SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY

DOCKET NO. 920260-TL

DIRECT TESTIMONY OF PAUL W. STALLCUP

ON BEHALF OF THE STAFF OF THE FLORIDA PUBLIC SERVICE COMMISSION

DIVISION OF AUDITING AND FINANCIAL ANALYSIS

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DIRECT TESTIMONY OF PAUL W. STALLCUP

Q Please state your name and business address.

A My name is Paul W. Stallcup. My business address is 101 East Gaines Street, Tallahassee, Florida.

Q By whom are you employed?

A I am employed by the Florida Public Service Commission as the Supervisor of the Forecasting Section in the Division of Audit and Financial Analysis.

Q Please summarize your educational background.

A I graduated from Florida State University in 1977 with a Bachelor Degree in Economics, and received a Masters Degree in Economics in 1979. In addition, I completed the course work and examinations for the Ph.D in Economics from Florida State University in 1980.

Q Please summarize your professional experience.

A From January 1981 to January 1983, I was employed by Florida Power & Light Company as a Load Forecast Analyst in the Systems Plannings Department. In this capacity, I participated in the development of the company's short and long term forecasting models, as well as the development of economic assumptions used to drive the forecasts.

I joined the Commission in January 1983 as an Economic Analyst in the Audit and Financial Analysis Department. Since that time, I have worked on several assignments including the evaluation of forecasts in both the electric and communications industries, the development of statistical procedures for use by the Commission's audit staff, as well as other special projects involving both statistical and economic analysis.

In my current position, I am responsible for the evaluation of

forecasted information filed with the Commission.

Q Have you previously provided expert witness testimony?

A Yes. I have testified before this Commission in the 1983 Southern Bell rate case.

Q What is the purpose of your testimony?

A The purpose of my testimony is to present estimates of the price elasticity of demand for three types of services offered by Southern Bell. These services are interLATA access, intraLATA toll, and short-haul intraLATA toll. The elasticity estimates for short-haul toll could be used with the Company's proposed Extended Local Service or some other short-haul toll plan.

Q Why do you believe these estimates are relevant to this case?

A These estimates are relevant because they form the basis for calculating the amount of stimulation and/or repression which may occur as a result of the Company's rate design proposals. Southern Bell chose not to include estimates of stimulation or repression in their filing. I believe that in making this choice, the Company is claiming, for all intents and purposes, that the extent of stimulation and/or repression which would result from a change in price will be zero. I believe that such a claim is contrary to economic theory as well as to actual experience, and I have therefore filed this testimony to correct what I consider to be an omission of relevant information.

Q Have you prepared any schedules to accompany your testimony?

A Yes. Exhibits PWS-1 through PWS-3 were prepared for this purpose.

Q Would you please explain how you derived your elasticity estimates?

A Yes. The elasticity estimates presented in my testimony and listed in my Exhibit PWS-3 have been developed by combining results from two areas of telephone demand research. The first area is concerned with the estimation of elasticities for specific types of services, while the second focuses on the relationships that have been found to exist between the elasticities for different types of services. By judgmentally combining the results from these two areas of research, I derive what I believe to be reasonable price elasticity estimates.

Q Do you believe that this is the best way to estimate price elasticities?

A No. I believe that the best way to estimate price elasticities is to perform an empirical analysis using price and usage data for the service in question, and economic and demographic data for the area in which the service is offered. In this way, you can be sure that you have properly captured the customers' response to variations in price given the economic and demographic characteristics of the market in which the service is sold.

Unfortunately in this case, I did not have the opportunity to construct my own empirical models in order to develop company specific elasticities. However, given that it is generally recognized that people do react to changes in price, and that the results presented here are derived from a broad survey of estimates, I believe that it is better to use these estimates than to use no estimates at all.

Q Would you please summarize the specific elasticity studies you used in formulating your elasticity estimates?

A Yes. One of the more comprehensive reviews of the telephone demand literature has been presented by Dr. Lester Taylor. In his monograph, Dr.

Taylor reviewed numerous telephone demand models. In one table, Dr. Taylor has presented a number of state models created by the Bell System during the time period of 1976 through mid-1978 which were used to analyze intrastate toll demand [Ibid., p. 121.] I have presented an abbreviated version of this table in Exhibit PWS-1. The models evaluated use either messages or price deflated revenues (as opposed to MOUs) as the dependent variable. Of the 31 models presented, 25 use some form of a Koyck distributed-lag model to take into account both short run and long run elasticities. As noted by Dr. Taylor, the price elasticities vary from -0.03 to - 0.44 in the short run and from -0.22 to -1.04 in the long run. [Ibid.]. The average of the short run estimates is -0.21, while the mean of the long-run estimates is -0.67.

I also reviewed a Staff study performed in 1986 entitled Florida Toll Demand Elasticities: A Background Paper. The paper presents demand models for both residential and business customers. These models employ the methodologies that were discussed in the Taylor survey. Each customer group (residential, business) has been evaluated under four different models: messages, messages/access line, price deflated revenues, and price deflated revenues/access line. I have presented a summary of the conclusions for this model in Exhibit PWS-2. This exhibit shows that the average long-run price elasticity, averaged for both residential and business customer groups for the message-based model, is about -0.32, while the messages-per-access-line model estimates a long-run price elasticity -0.42. The price deflated revenue models, reflecting the elasticity of overall calling, are much more elastic than those presented by the message-based models. The average long-run price elasticity for both the price deflated revenue model and the

price deflated revenue per access line model is -0.52.

I based my estimates for short-haul elasticities on the following two recent pieces or research:

Kenneth E. Train, Moshe Ben-Akiva, and Terry Atherton. "Consumption Patterns and Self-Selecting Tariffs," The Review of Economics and Statistics, 71, (February 1989), pp. 62-73.

Kenneth E. Train, Daniel L. McFadden, and Moshe Ben-Akiva. "The Demand for Local Telephone Service: A Fully Discrete Model of Residential Calling Patterns and Service Choices," Rand Journal of Economics, 18, (Spring 1987), pp. 109-123.

Both of the above articles estimate the demand responses of residential households based upon the time of day, and geographic zone called. The two articles present price elasticity estimates of -0.47 and -0.42, respectively. Both articles are based upon calls with very short average lengths of haul (e.g. under 40 miles). In this sense, these price elasticity estimates could be representative of the toll elasticity resulting from short-haul toll calls.

Q Would you please summarize the empirical relationships between elasticities that you used in formulating your elasticity estimates?

A Yes. There are several empirical relationships that are well established in the literature. One of the most commonly held regularities that has been presented in the literature is that price elasticities are

greater than zero for most telecommunication services. Lester Taylor, in his well-recognized survey on telecommunications demand notes

> Price and income elasticities of demand are definitely different from zero. While there still remains a great deal of uncertainty as to the actual magnitude of the elasticities, any idea that telephone services are consumed without regard to the prices of telephone services or the level of income must be dismissed. [Lester D. Taylor, Telecommunications Demand: A Survey and Critique (Cambridge, Ballinger Publishing Company, 1980), pp. 12-13.

Another well-recognized relationship which has arisen in the literature relates the size of the elasticity estimate to the average length of haul (ALOH) of the telephone call being analyzed. Dr. Taylor notes that

> In general, the empirical estimates of price elasticities establish that the price elasticity becomes larger (in absolute value) as one goes from local service to short-haul toll calls to long-haul toll calls to international calls. The same pattern also appears to hold for income elasticities. [Ibid.]

This empirical regularity is based, no doubt, on the concept of community

of interest. The smaller the ALOH, the closer one gets to the relevant community of interest. As this occurs, calling becomes more of a necessity than a discretion. Thus, we would expect to see the elasticity for intrastate interLATA toll to be greater than long-haul intraLATA toll, and the elasticity for long-haul intraLATA toll to be greater than that for short-haul intraLATA toll.

Q Based on this analysis, what are your estimates for the price elasticity of demand for interLATA access, intraLATA toll, and short-haul toll?

A Because of the intrinsic variability involved in estimating price elasticities, I have presented my estimates in the form of ranges. I believe that these ranges are consistent with the literature in telephone demand and reflect well recognized theoretical and empirical relationships.

For each toll service, I have presented an elasticity estimate and a subjectively determined level of variance for that elasticity. Taken together, the elasticity estimate and its variance determine the range for each service's elasticity.

For Intrastate interLATA access, I have presented an elasticity estimate of -0.65. With this estimate, I have included a subjective variance of 0.15. The range has a lower value of -0.50, and an upper value of -0.80. For intraLATA toll, I have presented an estimate of -0.50. This estimate is lower than the interLATA elasticity in keeping with the well recognized Average Length of Haul/Elasticity relationship discussed above. The subjective variance for this service is 0.10. The lower value for the range is -0.40, and the upper value is -0.60.

For short-haul toll, or an optional ELS plan, I have presented an

estimate of -0.42. Here again, the estimate is lower than the intraLATA toll estimate because of the ALOH/Elasticity relationship. The subjective variance is 0.10, leading to a lower value of -0.32, and an upper value of -0.52.

Q Does this conclude your testimony?

A Yes.

Estimates of Price Elasticities for Intrastate Toll Calls

State	Dependent Variable	Price Elasticity Short Run	Price Elasticity Long Run	Form of Model
State A-1	M	-0.16	NA	Linear
State A-2	M/MT	-0.15	-0.22	Log Koyck
State A-3	M/MT	-0.12	NA	Linear
State B-1	M/T	-0.32	-0.60	Log Koyck
State C-1	M	-0.07	-0.14	Log Koyck
State D-1	PDR	-0.35	-0.45	Log Koyck
State E-1	M/MT	-0.03	-0.85	Log F1-ADJ
State E-2	M/MT	-0.21	-0.73	Log Koyck
State E-3	M/MT	-0.17	-1.04	Log F1-ADJ
State E-4	M/T	-0.26	-1.04	Log Koyck
State E-5	M/MT	-0.13	-0.81	Log Koyck
State F-1	PDR/POP	-0.14	-0.62	Log Koyck
State G-1	PDR/POP	-0.16	-0.56	Log Koyck
State H-1	PDR	-0.37	-0.50	Log Koyck
State I-1	M/T	-0.44	-0.84	Log Koyck
State I-2	PDR/POP	-0.29	-0.64	Log Koyck
State I-3	M/T	-0.35	-0.96	Log Koyck
State I-4	M/T	-0.59	-0.59	Double Log
State J-1	PDR/POP	-0.14	-0.23	Log Koyck
State K-1	PDR/T	-0.21	-0.91	Log Koyck
State L-1	M	-0.20	-0.39	Log Koyck
State L-2	M	-0.23	-0.43	Log Koyck
State M-1	PDR/POP	-0.12	-0.69	Log Koyck
State M-2	PDR/POP	-0.17	-0.83	Log Koyck
State N-1	PDR/POP	-0.14	-0.82	Log Koyck
State N-2	PDR	-0.24	-0.86	Log Koyck
State N-3	PDR/POP	-0.15	-0.79	Log Koyck
State N-4	PDR/POP	-0.13	-0.91	Log Koyck
State O-1	PDR/POP	-0.07	-0.84	Log Koyck
State R-1	PDR/POP	-0.21	NA	Linear
State Q-1	PDR	-0.31	-0.37	Log Koyck
Average:		-0.21	-0.67	

Notes: M = Messages; MT = Main Telephones; T= Telephone Less Residential Extensions; PDR = Price Deflated Revenues; POP = Population; F1-Adj = Houthakker-Taylor Flow-Adjustment Model

Source: Lester Taylor, Telecommunications Demand: A Survey and Critique (Ballinger Publishing Company, 1980), pp. 122-124.

Florida Toll Demand Elasticities

Residential Models

Dependent Variable	Short Run	Long Run	Average One-Year
Messages	-0.21	-0.36	-0.30
Messages/Line	-0.20	-0.35	-0.29
Revenues	-0.31	-0.56	-0.45
Revenues/Line	-0.29	-0.56	-0.44

Business Models

Dependent Variable	Short Run	Long Run	Average One-Year
Messages	-0.12	-0.28	-0.19
Messages/Line	-0.19	-0.49	-0.32
Revenues	-0.21	-0.48	-0.35
Revenues/Line	-0.21	-0.47	-0.34

Combined Average

Dependent Variable	Short Run	Long Run	Average One-Year
Messages	-0.16	-0.32	-0.25
Messages/Line	-0.19	-0.42	-0.30
Revenues	-0.26	-0.52	-0.40
Revenues/Line	-0.25	-0.52	-0.39

Notes: Price elasticities calculated using Southern Bell Data, 1978-1985.

Source: Florida Toll Demand Elasticities: A Background Paper
(Tallahassee, Florida: Florida Public Service Commission -- Division of Communications, 1986), p. 44.

Recommended Range of Price Elasticities

Service	Estimate	Variance	Low	High
Intrastate InterLATA Access	-0.65	0.15	-0.50	-0.80
IntraLATA Toll	-0.50	0.10	-0.40	-0.60
Short-Haul Toll (< 40 Miles)	-0.42	0.10	-0.32	-0.52

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Comprehensive review of revenue requirements and rate stabilization plan of SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY.	DOCKET NO. 920260-TL FILED: 12/11/92

CERTIFICATE OF SERVICE

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