BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D. C. 20268-0001

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POSTAL RATE AND FEE CHANGES, 1997 : Docket No. R97-1

# RESPONSES OF JOINT PARTIES WITNESS ANTOINETTE CROWDER TO INTERROGATORIES OF NEWSPAPER ASSOCIATION OF AMERICA (NAA/JP-NOI3-1-2), AND MOTION TO RECEIVE RESPONSES ONE DAY LATE

The Advertising Mail Marketing Association, Direct Marketing Association, Mail Order Association of America, Parcel Shippers Association, and Advo, Inc. (the Joint parties) hereby submit the responses of Joint Parties witness Antoinette Crowder to Newspaper Association of America interrogatories NAA/JP-NOI3-1-2. The interrogatories are stated verbatim and are followed by the response.

The Joint Parties move that these responses be received one day late. The NAA interrogatories, dated Thursday February 12, 1998, were not received until Tuesday February 17, five days after the service date. This delay in receipt was caused at least in part by an intervening federal holiday (President's Day) with no mail delivery. We previously advised counsel for NAA that the responses would be filed a day late, and counsel indicated that NAA had no objection. We are telecopying copies of these responses, as well as witness Crowder's responses to USPS interrogatories USPS/JP-NOI-1-7, to counsel for NAA and the Postal Service today.

Respectfully submitted,

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## CERTIFICATE OF SERVICE

I hereby certify that I have on this date served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.

Thomas W. McLaughlin

February 27, 1998

**RESPONSES TO NEWSPAPER ASSOCIATION OF AMERICA INTERROGATORIES TO JOINT PARTIES WITNESS ANTOINETTE CROWDER (NAA/JP-NOI3-1-2)**

NAA/JP-NOI3-1. Please refer to page 8, lines 19-20 of your testimony where you state: "All non-elemental load time should be considered variable to the same extent as stops coverage."

(a) Assume the Commission chooses to employ its single subclass stop method to attribute the access costs of stops receiving only one subclass of mail to that subclass. Setting aside the fact that you may disagree with that assumption or methodology, if the Commission chooses to use its single subclass stop method to attribute access and coverage-related load costs, would the non-elemental load time be included in the coverage-related load time that the Commission attributes in this manner? If not, please explain why not.

(b) Are the non-elemental load costs for the stops receiving a single subclass of mail part of the incremental costs of that subclass? If not, why not?

RESPONSE:

(a) No. Although it is not clear exactly how you would propose to employ the single subclass stop method to attribute coverage-related load costs, I cannot think of a legitimate way to directly trace those coverage-related load costs to individual subclasses, except as described in my testimony and below. Both elemental and coverage-related load are measured at current system-wide stop and volume levels (using the point estimate of load time from the LTV models and the system-wide number of actual stops), under the established system-wide operational configuration and service levels. Also, there is a misperception that coverage-related load time does not vary with volume. When stop-level scale and scope economies are present, coverage-related load time varies at the margin with mail volume just as elemental load time does. This is true whether actual stops increase or remain the same. However, only in the former case (when there is a non-zero stops-coverage variability) is there a volume variable component to coverage-related load time. To see this clearly, one must understand the concepts associated with load time. These are explained below.

The Marginal Concept

Elemental load time recognizes the change in system-wide load time caused by a marginal change in volume on the system-average *stop* load time. This stop load time is predicted from the LTV models and is the total time which can be associated with the elemental and stops-coverage variabilities derived from the LTV and CCS models. Coverage-related load time is the remainder of system-average stop load after elemental load time has been identified. The volume-variable portion of coverage-related load time accounts for all variation in *system-wide* load time with respect to a marginal volume change in the system that is left unaddressed by the elemental load time measure. This includes the stops-coverage variable portion of: (1) total fixed stop load time, and (2) the total variable load time not included in elemental load time. The latter exists with scale and scope economies. With these economies, volume-variable coverage-related load time includes variable load time related to all infra-marginal (non-marginal) pieces on the average stop modeled by LTV.

This is shown in more detail in Figures 1 and 2. In Figure 1, stop load time is a function of stop volume, [f + c(v)], where (f) is the fixed time and c(v) is the portion of stop time that varies with stop volume. Only part of the variable cost, c(v), forms elemental load time. System-level average stop load time is shown by (Ca) on the vertical axis at system-level average stop volume (va) on the horizontal axis. Thus, average stop load time (Ca) is represented by [f + c(va)]. A line is drawn tangent to the load time vs. volume curve at the solution point (va, [f + c(va)]) and extended to the vertical axis. The difference between (Ca) and (C*) is equal to [va * c′(va)], or the product of average stop volume and the slope of the straight line measured at the point of tangency. This slope, c′(va), represents the marginal or elemental stop time caused by adding a piece to the already existing volume level on the stop. Thus the difference, (Ca - C*) or [va * c′(va)], measures average stop elemental load time. Then, system-wide elemental load time is simply identified by multiplying the average stop volume-variable time (the elemental stop time) by the number of actual stops in the system, (sa). Thus, system-wide elemental load time is defined by sa*va*c′(va) = Va*c′(va), where (Va) is system-level volume or [(sa) * (va)].

If all volume changes from system level average volume affect only existing stops (*i.e.*, there is zero stops-coverage variability), then elemental load time captures all volume-variable load time at the system level. In other words, total volume-variable costs would be a simple multiple, (sa), of the system average stop-level volume-variable time depicted in Figure 1. However, when number of stops is affected by a volume change, a coverage-related volume-variable component needs to be added to elemental load time to fully capture system level volume-variable load time.

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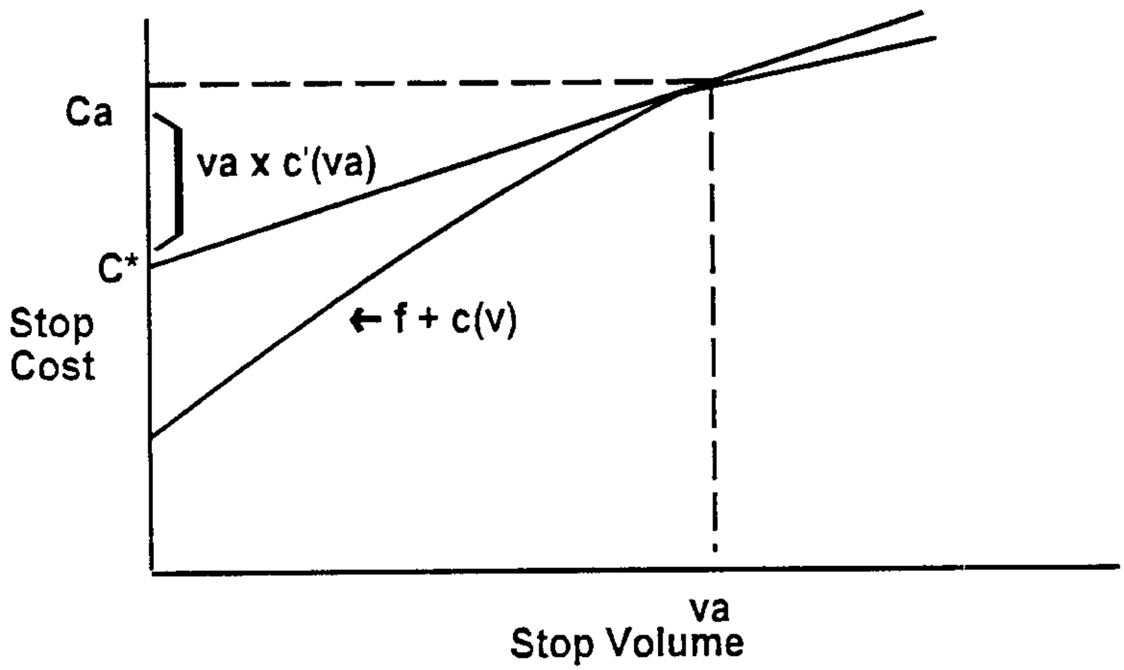
Figure 1 shows that coverage-related load time is the source for this second component of volume-variable system-wide load time. Since total stop-level time is explained by [f + c(va)], the non-elemental portion is C* = [f + c(va) - va*c′(va)] = [f + va*(c(va)/va - c′(va))]. Accordingly, this stop-level coverage-related load time is the sum of (1) the stop level fixed time plus (2) the variable portion of load time on the infra-marginal pieces not captured by elemental load time or va*(c(va)/va - c′(va)). This variable portion is positive with scale and scope economies. These economies generate the declining marginal load time as stop volume becomes greater, as indicated in the Figure 1.

As with elemental load time, the stop level coverage-related effects are mirrored at the system level. Multiplying the stop-level coverage-related load time amount, [f + c(va) - va*c′(va)], by the number of actual stops (sa) gives the system level coverage-related load time, {sa*[ f + c(va) - va*c′(va)]} = (sa*f) + sa*[c(va) - va*c′(va)]. Thus, like stop-level coverage-related load time, system-wide coverage-related load time has two components: (1) system level fixed time, (sa*f), and (2) the excess of system level variable time, [sa*c(va)], over elemental load time, [sa*va*c′(va)]. Total coverage-related load time also varies with volume because it includes the stop-level volume term (va) in the calculation. This change in coverage-related load time is independent of whether any of this time is volume variable.

There is a volume variable component to system-level coverage-related load time when actual stops vary with volume (*i.e.*, there is a non-zero stops coverage variability). When this occurs, elemental load time does not capture the full extent of variation in system-wide load time

FIGURE 1

STOP-LEVEL COST RELATIONSHIPS



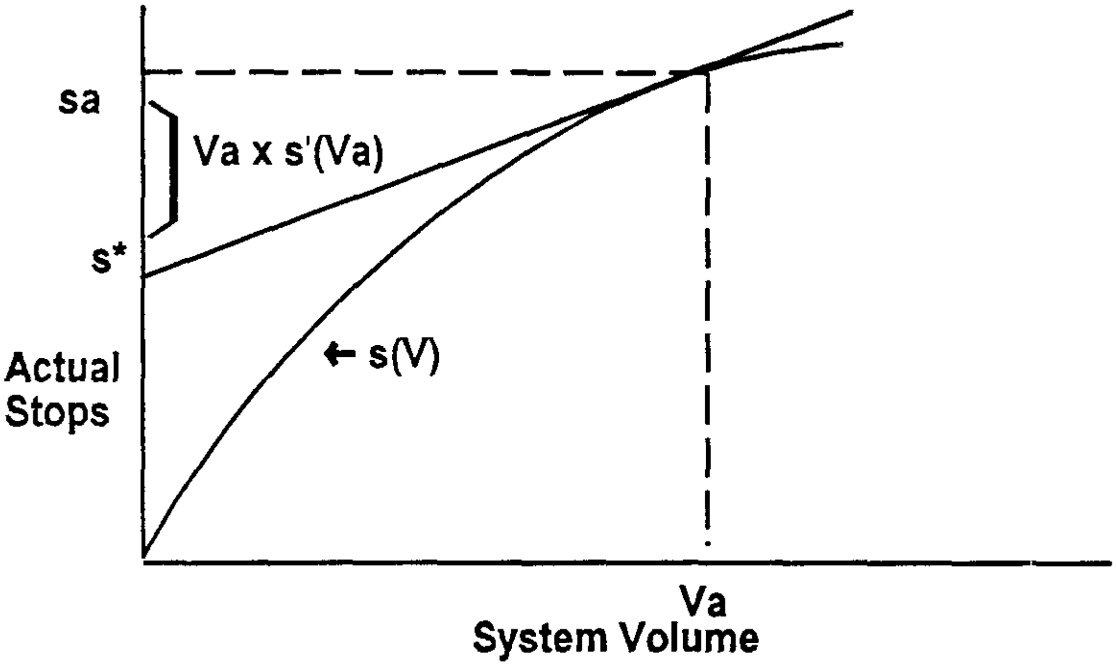
as volume changes. Each time a stop is added, system level load time increases by the stop-level coverage-related amount, [f + c(va) - va*c′(va)], explained above, with no change in average stop volume (va) assumed. This is the variation addressed by the volume-variable portion of system-level coverage-related load time. Clearly, it includes the additional fixed time (f) at the stop plus the average stop-level non-elemental but variable load time. *There can be a change in non-elemental variable load time because the load time for a new one piece stop does not reflect the scale and scope economies associated with the average volume stop.*

The volume-variable portion of coverage-related load cost is more meaningfully illustrated in Figure 2. Here, the actual stops-system volume curve, s(V), explains variations in stops as system volume changes. Actual stops increase at a decreasing rate with volume because with additional coverage on routes there is less likelihood that the marginal (last) mail piece goes to an already covered stop. The solution point is (Va, sa). Also, a straight line, tangent to the curve at this point, is drawn intercepting the vertical axis at (s*). The difference between (sa) and (s*) is explained by [Va*s′(Va)], or volume-variable stops measured at the system volume level.

The volume-variable portion of coverage-related load time can then be explained as the product of the stop-level coverage-related load time [f + c(va) - va*c′(va)] and this volume-variable stop value [Va * s′(Va)] , or [f + c(va) - va*c′(va)] * [Va*s′(Va)]. The expression has a straightforward interpretation. The value [f + c(va) - va*c′(va)] * [s′(Va)] is the change in coverage-related load time from adding a marginal piece. Multiplying this stops-related marginal time by system actual volume gives volume-variable coverage-related load time. It is important to

FIGURE 2

STOP-VOLUME SYSTEM RELATIONSHIPS



note that this volume-variable amount accounts for both variations in fixed time per stop, (f), and the variable, non-elemental load time per stop, [c(va) - va*c'(va)], as actual stops change.

Single Subclass Stops Treatment

If coverage-related load time were to be attributed on the basis of single subclass stops, total coverage-related load time would be apportioned to each subclass using the ratio of (1) the single subclass stops for that subclass (sst) to (2) total stops (sa). This would imply multiplying coverage-related load costs by the same ratio or sa*[f + c(va) - va*c'(va)] * (sst/sa) = [f + c(va) - va*c'(va)] * (sst). The false assumption underlying this calculation is that [f + c(va) - va*c'(va)] load time would be eliminated from the system if that subclass were eliminated. This is clearly wrong for two reasons. First, with the presence of scale and scope economies, neither strictly fixed load time (f) nor total stop load time, [f + c(va)], for single subclass stops is measured by this approach. Second, even if an adjustment were made to include all stop-level load time, the term [f + c(va)] captures *system-level average* stop time, not *single subclass average* stop time, causing an overstatement of the single subclass stop cost. If the intent is to identify the load time that would be eliminated on each single subclass stop, then only the time on single subclass stops is the correct time to measure.

The Incremental Concept

Calculation of *incremental* stop and load time requires the calculation of the system-wide time difference between (1) system-wide stop and load time assuming all subclass volumes in the system as currently configured and operated and (2) system-wide stop and load time assuming all subclass volumes in the system with the exception of the volume of the subclass under evaluation. This system-wide time difference should reflect all changes in system operations, configuration, or service levels that would result from elimination of the particular subclass (subclasses) under evaluation. Accordingly, since they are designed to represent current USPS operations and configuration, the LTV and CCS coverage-related models may not be as useful in identifying true, longer-term incremental stop and load costs.

However, under the strange and strained assumption that elimination of an entire subclass would cause no change in system operations or configuration, an attempt to measure "short-term" *incremental access and load time would recognize that elimination of a particular subclass causes* the elimination of some portion of load time on all stops receiving that subclass of mail. Under the same no reconfiguration assumption, these impacts would have to be calculated as the system-wide load and stop time difference evaluated from the load and coverage models at two volume levels: (1) current system volume and (2) this volume level minus the volume from the specific subclass being evaluated.

However, if elimination of a specific subclass would or should cause a reconfiguration of or change in operational procedures in the USPS system in order to acquire all efficiencies at the new volume level, then the incremental load and access costs should reflect those efficiency changes as well. Otherwise, the incremental load and stop costs are not correct and, in some cases, can lead to significantly inappropriate ratemaking decisions. This is particularly true when different subclasses require different service levels, some of which have major impacts on the structure and operations of the system. I believe that, since there are different service levels in the system, elimination of certain subclasses would cause the USPS to reconfigure its system and operations to maximize its technical efficiency for the new overall volume and service level. This latter point has been discussed repeatedly over several cases – see, *e.g.*, MC95-1, ADVO/NAA-T3-9 and ADVO, et al.-RT-1; R97-1, OCA-T-300, page 50, and ADVO/OCA-T300-5. If efficient reconfiguration is not appropriately recognized, the incremental costs calculated under the "short-term" approach are (1) substantially understated for subclasses with the greatest service levels, and (2) substantially overstated for subclasses with the lowest service levels.

(b) No, elemental and coverage-related load times are not concepts that apply to a correct incremental analysis. One cannot multiply *average stop-level* coverage-related load time by number of single subclass stops and derive a *single subclass stop* coverage-related load time that has any marginal or incremental meaning. Please see response to (a) above.

Perhaps the question applies not to coverage-related load time derived from the point estimate of LTV modeled stop load time, but rather to the "fixed stop time" presented on Tables 1, 2, and 3 of my testimony. As discussed in Attachment A, this time is likely to be principally stop-related. However, for ease of exposition and to focus on the modeled load time point, I assumed that the non-load, fixed-stop time (column 3 in Tables 1, 2, and 3) was distributed among the stop types to the same extent as the LTV modeled stop load times (see pages 2 and 3 of the testimony) and treated it as access, rather than run time. However, this fixed-stop time is likely to be principally associated with collection boxes, delivery retraces, and fixed access-type activities at MDR and B&M stops (see pages 6 and 7, and particularly footnote 1, of Attachment A). More precise data, if available, would likely show that most of those costs belong not to SDR but to the activities itemized above or to run time rather than access time.

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NAA/JP-NOI3-2. Please refer to page 10, lines 10-13 of your testimony where you state: "It can easily be demonstrated that elemental load time already includes the indirect effect of volume on stop load time caused by changes in number of actual deliveries per stop."

(a) If the number of actual deliveries per stop increases with no change in the volume of mail for the stop, will load time increase? Please explain why or why not. Please provide an example to demonstrate your conclusion.

(b) Does your proposed model reflect the increases in load time associated with increases in the number of deliveries per stop independent of any volume increase? If so, please explain how. If no please explain why not.

RESPONSE:

(a) Yes, in most cases. This response assumes that the question relates to day-to-day operational reality for a particular stop rather than to the LTV stop load time models. For an individual stop with a specific number of possible deliveries and a given volume level, stop load time would likely increase when (1) number of actual deliveries per stop increases and (2) pieces per delivery decline. For a load time increase to be caused by an additional delivery, there must be either a fixed time per delivery, some scale or scope economies to average delivery cost, or both. For some multiple delivery stops, volume is cased piece by piece to delivery receptacles; while, at others, volume is prepared in-office and is ready to put into each delivery receptacle as a single bundle. Depending upon the type of stop, the load time increase associated with increased actual deliveries, if any, could occur as a fixed delivery time increase, a variable time increase, or a combination of both.

Increases in stop volume cause (1) increases in stop-level deliveries and (2) increases in stop load time resulting from increases in stop-level deliveries. That is why there is no separate actual deliveries variable in the LTV models. However, there is no reason to expect the same daily volume levels to produce the same daily number of actual deliveries. This can vary from day to day. What matters is the expected or average number of deliveries which result from a particular average volume level. This is measured through system-representative stops, deliveries, and volume data which capture the underlying deliveries-volume relationship. This is what the CCS and LTV models do.

(b) I do not propose a model, I provide the correct interpretation of the LTV stop load time models: the volume effect on delivery coverage at the stop is already included in the elemental load cost, a separate measurement of the volume effect on delivery coverage is not needed. In other words, the elemental stop load time recognizes the marginal volume effect on stop time in two ways: (1) the change in average delivery time per delivery and (2) the change in the number of covered deliveries. Accordingly, witness Baron's separate attempt to also measure the "delivery effect" from the possible delivery variable in the models is wrong and causes a serious overstatement of elemental load time for the MDR and B&M stops.

The MDR and B&M stop load time models are designed to represent the system average stop for that specific stop type. The MDR and B&M models are regression models designed to explain system-average stop load time as a function of system-average stop volume by shape, system-average number of possible deliveries on a stop, and the system-average values for selected other explanatory variables. Thus, the volume coefficients in the models reflect the marginal effect of average stop volume on average stop load time, based on real operational volume and stop data. That is, the LTV data reflect the real-life operational variations in stop load time due to variations in volume and actual deliveries, which are caused by that volume. This is exactly the type of system-representative model that is useful for deriving system-level variabilities.

## DECLARATION

I, Antoinette Crowder, declare under penalty of perjury that the foregoing answers are true and correct, to the best of my knowledge, information, and belief.

Antoinette Crowder

Dated February 26, 1998