

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

In the Matter of	)	
	)	
Price Cap Performance Review	)	CC Docket No. 94-1
For Local Exchange Carriers	)	
	)	
Access Charge Reform	)	CC Docket No. 96-262

**GTE COMMENTS**

GTE Service Corporation and its  
affiliated local exchange carriers,

Gail L. Polivy  
GTE Service Corporation  
1850 M Street, NW  
Suite 1200  
Washington, DC 20036  
(202) 463-5214

Thomas R. Parker  
GTE Service Corporation  
600 Hidden Ridge, MS HQ-E03J43  
P.O. Box 152092  
Irving, Texas 75015-2092  
(972) 718-6361

Their Attorneys

## TABLE OF CONTENTS

	<b>PAGE</b>
SUMMARY.....	ii
I. INTRODUCTION .....	2
II. THE COMMISSION SHOULD ADOPT THE CALLS PROPOSAL .....	4
III. IF NECESSARY, THE COMMISSION SHOULD FORECAST THE X FACTOR USING OBJECTIVE STATISTICAL METHODS.....	4
A. GTE’s Proposal Will Provide The Most Reliable And Objective Method For Estimating The Price Cap Productivity Adjustment. ....	6
B. The Time-Series Model Should be Used for Each Year to Forecast the Price Cap Adjustment for the Following Year. ....	7
C. The Proposed Forecasting Approach Would Effectively Mimic a Competitive Market.....	9
D. There is No Justification for a Consumer Productivity Dividend.....	11
IV. THE COMMISSION SHOULD NOT ADOPT EITHER OF THE NEW MODELS SET FORTH IN THE FNPRM .....	11
V. CONCLUSION .....	14

## SUMMARY

The 1997 price cap decision adopted a model to estimate changes in ILEC productivity, based on a measure of Total Factor Productivity, or TFP. The Commission then employed unreasonable and results-oriented methods to determine the price cap productivity factor, or X factor, based on the estimates produced by the TFP model. The U.S. Court of Appeals, while accepting the Commission's TFP model, reversed and remanded the FCC's selection of an X, leading to this Further Notice.

It would appear to be a simple matter for the FCC to justify the selection of an X factor, based on a series of past years' estimates of X. However, the current X of 6.5 percent cannot be justified on the basis of the productivity estimates that are in the 1997 record. In what appears to be an attempt to achieve a particular result, the FNPRM proposes two new models, the "1999 staff model" and the "imputed X model" to create new productivity estimates which can be squared with the X factor the Commission desires. Both of these models are unreasonable, and neither should be adopted. The Commission should not replace results-oriented statistical estimation with results-oriented productivity measurement. Instead, the Commission should adopt the CALLS proposal. The CALLS plan would specify the path of price caps over the next five years, and would thus obviate the need for the Commission to select an X factor.

If the CALLS proposal is not adopted, the Commission should use the TFP model adopted in 1997, and apply a standard, well-accepted statistical forecasting technique to the estimates produced by this model to produce the best possible forecast of the price cap adjustment. This approach would directly address the issues remanded by the Court. Specifically, GTE proposes that a time series ARIMA model should be

used each year to forecast the price cap adjustment for the following year. This approach would produce the most accurate, objective, and statistically valid estimate of the price cap adjustment, and would eliminate arbitrary or results-oriented judgments from the process. It would establish a stable system on which firms could base reasonable expectations. By capturing all changes in productivity as they occur, it would eliminate any justification for a consumer productivity dividend. Finally, it would mimic the action of a competitive market, providing firms with the same efficiency incentives, and consumers with the same benefits.

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Price Cap Performance Review For Local Exchange Carriers	)	CC Docket No. 94-1
	)	
Access Charge Reform	)	CC Docket No. 96-262

**GTE COMMENTS**

GTE Service Corporation and its affiliated local exchange carriers<sup>1</sup> (collectively "GTE") hereby submit their Comments in response to the Further Notice of Proposed Rulemaking ("FNPRM") in the above-captioned proceeding. The Commission issued this FNPRM to re-evaluate X-factor-related issues remanded for further explanation by the US Court of Appeals<sup>2</sup> reviewing the Commission's 1997 price cap Order.<sup>3</sup> The FNPRM seeks comment on three possible options for setting the historical component of the X-Factor.

---

<sup>1</sup> GTE Alaska, Incorporated, GTE Arkansas Incorporated, GTE California Incorporated, GTE Florida Incorporated, GTE Hawaiian Telephone Company Incorporated, The Micronesian Telecommunications Corporation, GTE Midwest Incorporated, GTE North Incorporated, GTE Northwest Incorporated, GTE South Incorporated, GTE Southwest Incorporated, Contel of Minnesota, Inc., GTE West Coast Incorporated, and Contel of the South, Inc.

<sup>2</sup> USTA v. FCC, 188 F.3d 521 (D.C. Cir. 1999). The Court stayed issuance of its mandate until April 1, 2000 to allow the Commission sufficient time to conduct this proceeding.

<sup>3</sup> *Price Cap Performance Review for Local Exchange Carriers*, Fourth Report and Order in CC Docket No.94-1 and Second Report and Order in CC Docket No.96-262, 12 FCC Rcd 16642 (1997)("1997 Order").

## I. INTRODUCTION

In its 1997 Order, the FCC established a productivity factor for its price cap plan of 6.5 percent using two principal steps. First, the Commission determined that an estimate of year-over-year changes in Total Factor Productivity ("TFP") is the correct measure of changes in ILEC productivity, as both GTE and USTA had recommended. The Commission adopted a specific model ("the 1997 model") for estimating the change in ILEC TFP in each year of the historical period for which data were available.<sup>4</sup>

Second, once it had developed a series of productivity estimates for the previous years, generated by the 1997 model, the FCC then had to choose a prospective X factor based on those estimates.<sup>5</sup> In order to arrive at the X factor of 6.5 percent, the FCC resorted to a results-oriented process, in which it arbitrarily gave less weight to those years in the data which showed lower TFP growth, and assumed an upward "trend" in the estimates which did not exist.

In reviewing the 1997 Order, the Court did not object to the 1997 model or use of the model to develop estimates of TFP growth for each historical year.<sup>6</sup> The Court found, however, that the FCC had not explained how these estimates could reasonably

---

<sup>4</sup> The 1997 model was inferior to the model that had been submitted by USTA in the same proceeding ("the TFPRP model") because it departs in several respects from methods generally accepted by economists for the measurement of TFP. These departures from generally accepted practice were, in most cases, designed to bias the estimate of productivity upward.

<sup>5</sup> X is based on the difference between the growth in TFP estimated for the price cap LECs in a given year and the equivalent TFP growth for the U.S. economy in that year, as estimated by the Bureau of Labor Statistics ("BLS"). In November 1999, the BLS revised the productivity estimates the Commission has used for this purpose. If the revised BLS data were to be used, the effect would be to reduce the X factor.

<sup>6</sup> FNPRM at ¶25. "The Court did not find fault with the 1997 staff TFP study, and did not ask us to revisit it."

be construed to support an X-factor of 6.5 percent. The Court questioned the Commission's selective use of data. It noted that there was no discernable trend in the TFP estimates. It also found that the Commission had not adequately justified the inclusion of the Consumer Productivity Dividend, or CPD.

In the FNPRM, the Commission touches only briefly on the concerns raised by the Court. Any reasonable projection of X, based on the TFP estimates approved in 1997, would set the X factor at a significantly lower level. USTA shows that the average of the estimates of annual X-factor growth produced by the 1997 model for the period 1991-1998 is 4.12 percent.<sup>7</sup>

Rather than concentrating on the questions raised by the Court, the FNPRM proposes two new models for estimating productivity. One, the "1999 staff TFP study" is a revision of the 1997 model, in which almost every variable has been modified in order to bias the TFP estimate upward, reversing many of the specific findings the Commission made in 1997. The second, the "imputed X study" is an approach that seeks to determine ex post the X that would have held LEC earnings to a given level. This second approach completely reverses the basic finding the FCC made in 1997, namely that TFP is the appropriate measure of productivity. By doing so, the imputed X study essentially abandons incentive regulation, and reestablishes a form of rate of return regulation. Neither of the two new methods advanced in the FNPRM should be adopted. They both represent more of the same "results-oriented" decision making that has led to the remand.

---

<sup>7</sup> USTA Comments, Gollop Attachment. USTA also demonstrates that there is no five-year period within the data for which the X factor indicated by the 1997 model approaches 6.5 percent.

## **II. THE COMMISSION SHOULD ADOPT THE CALLS PROPOSAL**

In August 1999, a coalition of local and long distance companies submitted a proposal (the "CALLS" proposal) to the Commission which would resolve a wide range of related issues in access reform, price caps, and universal service.<sup>8</sup> This plan, if adopted, would replace the current method for setting the X factor. The CALLS plan would set a transition path for access prices within the price cap framework. Productivity reductions, based on the current X-factor of 6.5 percent, would be targeted to certain rate elements, and would continue until a target level for those rates is reached. Once the target is met, the prospective X would be set equal to inflation. Because the CALLS proposal specifies the path for price caps over the next five years, adopting the CALLS plan would obviate the need for the Commission to determine X, and would thus address the issues on which the Commission is seeking comment in this proceeding.

The CALLS plan would yield significant benefits, and GTE urges the Commission to adopt it. If the Commission does so, GTE believes that it will be unnecessary for the Commission to justify a choice of X in this proceeding.

## **III. IF NECESSARY, THE COMMISSION SHOULD FORECAST THE X FACTOR USING OBJECTIVE STATISTICAL METHODS**

In the alternative, if the CALLS plan is not adopted, the Commission will need to address the issues remanded to it by the Court. In that event, GTE urges the Commission to focus its efforts on the concerns the Court has raised, rather than on attempting to revise the model used to estimate TFP.

---

<sup>8</sup> FNPRM at ¶4.

The FNPRM seeks comment on how the Commission should choose an X factor, once it has estimated ILEC productivity for each historical year.<sup>9</sup> This is the essence of the issue the Court has remanded to the FCC. The FNPRM asks whether it should use an average of the historical estimates, or choose a number higher than the average, or base its choice on a perceived trend.

GTE submits that this is a straightforward statistical problem. The FCC has a series of numbers, and it wishes to produce the best possible forecast of the next number, or numbers, in the series. To do so, the Commission should use one of the existing, well-established statistical procedures, and must avoid engaging in the kind of arbitrary and selective practices already rejected by the Court. GTE provided a specific proposal in 1995 as to how the productivity offset could be estimated, and incorporates by reference herein those Comments.<sup>10</sup> The approach proposed by GTE would be simple, statistically correct and would provide the best possible estimate of the productivity offset. Equally important, it would be straightforward, objective and transparent.

For the period covered by the remand from July 1, 1997 to June 30, 2000, the productivity offset should be estimated using the statistical forecasting method proposed by GTE, and using the TFP estimates from the 1997 model for those previous years for which the FCC had data when it made its 1997 decision. An adjustment should be made to the July 2000 annual filing to correct for the effects of maintaining the 6.5

---

<sup>9</sup> FNPRM at ¶27.

<sup>10</sup> Price Cap Performance Review for Local Exchange Carriers, CC Docket No. 94-1, GTE Comments, filed Dec. 18, 1995 (“1995 GTE Comments”) at 25-31 and App. D. *See also* GTE Reply Comments in the same proceeding, filed Mar. 1, 1996 (“1996 GTE Reply Comments”) at 24-28.

percent X factor that has been in place since 1997. No CPD should be included in the X factor.

For prospective use, beginning July 1, 2000, the Commission should estimate the offset, again using the GTE method, but including the additional years of data that have become available since 1997. GTE's method would then project a new price cap adjustment on an annual basis for the following year.

The Commission should not adopt either of the alternative models discussed in the FNPRM. If any alternative model were to be considered, it should be the TFPRP model submitted by USTA. If the TFPRP is not adopted, then the Commission should retain the 1997 model, which the Court has not questioned.

**A. GTE's Proposal Will Provide The Most Reliable And Objective Method For Estimating The Price Cap Productivity Adjustment.**

In its 1995 Comments, GTE proposed that price cap adjustments should be estimated using a standard time-series forecasting model, called an Autoregressive Integrated Moving Average ("ARIMA") model.<sup>11</sup> Such models are widely used by statisticians, and are available in many statistical software packages. Because the procedures for using such a model are also well-known, the ARIMA model would remove subjective judgment from the Commission's process.

The ARIMA model would provide the best available statistical method for predicting the productivity experience for the coming year, given the historical experience from prior years. It would automatically answer the questions raised by the Commission in response to the Court's remand. The model would examine all of the years of data that are available. The relative emphasis to be placed on each year's

---

<sup>11</sup> 1995 GTE Comments at 27.

data would be determined as a statistical matter, rather than through a subjective judgment by the Commission. The model incorporates a moving average component, and thus subsumes the moving average method proposed by USTA. If there is a trend in the data, the model will reflect that trend in its forecast.<sup>12</sup> Because the TFP estimates tend to exhibit a high degree of random fluctuation from year to year, attempting to discern a pattern in the data through ad hoc, or “eyeball” methods is unjustifiable and unreasonable. Only a valid statistical process should be used to make such a determination, and the ARIMA model is the appropriate tool for doing this.

**B. The Time-Series Model Should be Used for Each Year to Forecast the Price Cap Adjustment for the Following Year.**

The Commission could use the time-series estimation technique to estimate the value of  $X$ , given the historical series of TFP estimates produced by the TFP model. If the Commission were to choose an  $X$  to remain in place for a given number of years, then the model could be used to generate the best available forecast of  $X$  for that future time period. Instead, rather than setting a single  $X$  for a period of years, GTE proposes that the model should be used each year to forecast the price cap adjustment for the following year.

To do this, the Commission would construct a series of the price cap adjustment percentage ( $\text{GDPPI} - X$ ) for each year of historical data, based on the past values of the inflation index, the estimated industry TFP and the national BLS estimate of TFP. The ARIMA model would then be used to forecast the price cap adjustment for the following

---

<sup>12</sup> For example, the FNPRM notes (at ¶18) that “[t]he Court also questioned the Commission’s reliance on an upward trend in the  $X$ -factor from 1993, noting that the trend could be part of a larger cyclical pattern, in which case a downward turn of the  $X$ -factor could be expected. In addition, the court noted that there was no discernable

year. The next year, the Commission would add one additional year to its series, and re-estimate the model to produce a new estimate of the price cap adjustment for the third year.

By forecasting all of the components of the price cap adjustment together, the Commission would ensure that all three are treated in a consistent manner. Further, as noted above, each of the individual components of the price cap adjustment exhibit considerable volatility from year to year. The price cap adjustment itself, however, is somewhat less volatile, because the movements in the individual components tend to cancel one another. Forecasting the price cap adjustment, rather than its components, will thus allow the Commission to work with a more stable series of numbers.

Forecasting the price cap adjustment each year on a rolling basis, rather than setting a single X for a period of years, would allow the Commission to estimate the adjustment more accurately, since there would never be a need to forecast more than one year ahead of the available data.<sup>13</sup> Clearly, the farther a forecast must be projected into the future, the less reliable that forecast will be. The rolling forecast approach also puts in place a stable, predictable process that will obviate the need for repeated reviews of the X factor. This would provide greater certainty for all market participants, and would allow the Commission's incentive regulation to provide the most effective incentives for the ILECs to operate efficiently. While the specific value of the price cap adjustment would vary from year to year, the process through which this would occur

---

trend in either of the two X-factor components..." The ARIMA procedure tests for the presence of either a trend or a cyclical component in the data.

<sup>13</sup> There may, of course, be a lag made necessary by a lag in the availability of the inputs for the TFP model. This is true for any approach. USTA recommends that its moving average method be applied with a two-year lag.

would be known, and anticipated, by all parties. Further, because the model filters random variations in the data, and adjusts its forecast only gradually over time as new information is added to the data, the year-to-year changes in the estimated price cap adjustment would be relatively smooth, and would not be unduly driven by "outliers" or sudden shifts. This mechanism will allow the price cap plan to adapt to changing circumstances over time, without resorting to the incessant "recontracting" that Dr. Taylor discusses in his affidavit attached to USTA's Comments. As Dr. Taylor explains, this recontracting destroys the efficiency incentives price caps are supposed to produce.

The ARIMA method proposed here is consistent with the five-year moving average approach proposed by USTA, since, as noted above, a moving average component is part of the ARIMA model. GTE believes that the two approaches share many of the same advantages, and depending upon the data series to be estimated, are likely to yield similar results. However, GTE submits that, over time, the more complete ARIMA model would provide better estimates, because it makes use of all the available data, tests for several different patterns in the data and is capable of adjusting the time period of its moving average component to best fit the data. A five-year average may perform very well as a forecasting method in some periods, and less well in others.

**C. The Proposed Forecasting Approach Would Effectively Mimic a Competitive Market.**

The FNPRM expresses concern that its price cap methodology should "replicate the effects of a competitive market in apportioning the gains from successful operation between carriers and consumers."<sup>14</sup> GTE submits that this goal should be achieved,

---

<sup>14</sup> FNPRM at ¶35.

not by repeatedly adopting new X factor methodologies in an attempt to recapture productivity gains, but rather by setting in place a price cap mechanism that mimics the workings of a competitive market. The forecasting method proposed here would provide such a mechanism

As Dr. Taylor explains, in a competitive market a firm that adopts a cost-saving innovation is rewarded by an increase in its profits. Attempting to recapture these profits, through recontracting the X factor, will take away the firm's incentive. Over time, however, as firms enter or exit the market, and as other firms in the industry adopt the innovation, prices in the industry generally will be pushed down to reflect the cost savings, thus passing the benefit of these savings to consumers.<sup>15</sup>

The forecasting approach would allow the price cap plan to mimic this competitive process. Price cap companies would retain transitory profits resulting from any efficiency gain. However, over time, if productivity gains in the industry increase, the ARIMA forecast will incorporate this new information. The resulting price cap adjustment would pass the benefits on to consumers over time, just as a competitive market would do. This would happen automatically, and in a predictable fashion, without the need for the Commission to guess at market outcomes, or to arbitrarily seek recapture of ILEC efficiency gains. This process would strike the same balance

---

<sup>15</sup> This process is described in the FNPRM at ¶15: "Effective competition encourages firms to improve their productivity and introduce improved products and services, in order to increase their profits. With prices set by marketplace forces, the more efficient firms will earn above-average profits, while less efficient firms will earn lower profits, or cease operating. Over time, the benefits of competition flow to customers and society, in the form of prices that reflect costs, maximize social welfare, and efficiently allocate resources."

between maintaining incentives for the companies and passing benefits to consumers that a competitive market would strike.

**D. There is No Justification for a Consumer Productivity Dividend.**

For reasons set forth in USTA's Comments, there is no justification for adding a CPD to the X-factor that would otherwise be estimated on the basis of the TFP estimates. Further, if GTE's forecasting approach is adopted, any future productivity improvements will be recognized and incorporated into future price cap adjustments automatically. Adding a CPD to any estimated price cap adjustment would double count the effect of any such productivity gains.

**IV. THE COMMISSION SHOULD NOT ADOPT EITHER OF THE NEW MODELS SET FORTH IN THE FNPRM**

The FNPRM discusses two new models for estimating the X factor, the "1999 staff model" and the "imputed X staff study." Neither of these models should be adopted. As shown in the USTA Comments, both of these models are severely flawed, and, as proposed, will produce severely biased estimates of the X factor. GTE concurs with USTA's assessment.

The 1999 staff model is based on the model the Commission adopted in 1997, but almost every variable has been modified. As Dr. Gollop shows, in his attachment to USTA's Comments, the effect of every such change is to increase the estimated X. These changes are replete with errors. For example, the 1999 staff model incorrectly relies on Moody's Baa bond rate series as a measure of the opportunity cost of capital for the price cap LECs. The ILECs obtain financing through a combination of debt and equity, which the model ignores. Further, as Dr. Gollop points out, the best alternative use of capital for the ILECs would clearly be an equity investment, rather than the

acquisition of bonds. Since bond rates have declined over the period, while returns to equity have increased, the arbitrary choice of a bond index as a measure of changes in the cost of capital biases the estimate of X upward.

Similarly, the 1999 model adopts a measure of local output, DEMs, which is different from the messages used for that purpose in the 1997 model. By making this change, one of the weaknesses in the Commission's own 1997 model is exploited. When a firm produces many different outputs, the accepted practice for TFP studies is to measure this output through a deflated revenue, which is derived by dividing revenue by a price index. This approach includes all output in the calculation, and weights them together using their prices. The 1997 model departs from this normal practice, in that it arbitrarily selects one output, messages, to represent all of the local service LECs provide. This is itself somewhat arbitrary, since the local output that causes most ILEC cost, and which is associated with most local revenue, is lines. By arbitrarily changing to a minute-of-use measure, which is growing at a faster rate because of Internet traffic, the 1999 model creates an upward bias to the measured output, and thus also to the estimate of X. The most appropriate measure for output would be deflated revenue, which is the measure used in the USTA model. If one measure for local output has to be used, lines, rather than minutes, would be better correlated with the total output the study is supposed to measure.

When all of the errors in the 1999 model have been corrected, Dr. Gollop demonstrates that the resulting estimates of X are actually slightly lower than those generated by the 1997 model. However, rather than attempt to correct the deficiencies

of the 1999 model, the Commission should confine itself to applying statistically valid forecasting techniques to the model it adopted in 1997.

The imputed X study represents a reversal of several important findings from the Commission's 1997 Order. It seeks to derive an X factor that would have yielded a specified rate of return over the historical period. This is a revised version of an approach the Commission soundly rejected, for good reason, in 1997.<sup>16</sup> As Dr. Taylor explains, the imputed X method would represent a reversion to rate-of-return regulation, thus destroying the efficiency incentives price caps were meant to create. Further, the imputed X study is based on allocated accounting data. The Commission has repeatedly affirmed that productivity growth for the interstate jurisdiction is a meaningless, and undefined, concept.<sup>17</sup> The Commission has also recognized that allocated accounting information is of limited relevance to pricing decisions, and has adopted price caps as a means of eliminating its reliance on such data. As Dr. Taylor shows, when an economically meaningful measure of earnings is used, it is evident that the price cap plan has in fact ensured that interstate rates track changes in LEC costs, and in fact that the growth of LEC earnings over the period has been dramatically lower than that of a broad sample of firms in the economy. The Commission should not now thoroughly reverse itself on such major issues as to adopt the imputed X model, especially in light of the Court's remand of the Commission's earlier attempt to achieve

---

<sup>16</sup> The Commission rejected the Historical Revenue Approach proposed by AT&T.

<sup>17</sup> The Commission explained this finding to the Court in its Brief. See FCC's Respondents' Brief at 23. See *also*, Taylor Affidavit, at 17-20, USTA Comments for a demonstration of why productivity gains cannot be attributed to one jurisdiction or another, even if output grows more rapidly in one jurisdiction. In a competitive market, the price effects of the productivity change would be the same for both products.

a preordained result. The imputed X model, like the 1999 staff model, should be rejected.

## **V. CONCLUSION**

The Commission should adopt the CALLS proposal. Among its many other benefits, the CALLS plan specifies the path of price caps for the next five years, obviating the need for the Commission to select an X factor in this proceeding.

In the event that CALLS is not adopted, the Commission should apply well-accepted time series forecasting techniques to the estimates of productivity produced by the 1997 model in order to derive the price cap productivity adjustment. This approach will provide the most accurate and objective estimate, eliminating the sort of results-oriented judgments that have led the Court to reverse the Commission's 1997 decision. The Commission should not seek to avoid the issues raised by the Court by creating new, and arbitrary, estimates of productivity. In particular, neither of the two new models for estimating X set forth in the Notice should be adopted.

January 7, 2000

Respectfully submitted,

GTE Service Corporation and its  
affiliated local exchange carriers,

---

Gail L. Polivy  
GTE Service Corporation  
1850 M Street, NW, Suite 1200  
Washington, DC 20036  
(202) 463-5214

Thomas R. Parker  
GTE Service Corporation  
600 Hidden Ridge, MS HQ-E03J43  
P.O. Box 152092  
Irving, Texas 75015-2092  
(972) 718-6361

Their Attorneys