

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

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In the Matter of:

NOTICE OF SOUTH CENTRAL BELL TELE-)
PHONE COMPANY OF AN ADJUSTMENT IN) CASE NO. 8847
ITS INTRASTATE RATES AND CHARGES)

and

THE VOLUME USAGE MEASURED RATE)
SERVICE AND MULTILINE SERVICE) CASE NO. 8879
TARIFF FILING OF SOUTH CENTRAL)
BELL TELEPHONE COMPANY)

O R D E R

IT IS ORDERED that South Central Bell Telephone Company ("SCB") shall file an original and 15 copies of the following information with the Commission on or before November 14, 1983. Each copy of the data requested should be placed in a bound volume with each item tabbed. When a number of sheets is required for an item, each sheet should be appropriately indexed, for example, Item 1(a), Sheet 2 of 6. Include with each response the name of the witness who will be responsible for responding to questions relating to the information provided. Careful attention should be given to copied material to insure that it is legible. Where information requested herein has been provided along with the original application, in the format requested herein, reference may be made to the specific location of said information in responding to this information request. When

applicable, the information requested herein should be provided for total company operations and Kentucky jurisdictional operations, separately. If neither the requested information nor a motion for an extension of time is filed by the stated date, the case may be dismissed.

Note: All questions numbered 1 - 37 of this data request that concern econometric demand models refer to the models supplied in answer to Item 12 of Staff Information Request No. 2 dated July 20, 1983 in Case No. 8838.

- 1) What type of lag structure is being posited in the four econometric demand models (i.e., are these geometric (Koyck) lags; polynomial lags; or some other structure)? Is the same lag structure being employed in all models?
- 2) Provide a conceptual-theoretical justification for inclusion of the seasonal binary variables. Cite instances in the academic or industry literature where such variables have been employed in telephone demand equations or their use discussed. Explain in detail why the full complement of seasonality variables is employed in the access line equations, whereas the residence MTS equation includes one and the business MTS equation includes two.
- 3) Why was a bifurcated price variable employed in the access line demand models? Supply any workpapers, references, computer output, which

were considered or produced in reaching this decision.

- 4) Please provide partial regression leverage plots of the residuals for all independent variables in all models.
- 5) Provide all workpapers used in the derivation of the "first year" demand elasticity coefficients for each of the four econometric demand models. Include complete explanations and interpretations of all such derivations.
- 6) If the lag structure in these models imposes an identical lag structure on all independent variables in the equation (e.g., as is the case with geometric lag) please provide justification for the use of such a structure.
- 7) Provide specific interpretations of the coefficients of each variable appearing in the four econometric models. Omit from this request the coefficients of the price and income variables.
- 8) Provide an explanation and results of any statistical test conducted on any of the models to evaluate the statistical significance of the seasonal binary variables as a group (i.e., the significance of seasonality per se).
- 9) Please provide the results of estimation of models that are identical to the four final

model specifications except for the omission of the seasonality binary variables.

- 10) Provide the methodology, workpapers, and results of any tests run to detect multicollinearity between the regressors of any of the models estimated. If no such tests were conducted on the variables of the final models, explain the rationale for this decision.
- 11) Please enumerate the specific criteria used to choose among the alternative model specifications estimated. While it is recognized that such decisions are complex and to some extent judgmental, please provide an indication of the relative weights assigned to the various factors that served as choice criteria.
- 12) Please identify the software package the demand models were run on, and the programs utilized. Is this package commercially available or an internal Bell package?
- 13) Provide all results that have not already been supplied of any statistical tests performed on any of the estimated models. Include all workpapers used to perform the statistical tests, explanations of why the tests were performed, and interpretations of the results.

- 14) Provide the general algebraic form (non-logged) of each model chosen as the final specification.
- 15) Provide detailed explanation for the inclusion of the following variables in the various final models:
- A) H_t in the residence access demand equation.
 - B) α_{50} in the residence access demand equation.
 - C) α_{55} in the residence access demand equation.
 - D) TPI_t in the business access demand equation.
- 16) Why was it deemed necessary to employ price deflated revenue as a proxy for some measure (adjusted, massaged, or aggregated) of toll minutes of use in the intrastate MTS demand equations?
- 17) Please specify whether the final business access demand equation is log-linear in form. If it is not, please identify the specific model specification, and explain why the final

residence access demand equation is fitted in natural logs while the final business access demand model is not.

- 18) What is an appropriate level of significance to be employed in a test for the presence of first order autocorrelation using either the Durbin-Watson statistic or Durbin's H statistic? Should such tests be run as one-tailed or two-tailed tests?
- 19) Supply a copy of the computer printout of results for the equations chosen as the "final" business and residence MTS demand models.
- 20) Please confirm that the repression and stimulation adjustments filed in Case No. 8847 have been derived from the econometric models supplied in response to Item 12 of staff information request dated July 20, 1983, in Case No. 8838, Toll and Access Charges for Telephone Utilities.
- 21) Provide a detailed description of the development of the following:
 - A) Intrastate residence MTS price index.
 - B) Intrastate business MTS price index.
 - C) Kentucky out measured WATS price index.

Provide all workpapers used in calculating these indexes.

- 22) Supply copies of the original sources of data for the following variables:
- A) L_t , P_{1t} and P_{2t} , CPI-U, Y_t , H_t in the residence access demand equation.
 - B) L_t , P_{t1} , and P_{t2} , TPI_t, CPI_t in the business access demand equation.
 - C) P_t , Y_t in residence MTS equation.
 - D) P_t , Y_t in business MTS equation.
- 23) Explain the data errors(s) that necessitated the use of the binary variables D178 and D280 in the business and residence MTS equations.
- 24) Explain and justify any and all manipulations, permutations, and massaging techniques used on raw data to arrive at the inputted values of all variables listed in Question 22.
- 25) Explain why access lines rather than rate adjusted revenue was chosen to be the dependent variable in the business and residence access demand equations. Cite any known examples in the academic or telephone industry literature where models of a similar level of disaggregation employ access lines as a dependent variable.
- 26) Provide normal probability plots of the residuals for each regression model provided in response to staff information request dated July 20, 1983, in Case No. 8838.

- 27) Provide correlation matrix of the regressor variables for each regression model provided in response to staff information request dated July 20, 1983, in Case No. 8838.
- 28) Provide model, computer printouts and all workpapers used in determining WATS stimulation adjustment.
- 29) Provide all calculations and workpapers used in estimating the loss of revenue due to repression of demand for residential access lines. Provide a narrative explaining the repression adjustment for residential access lines. Provide the amount of repression revenue adjustment without cost savings.
- 30) Provide all calculation and workpapers used in estimating loss of revenue due to repression of demand for business access lines. Provide a narrative explaining the repression adjustment for business access lines. Provide repression revenue adjustment without cost savings.
- 31) Provide all calculations and workpapers used in estimating cost savings due to repression of demand for residential access lines. Provide a narrative explaining cost savings adjustment.
- 32) Provide all calculations and workpapers used in estimating cost savings due to repression of

demand for business access lines. Provide a narrative explaining cost savings adjustment.

- 33) Provide an explanation of the reasons for the difference in the overall MTS rate decrease of 12 per cent stated by Ms. Mezzell in direct testimony and the 3.9012 per cent decrease for business MTS and 6.2155 per cent decrease for residential MTS used in computing MTS revenue changes due to stimulation. Provide work-papers.
- 34) Provide billing units by category of service (e.g., residential single line, business single line, etc.) associated with price out of basic exchange service for pre- and post-repression revenue levels.
- 35) Provide minutes of use for MTS, both pre- and post-stimulation revenue adjustment.
- 36) Are the demand models filed October 17, 1983, in response to staff information request Item 12 dated July 20, 1983, used for forecasting access line growth? If yes, provide estimates of access line growth for 1984 and 1985. Provide forecasted values of the independent variables, the sources of these forecasted variables, and the ranges considered reasonable for each variable.

37) If the demand models were not used in forecasting access line growth for 1984 and 1985 as provided in response to Item 64, Staff Information Request III, then provide an explanation detailing the inadequacies of these models for use in forecasting access line growth.

Done at Frankfort, Kentucky, this 4th day of November,
1983.

PUBLIC SERVICE COMMISSION



For the Commission

ATTEST:

Secretary