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July 15, 1996

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Federal Communications Commission
Office of Secretary

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

Re: Ex parte contact in CC Docket No. 94-1

Dear Mr. Caton:

On July 15, 1996, the undersigned, on behalf of the Ad Hoc Telecommunications Users Committee, delivered the enclosed "Declaration of Patricia D. Kravtin" to the Chief, Common Carrier Bureau, the Chief, Competitive Pricing Division and members of the Division staff.

If there any questions regarding this filing, please, contact the undersigned.

Sincerely,

James S. Blaszak

cc Regina Keeney (w/encl.)
James D. Schlichting (w/encl.)
Les Seltzer (w/encl.)
Anthony Bush (w/encl.)

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

In the Matter of	)	
	)	**CC Docket 94-1**
Price Caps Performance Review	)	
for Local Exchange Carriers	)	

DECLARATION OF PATRICIA D. KRAVTIN

I, Patricia D. Kravtin, declare the following:

1. I am Vice President and Senior Economist at Economics and Technology, Inc. ("ETI"), a research and consulting firm specializing in telecommunications economics, regulation, management and public policy. I am an economic consultant for the Ad Hoc Telecommunications Users Committee ("Ad Hoc Committee") in connection with CC Docket 94-1, Price Cap Performance Review for Local Exchange Carriers.

2. I have been actively involved in telecommunications regulatory proceedings before the Commission and in state jurisdictions throughout the country encompassing a wide range of issues, including revenue requirement, rates and tariffs, cost and demand studies, competition,

alternative regulation, access charges and infrastructure/plant modernization. Over the past several years, I have done extensive analysis of price cap plans and related issues. I am the co-author of two reports prepared on behalf of the Ad Hoc Committee and submitted to the FCC in CC Docket 94-1: "Establishing the X-Factor for the FCC Long-Terms LEC Price Cap Plan," December, 1995, and "Reply to X-Factor Proposals for the FCC Long-Term LEC Price Cap Plan," March 1, 1996. My Statement of Qualifications is attached hereto.

Introduction

3. This declaration responds to the arguments raised in the June 4, 1996 declaration of Dr. Melvyn Fuss, submitted by Bell Atlantic as an *ex parte* filing.[1] In that declaration, Dr. Fuss presents arguments in rebuttal to the Reply Comments submitted by the Ad Hoc Committee[2] in CC Docket 94-1 and in particular, to the ETI study submitted in connection with those Reply Comments.[3] As demonstrated below, Dr. Fuss's *ex parte* response is yet another attempt to use complex and relatively obscure statistical techniques to support a concocted

[1]Declaration of Melvyn A. Fuss ("Fuss Declaration"), CC Docket 94-1, prepared on behalf of Bell Atlantic, June 4, 1996.

[2]Prof. Fuss also responds in his declaration to arguments raised by AT&T in its Reply Comments.

[3]Lee L. Selwyn and Patricia D. Kravtin, *Reply to X-Factor Proposals for the FCC Long-Term LEC Price Cap Plan, Price Cap Performance Review for Local Exchange Carriers*, ("ETI Reply Study"), CC Docket 94-1, prepared for the Ad Hoc Telecommunications Users Committee, March 1, 1996.

"temporary change hypothesis." Ironically, the new results presented in Dr. Fuss's declaration do more to discredit Dr. Fuss's own "temporary change hypothesis" than to rebut the "permanent change hypothesis" associated with the Bush and Uretsky findings and endorsed by ETI.

4. In an attempt to discredit the strength of the permanent change hypothesis, Dr. Fuss makes the following allegations concerning the ETI analysis: (1) ETI applies only one-half of the non-nested hypothesis testing procedure; (2) ETI applies the test to a regression equation that Dr. Fuss asserts Drs. Norsworthy and Berndt argue is "spurious;" (3) ETI provides no argument as to why the 1990 data point should be considered an outlier.[4] Each of these allegations is addressed below and shown to be totally unfounded.

Incorrect application of the non-nested hypothesis testing procedure

5. As discussed in the ETI Reply Study, Dr. Fuss uses two similar methods of testing "non-nested hypotheses" to consider the validity of the input price differential, i.e., the "Cox Test" and the "J Test", which permit him to consider the following four outcomes: (1) reject both competing hypotheses; (2) reject neither competing hypothesis; (3) reject the permanent change hypothesis, but not the temporary change hypothesis; and (4) reject the temporary change

[4]Fuss Declaration, para. 20.

hypothesis, but not the permanent change hypothesis.[5] Dr. Fuss's position, as expressed in his initial declaration submitted on behalf of Bell Atlantic, is that the results of both the J Test and Cox Test support the conclusion that the permanent change hypothesis (H1) is not correct (i.e, can be rejected) but that the temporary change hypothesis (H2) is correct (i.e., cannot be rejected).[6]

6. In its Reply Study, ETI responded to Dr. Fuss's analysis by challenging the underlying rationale for Dr. Fuss's competing hypothesis and also by demonstrating that when the 1990 outlier is omitted from the data set, Dr. Fuss's finding that the temporary change hypothesis (H2) is correct (i.e , cannot be rejected) does not hold true.[7]

7. In this latest *ex parte* filing, Dr. Fuss does not refute ETI's finding that the temporary change hypothesis (H2) is in fact rejected when the 1990 outlier is removed. Rather, Dr. Fuss criticizes ETI's analysis by alleging ETI incorrectly applied the non-nested procedure by failing to consider the outcomes with respect to the permanent change hypothesis (H1). Dr. Fuss's argument is bogus. In Tables D-3 and D-4 attached to his declaration, Dr. Fuss completely replicates ETI's results with respect to the rejection of H2. Dr. Fuss's ability to replicate ETI's findings with respect to H2 demonstrates that ETI applied the non-nesting procedures in precisely the same manner as Dr. Fuss, and in particular, included the same

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[5]ETI Reply Study at 22-23.

[6]Fuss Declaration, December 15, 1995, at 8-9.

[7]ETI Reply Study at 23

outcomes with respect to H1 that Dr. Fuss alleges ETI omits. Dr. Fuss appears therefore to making an issue merely of the point that ETI does not discuss in its report the companion results for the permanent change hypothesis (H1), which as was set forth in Dr. Fuss's declaration, is also rejected under the Cox Test. There is, however, no substantive issue to be made, nor was there any "suppression" of evidence by ETI as Dr. Fuss alleges.

8. Dr. Fuss introduced the non-nested hypothesis testing procedures (Cox Test and J Test) into the record as a means of providing support for his temporary change hypothesis (H2), and ETI's use of the Cox Test was in direct response to Dr. Fuss's own use of these types of testing procedures. The purpose of ETI's analysis was strictly limited to refuting the particular conclusion reached by Dr. Fuss on the basis of these tests, i.e., the conclusion that the temporary change hypothesis (H2) is correct. Whether or not the permanent change hypothesis (H1) is also rejected under the non-nested hypothesis testing procedures is not relevant to this point, since ETI does not rely upon the non-nested hypothesis testing procedures introduced by Dr. Fuss as the basis of its own support for the permanent change hypothesis.[8]

[8]ETI's support for the permanent change hypothesis is fully explained in the initial ETI Study. Lee L. Selwyn and Patricia D. Kravtin, *Establishing the X-Factor for the FCC Long-Term LEC Price Cap Plan* ("ETI Initial Report"), CC Docket 94-1, prepared for the Ad Hoc Telecommunications Users Committee, December, 1995, at 30-34.

9. By contrast, as noted in the ETI Reply Report, Dr. Fuss provided no evidence in his initial declaration to support the stated rationale for his two competing hypotheses, his theory that divestiture caused a one-time shock to the equipment market, or how his theories actually would be reflected in the particular data sets he relies upon in his statistical analyses.[9] It is significant, therefore, that Dr. Fuss does not use this *ex parte* opportunity to respond to these substantive arguments raised in rebuttal to his analyses. Instead, consistent with the approach followed in his initial declaration, Dr. Fuss attempts to reduce the decision-making process to a matter of econometrics machinations.

10. However, even putting aside the very important fact that Dr. Fuss fails to respond to the substantive criticisms concerning the lack of convincing rationale for the competing hypotheses Dr. Fuss applies in the non-nested hypothesis testing procedures, Dr. Fuss's own analyses demonstrate that the temporary change hypothesis (H2) is *not* generally supported. As shown in Tables D-3 and D-4 of the Fuss Declaration and reproduced in Table 1 on the following page, in 3 out of 4 cases the temporary change hypothesis is in fact rejected, when the 1990 outlier is removed. Moreover, as discussed further below, the analysis presented in Dr. Fuss's declaration, if anything, further corroborates the treatment of the 1990 data point as an outlier.

[9]ETI Reply Study 23-24.

Table 1:
Testing the Two Competing Hypothesis Using the Cox Test

Data to 1992 (1990 Data Point Excluded)				
Data Set and Equation Nos.	**Hypothesis**	**Standard Normal Statistic (N) for α**	**Critical 5% Value of N**	**Conclusion**
Christensen Eqs (2) & (4) (CPT is dependent variable)	H1 is correct	-2.49	-1.96	**Reject**
	H2 is correct	-2.25	-1.96	**Reject**
Christensen Eqs (3) & (5) (CPDIFF is dependent variable)	H1 is correct	-2.05	-1.96	**Reject**
	H2 is correct	-1.25	-1.96	Accept
Data to 1993 (1990 Data Point Excluded)				
Data Set and Equation Nos.	**Hypothesis**	**Standard Normal Statistic (N) for α**	**Critical 5% Value of N**	**Conclusion**
Christensen Eqs (2) & (4) (CPT is dependent variable)	H1 is correct	-2.34	-1.96	**Reject**
	H2 is correct	-3.77	-1.96	**Reject**
Christensen Eqs (3) & (5) (CPDIFF is dependent variable)	H1 is correct	-2.09	-1.96	**Reject**
	H2 is correct	-2.08	-1.96	**Reject**
Note: H1: permanent change hypothesis; H2: temporary change hypothesis.				

Incorrect application to "spurious" equation

11. Dr. Fuss next alleges that ETI's analysis is flawed because it focuses on the regression equation run on the dependent variable "LEC Input Price Growth" (referred to in the Fuss declaration as "CPT") versus the "LEC-US Input Price Differential (referred to in the Fuss

declaration as "CPDIFF").[10] According to Fuss, the former equation has been found to be "spurious" by Drs. Norsworthy and Berndt in comments submitted on behalf of AT&T. Dr. Fuss's allegation is without merit.

12. First, ETI analysis was in direct response to the various empirical analyses presented by Christensen, NERA, Lincoln Telephone, and Fuss, who all address *without distinction or commentary* the two different estimating equations. Second, Drs. Norsworthy and Berndt criticisms regarding the spurious nature of the estimating equation do not apply exclusively to equation using the LEC Input Price Growth as the dependent variable as Dr. Fuss suggests, but rather encompass the estimating equation using the LEC-US Input Price Differential as the dependent variable as well.[11] Finally, and most significantly, as shown in Table D-4 of the Fuss Declaration, and reproduced in Table 1 above, ETI's results (i.e., the rejection of the temporary change hypothesis (H2) *do in fact hold true* for the equation using the LEC-US Input Price Differential as the dependent variable when estimated over the complete Christensen 1 data set (i.e, including data to 1993). It is most curious, therefore, that Dr. Fuss would seek to make a substantive issue of ETI's illustrative presentation of results, given the actual outcome of the analysis.

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[10]Fuss Declaration at 10.

[11]Reply Statement of Dr. John R. Norsworthy and Dr. Ernst R. Berndt, *Response to Comments of Local Exchange Carriers on Methods for Measuring the X-Factor for their Interstate Access Services*, Appendix B of AT&T Reply Comments, March 1, 1996, at 24.

Incorrect exclusion of outlier

13. Dr. Fuss alleges that the 1990 data point is not an outlier and that the ETI procedure of dropping this data point is not valid.[12] Dr. Fuss's conclusion is not supported either by common sense or by the relatively obscure econometric tests he performs.

14. Dr. Fuss identifies two classifications of outliers. The first classification is a data point that is an outlier independent of the model being estimated, as would occur if "the data point had been calculated incorrectly, or recorded in error, or there was a change in the basic underlying data generating process which made the data point noncomparable with the rest of the sample."[13] The second classification is a data point that is an outlier relative to a particular model, as would occur if the model had difficulty explaining that particular data point."[14]

15. Dr. Fuss flippantly assumes away the relevance of the first type of outlier, suggesting a lack of evidence in these proceedings and asserting that ETI does not make such a claim. There is no basis for Dr. Fuss's assumption. Examination of the data, reproduced in Table 2 on the following page, clearly demonstrates that the 1990 data point deviates significantly from the trend observed in the post-divesture period. Based on this examination, there is no reason to assume away the possibility of a error in calculation, recordation, or basic underlying

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[12]Fuss Declaration, Appendix D, at 3.

[13]*Id.*, at 1.

[14]*Id.*

data, and ETI made no statement to that effect in its report.

Table 2 Input Price Change Data		
Year	**LEC Input Price Change**	**LEC-US Input Price Growth**
1984	1.8%	-5.6%
1985	0.1%	-3.9%
1986	1.3%	-2.5%
1987	1.7%	-1.4%
1988	-3.2%	-7.6%
1989	-3.7%	-7.8%
1990	**11.9%**	**7.7%**
1991	1.3%	-1.6%
1992	4.4%	-0.7%
1993	0.9%	-3.4%
Source: Christensen February 1995 Affidavit.		

16. Dr. Fuss's analysis of the second type of outlier is confusing at best, since the econometric tests Dr. Fuss performs actually *support* the treatment of the 1990 data point as an outlier. Dr. Fuss provides the summarized results of the "Bera-Jarques" normality statistic and of the "studentized residuals" values, which together he uses to test econometrically for the possible existence of model-related outliers.

17. According to the econometrics textbook that Dr. Fuss cites for the procedures he uses, the criteria for determining whether outliers exist is as follows:

> Studentized residuals that have values that could reasonably have come from a *t*-distribution, *say less than 2 in absolute value*, are regarded as acceptable in terms of the model specification. Others are regarded as outliers.[15]

Dr. Fuss then proceeds to assert that since the studentized residuals for the temporary change

[15]Fuss Declaration, Appendix D, at 2 (footnote 21), citing Judge et al (1988) at 894 (emphasis supplied).

hypothesis are less than 2, one should conclude that the 1990 data point is not an outlier, *despite the fact that the studentized residuals for the permanent change hypothesis are greater than 2, and hence under the same criteria, would indicate the 1990 data point is an outlier.* These results are presented in Table D-2 of Dr. Fuss's Declaration, reproduced as Table 3 below.

Table 3:
Studentized residuals for the 1990 data point

1949-92						
Hypothesis	**Dependant Variable CPT**	**95% t=1.96**	**90% t=1.65**	**Dependant Variable CPDIFF**	**95% t=1.96**	**90% t-1.65**
Temporary	1.6	No Outlier	No Outlier	1.81	No Outlier	**Outlier**
Permanent	3.68	**Outlier**	**Outlier**	3.29	**Outlier**	**Outlier**
1949-93						
Hypothesis	**Dependant Variable CPT**	**95% t=1.96**	**90% t=1.65**	**Dependant Variable CPDIFF**	**95% t=1.96**	**90% t=1.65**
Temporary	1.65	No Outlier	**Outlier**	1.84	No Outlier	**Outlier**
Permanent	3.71	**Outlier**	**Outlier**	3.30	**Outlier**	**Outlier**

18. Using logic that is difficult to comprehend, Dr. Fuss rationalizes his interpretation of the mixed results (i.e., "Outlier" for the permanent change hypothesis, "No outlier" for the temporary change hypothesis – at least at the 95% confidence interval) in favor of the "No outlier" conclusion, on the grounds that to do otherwise "would bias the test in favor of the hypothesis for which the studentized residual is greater than 2,"[16] which happens to be Dr. Fuss's *non*-preferred hypothesis - the permanent change hypothesis. The obvious flaw in Dr. Fuss's reasoning, of course, is that in interpreting the results as he does in order to avoid biasing

[16]Fuss Declaration, Appendix D, at 2.

the test results in favor of the permanent change hypothesis, Dr. Fuss introduces a bias in the test results "in favor of the hypothesis for which the studentized residuals are [less] than 2," which happens to be Dr. Fuss's preferred hypothesis - the temporary change hypothesis. That Dr. Fuss appears willing to accept the latter type of bias (which using his logic would favor his preferred temporary change hypothesis), but not the former type of bias (which he alleges favors the permanent change hypothesis) is a true and incredibly blatant example of the "selectivity bias" Dr. Fuss (falsely) accuses ETI of committing. Significantly, Dr. Fuss fails to provide any theoretical support or citation for his method of interpreting the mixed results in favor of the temporary change hypothesis and the "No Outlier" conclusion.

19. Moreover, it is clear from the textbook cite provided by Dr. Fuss that there is no particular requirement that 2 be used as the critical value. While 2 is a commonly used critical value for the t-distribution, reflecting the selection of a 95% confidence interval, there is no policy significance to using a 95% confidence interval vis-a-vis a 90% confidence interval or even an 85% confidence interval. Indeed, from a public policy perspective, it is as correct to analyze the studentized residual values using, *say 1.65* (reflecting a 90% confidence level (t-statistic). If Dr. Fuss's results are analyzed using 1.65 as the critical value (in lieu of 2), the 1990 data point is in fact determined to be an outlier for *both the temporary change and the permanent change hypothesis* (see Table 3 above).

20. This "Outlier" finding is also consistent with findings of others who have analyzed the LEC input price growth data series. The Prosecutorial Unit of the Connecticut's Department

of Public Utility Control ("Unit") in a price cap proceeding before the Connecticut Department of Public Utility Control (DPUC) analyzed the LEC input price growth data series (presented in that proceeding in the testimony of Dr. William Taylor on behalf Southern New England Telephone Company) and concluded that:

> ... the results of Dr. Taylor's t-test is determined by the presence of one outlier, LEC input price growth during 1990 ... In that year, LEC input prices increased by 12.1%; in no other year did LEC input price growth rate exceed 3.6%, and input prices grew at a negative rate during four of the eight postdivestiture year. When one conducts a t-test on the LEC vs. US input price data series, absent 1990 data, the null hypothesis is rejected at the 1% level. That is, one accepts with 99% confidence that LEC's input prices grew at a significantly slower rate than input prices for the US economy.

Because Dr. Taylor's conclusion that LEC and US input prices have grown at the same rate is based on the presence of a single data point, Prosecutorial believes that his conclusion must be viewed with extreme caution.[17]

21. The inability to use these types of non-nested hypothesis tests to validate the temporary change hypothesis is further indicated by results of the J-Test, which Dr. Fuss criticizes ETI for not reporting. As shown in Table 4 below, using a 5% critical value, when the 1990 outlier is excluded, the J-Test accepts the permanent change hypothesis. In fact, the only hypothesis that is rejected under the J-Test is Dr. Fuss's temporary change hypothesis. Using a 10% critical value, when the 1990 outlier is excluded, the J-test rejects both the permanent and temporary change hypothesis using the LEC input price growth equation and accepts both when

[17]Brief of the Prosecutorial Unit of the Department of Public Utility Control, Connecticut Department of Public Utility Control Docket No. 95-03-01, November 28, 1995 at 11-12.

using the LEC-US input price differential equations. As with the other tests, the results of the J-test fail to provide conclusive support for the temporary hypothesis.

Table 4:
Testing the Two Competing Hypothesis Using the J Test

Data to 1992 (1990 Data Point Excluded)						
Data Set and Equation Nos.	**Hypothesis**	**t-Statistic for α**	**Critical 5% Value of t**	**Conclusion**	**Critical 10% Value of t**	**Conclusion**
Christensen Eqs. (2) & (4)	H1 versus HC	1.90	1.96	Accept	1.65	**Reject**
	H2 versus HC	1.76	1.96	Accept	1.65	**Reject**
Christensen Eqs. (3) & (5)	H1 versus HC	1.60	1.96	Accept	1.65	Accept
	H2 versus HC	1.071	1.96	Accept	1.65	Accept
Data to 1993 (1990 Data Point Excluded)						
Data Set and Equation No.	**Hypothesis**	**t-Statistic for α**	**Critical 5% Value of t**	**Conclusion**	**Critical 10% Value of t**	**Conclusion**
Christensen Eqs. (2) & (4)	H1 versus HC	1.83	1.96	Accept	1.65	**Reject**
	H2 versus HC	2.55	1.96	**Reject**	1.65	**Reject**
Christensen Eqs. (3) & (5)	H1 versus HC	1.61	1.96	Accept	1.65	Accept
	H2 versus HC	1.60	1.96	Accept	1.65	Accept

Note: H1: permanent change hypothesis; H2: temporary change hypothesis.

Conclusion

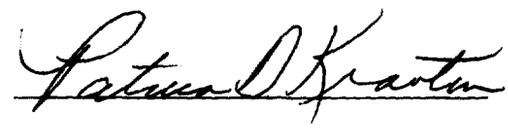
22. As succinctly explained in the ETI Reply Study,

> [...] important (and indisputable) structural changes occurred in the telecommunications industry at the time of divestiture that render pre-1984 data non-comparable to post-1984 data and provide a strong theoretical basis for recognition of a structural break in the data. [...] it is USTA's experts that replace the theoretically sound hypothesis of there being a *permanent* structural change following divestiture with a variety of theoretically unsound hypotheses alleging *temporary* shifts that are necessarily of far less moment than the break-up of the

Bell System.[18]

23. In limiting his declaration strictly to a presentation of econometric results, Dr. Fuss fails entirely to address the structural issues raised by the Ad Hoc Committee and others concerning the appropriateness of including an input price differential between LECs and the economy as a whole as measured for the post-divestiture period as a component of the price cap formula. Moreover, as demonstrated in the preceding analysis, even the econometric tests introduced by Dr. Fuss in both of his declarations fail to provide conclusive evidence that the temporary change hypothesis is more meaningfully statistically than the permanent change hypothesis. Accordingly, Dr. Fuss's analyses should be dismissed by the Commission as failing to provide any compelling evidence, from either a statistical or economic perspective, that would warrant exclusion of an input price differential component in the price cap formula.

I declare under penalty of perjury that the foregoing is true and correct.



Patricia D. Kravtin

Date: July 12, 1996

[18]ETI Reply Study, pp. 12-13.

Statement of Qualifications

PATRICIA D. KRAVTIN

Patricia D. Kravtin is Vice President and Senior Economist at ETI. Ms. Kravtin did graduate study in the Ph.D. program in Economics at the Massachusetts Institute of Technology, where she was a National Science Foundation Fellow. Her fields of study have included Industrial Organization, Government Regulation of Industry, and Urban and Regional Economics. While at M.I.T., Ms. Kravtin performed research for the Sloan School of Management and the Joint Center for Urban Studies of M.I.T. and Harvard. Her own empirical work has centered on multiproduct industries and has included econometric estimation of multiproduct cost functions and measurement of product-specific economies of scale and economies of joint production.

While in Washington, D.C., Ms. Kravtin gained valuable insight into the regulatory process performing research and policy analysis at the United States Department of Commerce, the Securities and Exchange Commission, and the Private Radio Bureau of the Federal Communications Commission.

Since joining ETI in 1982, Ms. Kravtin has been actively involved in telecommunications regulatory proceedings in state jurisdictions throughout the country and has frequently testified as an expert witness before regulatory commissions. Ms. Kravtin has testified before the Rhode Island Public Utilities Commission, the Maine Public Utilities Commission, the Florida Public Service Commission, the New York Public Service Commission, the Louisiana Public Service Commission, the Minnesota Public Utilities Commission, the Mississippi Public Service Commission, the Arizona Corporation Commission, the Kentucky Public Service Commission, the Delaware Public Service Commission, the Georgia Public Service Commission, the Tennessee Public Service Commission, the New Hampshire Public Utility Commission, the New Jersey Board of Regulatory Commissioners, the Arkansas Public Service Commission, the Kansas Corporation Commission, and the California Public Utilities Commission. Ms. Kravtin has also testified as an expert witness in anti-trust litigation before the United States District Court for the Eastern District of Tennessee at Greeneville.

Ms. Kravtin's assignments have involved the analysis of both rate design and revenue requirements issues. She has performed analyses of various cost methodologies used by telephone companies to determine costs and set rates, and econometric demand models used to develop estimates of repression and stimulation of demand as a result of price changes. She has conducted numerous analyses of the costs and benefits of local measured service.

Ms. Kravtin has also been involved in the analysis of issues relating to telephone company modernization expenditures and plant utilization. Ms. Kravtin has presented testimony on the subject of infrastructure/plant modernization before the Ohio General Assembly senate select Committee on telecommunications Infrastructure and Technology and the New Jersey Senate Transportation and Public Utility Committee.

More recently, Ms Kravtin has gained extensive expertise in the area of video and multimedia information service markets. Ms. Kravtin has submitted numerous filings before the FCC concerning the economics of video dialtone investment and/or VDT tariffs proposed by New

Jersey Bell, Pacific Bell, Ameritech, Southern New England Telephone, US West, GTE, Bell Atlantic, BellSouth, NYNEX, Puerto Rico Telephone Company and Carolina Telephone in over 25 Section 214 Application proceedings.

Ms. Kravtin has authored and co-authored numerous papers and reports pertaining to these issues. These include the following:

"The Economic Viability of Stentor's 'Beacon Initiative,' Exploring the extent of its financial dependency upon revenues from services in the Utility Segment," prepared for Unitel, submitted as evidence before the Canadian Radio-television and Telecommunications Commission, March 1995.

"A Public Good/Private Good Framework for Identifying Pots Objectives for the Public Switched Network" prepared for the National Regulatory Research Institute, October 1991;

"The U S Telecommunications Infrastructure and Economic Development," presented at the 18th Annual Telecommunications Policy Research Conference, Airlie, Virginia, October 1990;

"An Analysis of Outside Plant Provisioning and Utilization Practices of US West Communications in the State of Washington," prepared for the Washington Utilities and Transportation Commission, March 1990; and

"Telecommunications Modernization: Who Pays?," prepared for the National Regulatory Research Institute, September 1988.

Ms. Kravtin has also been actively involved in the analysis of issues relating specifically to industry structure, BOC market power and MFJ restrictions, regulatory reform, price caps regulation, access charges, and local and long-distance competition in the telecommunications industry at both the state and federal level. Ms. Kravtin has served as an expert witness in antitrust cases involving BOC monopolization. She has co-authored numerous papers and reports pertaining to these issues. These include the following:

"Reply to X-Factor Proposals for the FCC Long-Term LEC Price Cap Plan," prepared for the Ad Hoc Telecommunications User Committee, submitted in FCC CC Docket 94-1, March 1, 1996.

"Establishing the X-Factor for the FCC Long-Terms LEC Price Cap Plan," prepared for the Ad Hoc Telecommunications User Committee, submitted in FCC CC Docket 94-1, December, 1995.

"Fostering a Competitive Local Exchange Market in New Jersey: Blueprint for Development of a Fair Playing Field," prepared for the New Jersey Cable Television Association, Januarv 1995.

"The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers," February 1994.

"A Note on Facilitating Local Exchange Competition," prepared for E.P.G., November 1991;

"Testing for Effective Competition in the Local Exchange," prepared for the E.P.G., October 1991;

"Report on the Status of Telecommunications Regulation, Legislation, and modernization in the states of Arkansas, Kansas, Missouri, Nebraska, Oklahoma and Texas," prepared for the Mid-America Cable-TV Association, December 13, 1990;

"Sustainability of Competition in Light of New Technologies," presented at the Twentieth Annual Williamsburg Conference of the Institute of Public Utilities, Williamsburg, Virginia, December 1988;

"Industry Structure and Competition in Telecommunications Markets: An Empirical Analysis," presented at the Seventh International Conference of the International Telecommunications Society at MIT, July 1988;

"Market Structure and Competition in the Michigan Telecommunications Industry," prepared for the Michigan Divestiture Research Fund Board, April 1988;

"Impact of Interstate Switched Access Charges on Information Service Providers - Analysis of Initial Comments," submitted in FCC CC Docket No. 87-215, October 26, 1987;

"An Economic Analysis of the Impact of Interstate Switched Access Charge Treatment on Information Service Providers," submitted in FCC CC Docket No. 87-215, September 24, 1987;

"Regulation and Technological Change: Assessment of the Nature and Extent of Competition From A Natural Industry Structure Perspective and Implications for Regulatory Policy Options," prepared for the State of New York in collaboration with the City of New York, February 1987;

"Long-Run Regulation of AT&T: A Key Element of a Competitive Telecommunications Policy," *Telematics*, August 1984;

"BOC Market Power and MFJ Restrictions: A Critical Analysis of the 'Competitive Market' Assumption,' submitted to the Department of Justice, July 1986; and

"Economic and Policy Considerations Supporting Continued Regulation of AT&T," submitted in FCC CC Docket No. 83-1147, June 1984.

Ms. Kravtin attended George Washington University on an Honor Scholarship where she received a B.A. with Distinction in Economics. She was elected to Phi Beta Kappa and Omicron Delta Epsilon in recognition of high scholastic achievement in the field of Economics. Ms. Kravtin is a member of the American Economic Association.