditures by an input price index. As the above discussion shows, this statement is clearly wrong for the capital component of input. Capital expenditures are constructed, not measured. In fact, capital input *quantities* are measured directly. Therefore, in the context of a TFP study, Dr. Selwyn's claim that a higher rate of input price inflation translates directly into a lower rate of input quantity growth is utterly without merit.

## VI. INDICES OF EFFECTIVE COMPETITION

Professor Mayo (p. 15) lists several criteria for assessing market power for the purpose of reclassifying services. His list is quite general and, for the most part, unexceptionable in principle. Of course, the critical test comes when particular criteria are actually used to classify services. In particular, we must caution the Commission that what is important is not a list itself, but the purpose to which it is being put: to determine whether the LEC retains significant power to charge supracompetitive prices.<sup>11</sup> In this regard, we note that there has often been an overemphasis on market share,<sup>12</sup> especially when measured by existing volumes or revenues, in attempts to assess market power. In industries that have been subject to pervasive regulation and are undergoing a rapid transition to competition, market share is a particularly poor indicator of market power. A more telling measure is the ability of competitors to deploy capacity to serve the demands of the former monopolist. Finally, the basis for assigning services to Category III has no bearing on the central question of this investigation: whether the price cap formula should be eliminated. Whether or not the formula is eliminated should have no effect on how services that are effectively competitive should be treated; they should not be subject to price regulation.

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<sup>11</sup> Professor Mayo appears to believe that the price cap formula is required to control market power. This is not the case. Under Pacific's proposal, the Commission would continue to control Category I prices and to impose price ceilings for Category II.

<sup>12</sup> Professor Mayo lists market share separately. In addition, his measure of the percentage of customers who have choices and the percentage who have exercised their options appears to be another market share measure.

## **VII. SUMMARY AND CONCLUSIONS**

After evaluating the positions of other parties in this proceeding, our major conclusion still remains that elimination of the formula with targeted price protection is superior to maintaining the current price cap formula. Further, the additional complications proposed by Professor Wolak, Dr. Collins, and Dr. Selwyn should be rejected, because they are incompatible with efficient regulation in an increasingly competitive industry. Similarly, Dr. Selwyn's proposals to increase the "stretch" factor in the event that sharing is eliminated and to include an input price inflation adjustment in the productivity factor (in the event the Commission chooses to modify, rather than eliminate the formula) are without merit.

**PREPARED REPLY TESTIMONY**

**OF**

**DR. RICHARD L. SCHMALENSEE**

**BEFORE THE**

**PUBLIC UTILITIES COMMISSION**

**OF THE STATE OF CALIFORNIA**

**ON BEHALF OF**

**PACIFIC BELL**

**INVESTIGATION NO. 95-05-047**

**SEPTEMBER 18, 1995**

**PREPARED REPLY TESTIMONY OF DR. RICHARD L. SCHMALENSEE**

**Q. Please state your name, business address, and professional qualifications.**

**A. My name is Richard L. Schmalensee. I am presently the Gordon Y Billard Professor of Economics at Massachusetts Institute of Technology ("MIT") and Special Consultant to National Economic Research Associates, Inc.**

**Q. Have you previously filed testimony in this proceeding?**

**A. Yes. I have.**

**Q. What is the purpose of your testimony?**

**A. The purpose of my testimony is to respond to parties that propose to retain the price cap formula and to other proposals that would make regulation less efficient. My analysis is presented in the study entitled, "Incentive Regulation and Competition: Reply Comments." A copy of the study is Attachment 1 to this testimony.**

**Q. Does this conclude your prepared testimony?**

**A. Yes, it does.**

**PREPARED REPLY TESTIMONY**  
**OF**  
**DR. RICHARD L. SCHMALENSEE**

**ATTACHMENT 1**

**INCENTIVE REGULATION AND COMPETITION:**  
**REPLY COMMENTS**

Post-It™ brand fax transmittal memo 7671		# of pages: <u>2</u>
To: <u>Joe Faber</u>	From: <u>Mike Golobek</u>	
Co: <u>CCLTC</u>	Co: <u>GTE</u>	
Dept:	Phone:	
Fax: <u>415-421-6619</u>	Fax:	



**GTE California Incorporated**

One GTE Place  
 Thousand Oaks, California 91362-3811  
 805 372-6000 — Databel 805 372-8232

Via Facsimile

In Reply Refer To  
**CA500LB**

September 28, 1995

Joseph S. Faber, Esq.  
 Davis Wright Tremaine  
 235 Pine Street, Suite 1500  
 San Francisco, CA 94104

Re: CCLTC Second Set of Information Requests

Dear Joe:

Below is GTEC's response to CCLTC's Second Set of Information Requests.

Q1. Please provide cites to economic authorities that would support Dr. Duncan's assertion with regard to adjustments by the economy to bring LEC input price growth in line with the economy as a whole.

R1. Economic Cites:

"Price Theory", Milton Friedman, Aldine Publishing Company, 1976, pp. 286-291.

"Introduction to Modern Microeconomics", Kelvin Lancaster, Rand McNally & Company, pp.49-51.

"Microeconomic Theory, P. R. G. Layard and A. A. Walters, McGraw-Hill Book Company, pp. 63-67.

Q2. Please provide cites to economic authorities that would support Dr. Duncan's assertion that the claim of finding a long run structural change "would overturn accepted economic facts in two areas: (1) the microeconomic principle that markets clear ... and (2) the macroeconomic principles that nominal price series are cointegrated.

Joseph S. Faber  
Page 2

R2. Economic cites:

"Forecasting, Structural Time-series Models and the Kalman filter", Andrew C. Harvey, Cambridge University Press, 1990, pp. 463-464

"Co-integration and Error Correction: Representation, Estimation, and Testing", Robert F. Engle and C.W.J. Granger, *Econometrica*, Vol. 55, No. 2 (March 1987), p. 251.

"Wage Growth and the Inflation Process: An Empirical Note", Yash P. Mehra, *American Economic Review*, September 1991, pp. 931-932.

For all of the above citations, the authorities do not specifically address Dr. Selwyn's term "non-homogeneous inputs". The article by Engle and Granger does discuss "close substitutes" at the same page referenced above.

For all of the above citations, the authorities do not specifically address Dr. Selwyn's assertion regarding the effect of differences in capital/labor intensities among industries.

If you have any questions, please do not hesitate to contact.

  
Michael J. Golabek  
Attorney

SNET TFP Study

OFFICE OF CONSUMER COUNSEL  
Interrogatories to The Southern New England Telephone Company

TOTAL FACTOR PRODUCTIVITY AND TOTAL FACTOR INPUTS

Witness Responsible: Robert R. Laundry

OC107SAT: Provide SNET's figures tracking "its productivity related to total factor inputs" for each or any of the years 1981-1995, as well as SNET's projected "productivity figures related to total factor inputs" for each or any of the years 1996 - 2009. See Decision in Docket No. 92-09-19 at pages 43-44.

Answer: The table below displays SNET productivity growth related to total output and inputs. The data are currently available only for 1990 through 1994. The data are the results from the TFP study performed by Drs. Melvyn Fuss and Leonard Waverman of the University of Toronto, who have been engaged by the Company to produce an SNET TFP study. Results for 1981-1989 will be provided as they become available.

SNET TOTAL FACTOR PRODUCTIVITY  
Growth Rates

	TFP % change	Output % change	Input % change
1990	1.3	1.4	.1
1991	-.2	-1.6	-1.3
1992	-.9	-3.2	-2.3
1993	3.9	1.0	-2.8
1994	.6	0.0	-0.6
Average	.9	-.5	-1.4

The methodology employed by the Fuss/Waverman study differs somewhat from the methodology used by SNET in its historical TFP studies. The FCC supports the use of Total Factor Productivity as an appropriate basis on which to establish an X-factor in the FCC price cap formula. While both approaches measure Total Factor Productivity, SNET followed the methodology developed by Dr. John Kendrick, a pioneer in productivity work. This methodology had been adopted by AT&T prior to the 1984 divestiture and utilized by all the Regional Bell

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**TOTAL FACTOR PRODUCTIVITY AND TOTAL FACTOR INPUTS**

**Witness Responsible: Robert R. Laundry**

**Answer (cont'd):**

**Operating Companies. The methodology used by Fuss/Waverman superseded the Kendrick methodology in the academic literature and also has been adopted by the Bureau of Labor Statistics. In addition, it has been utilized by Christensen Associates in the LEC TFP study undertaken on behalf of United States Telephone Association.**

**The Company has not calculated TFP nor its related input for the years 1995 through 2009 because of the lack of detailed data required for computation. In addition, estimated data must be used which, of course, implies prediction error in the calculation for future TFP magnitudes.**

**Testimony provided by Dr. William E. Taylor (DPUC Docket No. 95-03-01, June 19, 1995, p.22) states "the historical evidence on productivity growth shows no sign of an increasing trend in TFP growth rates; indeed, the most recent industry TFP study, Dr. Christensen's post-divestiture study, found the recent TFP growth differential (between LEC industry and US industry) to be no different from its long-term historical average."**

**See prefiled testimony of Dr. William Taylor (DPUC Docket No. 95-03-01, June 19, 1995 at page 22) for additional information regarding cost reductions, new technologies, and competition and the impact on future TFP.**