

UNITED STATES OF AMERICA
Before The
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

Experimental Rate and Service Changes)
To Implement Negotiated Service Agreement)
With Capital One Services, Inc.)

Docket No. MC2002-2

ANSWERS OF
OFFICE OF CONSUMER ADVOCATE
WITNESS: J. EDWARD SMITH TO INTERROGATORIES OF
THE UNITED STATES POSTAL SERVICE (USPS/OCA-T1-1-5)
(January 27, 2003)

The Office of the Consumer Advocate hereby submits the answers of J. Edward Smith to interrogatories of the United States Postal Service, dated January 17, 2003. Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

OFFICE OF THE CONSUMER ADVOCATE

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USPS/OCA-T1-1. Using that methods you discuss in your testimony and any other method you choose, please forecast Capital One's mail volume for October, November, and December. Please explain the rationale underlying your forecast. If you cannot provide a forecast, please explain.

RESPONSE TO USPS/OCA-T1-1.

Data for Capital One's First-Class Customer mail and Solicitation mail were presented in the OCACOS spreadsheet. The Capital One data are available from witness Elliott's testimony, COF-T-2, Exhibit 2, revised 11/1/02, Tr. 2/207, and presented for August and September 2002 in the response to OCA/COS-T2-5, Tr. 2/238. For purposes of this response, the updated August and September data were used. The objective of this response is to provide a forecast of Capital One's mail volume for October, November, and December of 2002.

Customer Mail: I forecast the Customer mail level for calendar year 2002 based on the growth rate for the 12 months ended September 2001 and the level of 12 month customer mailings as of December 2001. I then subtract the level of mailings for the nine months ended September 2002. The remainder is the total forecasted volume for October, November, and December 2002.

Solicitation Mail: I forecast the Solicitation mail level for calendar year 2002 based on the growth rate for the 12 months ended September 2001 and the level of 12 month solicitation mailings as of December 2001. I then subtracted the level of mailings for the nine months ended September 2002. The remainder is the total forecasted volume for October, November, and December 2002.

The calculations are delineated in the following table.

	Customer Mail	Solicitation Mail	Total Mail
12 mo ending Septmbr2000	338,602,516	753,620,555	1,092,223,071
12 mo ending Septmbr2001	470,592,285	788,930,179	1,259,522,464
Monthly growth rate	1.028	1.004	
Annual Growth Rate	1.390	1.047	
12 mo ending Decmbr2001	498,763,577	960,973,030	1,459,736,607
Projection 2002	693,185,314	1,005,997,806	1,699,183,120
Mail Pieces 9 mo ending September2002	443,200,101	728,770,157	1,171,970,258
Difference (Oct, Nov, Dec)	249,985,213	277,227,649	527,212,862

USPS/OCA-T1-2. Assume that Capital One's forecast for FY2003 for the Before Rates Volume was the following:

- a) 1.2 Billion pieces
- b) 1.3 Billion pieces

Please describe in detail how such a forecast would affect your testimony.

RESPONSE TO USPS/OCA-T1-2.

My testimony addresses the possible approaches for arriving at a forecast level and the need to avoid a free rider problem. On the assumption that the Capital One forecast is verifiable and is based on a methodology acceptable to the Postal Service, and consistent with the criteria in witness Callow's testimony, then the number would be suitable for the NSA.

My testimony would be unchanged in either case under the above conditions.

The free-rider problem would have been addressed, and an appropriate forecasting methodology would have been implemented. My testimony did not find a way in which to produce a regression based forecast, and I was limited to advocating an approach based on previous growth rates. Either of these approaches, or some other approach, should be acceptable if they avoid the free rider problem, are verifiable based on publicly available data, and acceptable to the Postal Service.

USPS/OCA-T1-3. Please confirm that in evaluating the proposed rate, classification, and fee changes in the Postal Service's Request, the Commission should consider the entire impact on contribution and not just the impact on one part of the proposed changes.

RESPONSE TO USPS/OCA-T1-3.

I confirm that the Commission should consider the impact on contribution generated by Capital One's competitors, the impact on contribution generated by Capital One, and whether or not there is a free rider problem.

USPS/OCA-T1-4. Please refer to the changes in rates, classification, and fees proposed by witness Callow. Also, please refer to Capital One Services, Inc. mailing volume history which is presented through July 2002 in Exhibit 2 to COS witness Elliot's testimony, COS-T-2, Tr. 2/207, and presented for August and September 2002 in the response to OCA/COS-T2-5, Tr. 2/238. Given your testimony, please state how that Postal Service would set Capital One's discount threshold and what the threshold would be. If you cannot provide a threshold and a rationale for the threshold, please explain why not.

RESPONSE TO USPS/OCA-T1-4.

Please see my testimony, Direct Testimony of J. Edward Smith, OCA-T-1. On page 10 I indicate that "A Company-Specific demand study is needed for a full understanding of future mailing levels". Although I attempted some regression analysis, such efforts were unsuccessful in the case of First-Class Solicitation mail.

Lacking a regression analysis basis for the forecasting of Capital One's mail volume, I used a simple extrapolation of trends, as presented in Table 4 at 18 of my testimony. Such an extrapolation assumes that the future will resemble the past. It is not clear that this approach, or alternatively a regression approach, will work for the estimation of mail volumes by Capital One if, in fact, Capital One has changed its marketing strategy. The prediction is presented under the heading "Alternative Projection" in Table 4.

I believe that the threshold for a year should be set at the estimated volume for the year; accordingly, volume in excess of the threshold would be eligible for a discount. This largely eliminates the problem of free riders.

Ultimately, in implementing a classification recommended by the Postal Rate Commission, the Postal Service will determine an acceptable procedure or procedures for the estimation of volume which takes into account problems of free riders, data availability, and impacts on competitors and their use of the mail.

USPS/OCA-T1-5. Please describe the forecasts of volumes you have done for publicly-held companies and the method you used to forecast them.

RESPONSE TO USPS/OCA-T1-5.

This response will present information on a variety of forecasting efforts in which I have been involved. The comments focus on forecasting efforts for a major electrical equipment manufacturer and a major distributor of natural gas. The information delineated under "All Other" represents forecasting efforts which were less elaborate. Generally, the choice of forecasting approach is a function of the level of effort which the management, client, or decision maker deems appropriate in view of the uncertainty, importance, or significance of the results.

Electrical Equipment

I modified, developed, or estimated forecasting models for the overall market level of orders for Alternating Current (AC) electrical power equipment in the United States. The electric utility industry and some major power users or producers order a variety of items related to the production and consumption of electricity. Major types of high voltage electric generation, transmission, and distribution products include the following:

- **Generation units:** Electricity is generally generated at voltages in excess of 13,000 volts by generation units powered by coal, natural gas, hydro power, oil, or nuclear sources. Generally a number of units are located in a power plant, and new orders may represent additions to an existing plant or the building of a new plant. There is a wide variety of equipment options. The units are complex, expensive, and produced in limited numbers in a given year.

- Power transformers: Power transformers step-up the 13,000 volt power from the generation unit to 525,000 volts (significantly more or less, depending on system design) for transmission.
- Switchgear generally resides next to the transformer, is of a similar capacity, and handles the switching of current with voltages as high as 765,000 volts or more. Although there is no downward limit on size, the cutoff point for forecasting purposes would be in the neighborhood of 13,000 volts.
- Distribution transformers: Distribution transformers are the pole pots or green ground boxes around residential neighborhoods; a larger voltage/size of transformer will be used in factories, generally transforming electricity to 440/230/115 volts rather than the 230/115 volts option.

The definition of the products indicates that they have one important factor in common: the demand for the products is driven by the need to produce and distribute electricity. Accordingly, in producing sales forecasts, the first requirement is to produce a forecast of the demand for electricity. The estimate of electric demand, measured in kilowatt hours, (kwh) is then used to estimate kilowatts (kw) of capacity. The kw capacity estimates translate into total product demand, with actual units consisting of some multiple of kw capacity. Depending on the type of equipment, there will be lags of six months to six years between identification of the need for the equipment (the order) and the actual manufacture of the product (the sale). Business forecasts of orders to be received by a specific company are based on the overall estimate of the total

market product demand, taking into account product ordering cycles, production cycles, and the oligopolistic equilibrium of the market.

1. Estimate the demand for electricity

The demand for electricity is a summation of the demands of a variety of end users--e.g., the residential, commercial, and industrial markets; there is also a variety of other, minor demands (e.g., transportation).

A. Commercial Sector

- Define the commercial sector in terms of building types; the model will typically have 10 different types of buildings.
- Obtain a baseline total of square feet of commercial space by building type for the base year; the estimate is based on commercial additions over a past time period with appropriate removal rates applied.
- Determine appropriate drivers of yearly construction additions to commercial sector square feet, by building type. Data for the drivers are available from forecasting services.
- Forecast new construction: Square feet of new commercial construction by building type can be forecasted through regression analysis of the drivers.
- Combine existing and estimated square feet of commercial building space by type of building for each type of building and year.
- Obtain annual electric consumption per square foot by end use and type of building; adjust for trends.
- Forecast future electric consumption on the basis of energy use per sq ft, end use, and square feet.

B. Industrial Sector

- Define major electric using industries--to be modeled separately.
- Non major industries--to be modeled as one or more "all-other" variables.
- Determine base year electric consumption
- Determine major electric drivers for each industry--generally based on economic forecasts purchased on an ongoing basis from major forecasting organizations.
- Determine level of drivers for future periods.
- Produce forecasts of energy use, taking into account the normal econometric procedures in dealing with time series data.

C. Residential Sector

- Determine existing residential stock of housing
- Determine energy use per square foot by end use.
- Determine market penetration by fuel type.
- Determine market drivers of new construction.
- Forecast new housing units.
- Generate forecasts for future energy consumption based on end use and number of units.

2. Derivation of capacity

The total electric consumption is a summation of the three major sectors plus a variety of other, minor sectors. This gives the total kilowatts consumed (generally expressed in terms of megawatt hours in order to eliminate a number

of zeros--MWH). This figure is a measure of output of electricity. It is not a measure of megawatts of installed generating capacity. Megawatt hours are translated into megawatts based on known usage patterns. These patterns change slowly, so no analysis of MW and MWH is generally needed, although such an analysis could be performed.

3. Finalization of the Forecast

To obtain forecasts of the demand for future product (i.e., generators, transformers, switch gear, etc.), determine the relationship between increases in MW capacity and product usage. This converts MW of capacity into MW of orders, with unit capacities and voltages generally a function of previous experience. Given that the high voltage AC electrical equipment market is an oligopoly with fixed shares at optimum prices by existing firms, one can determine the actual orders for a specific firm based on an unchanging oligopoly solution.

Natural Gas Forecasting

Working for a gas distribution utility I generated sales forecasts for gas in terms of end use sector, e.g., residential, commercial, multifamily.

1. Residential: The residential model generally corresponded to the design of a residential model for electric use. Heating is the dominant load, followed closely by hot water usage. The first input is end use by housing type for the existing housing stock. An analysis of trends in this usage is necessary. Forecasts of new residential construction housing generally drive major changes in future

consumption, with an allowance being made for changing technologies in end use efficiencies. In addition, an estimate of market penetration by fuel choice and end use is necessary, generally being based on existing trends.

2. Commercial and Multifamily, firm usage: Gas use in both types of space is dominated by boiler fuel or, alternatively, food processing needs, depending on building design and type. A commercial or multifamily model is based on an initial estimate of existing units, usage per square foot or unit, projected unit/square foot additions, and market penetration. Projections are usually derived via regression analysis employing appropriate drivers.

3. The total forecast for each year is a summation of the three sectors plus any miscellaneous uses the analyst chooses to include.

Other Industries

I have also worked on forecasting procedures in a variety of other industries. This work has frequently been less elegant in terms of the level of effort and, therefore, level of model complexity. The work has been focused on budgeting processes on a rapid turnaround basis. Industries have included shoes, information technology, engineered materials, and automated processing equipment. All forecasting work involves the identification of market drivers, the prediction of how the drivers will vary in the future, and the development of relationships between drivers and orders/sales.