

USPS-T-23

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

POSTAL RATE AND FEE CHANGES, 2001 :

Docket No. R2001-1

**DIRECT TESTIMONY
OF
VIRGINIA J. MAYES
ON BEHALF OF
UNITED STATES POSTAL SERVICE**

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**DIRECT TESTIMONY
OF
VIRGINIA J. MAYES**

AUTOBIOGRAPHICAL SKETCH

My name is Virginia J. Mayes. I am the Manager of Special Studies in Cost and Rate Case Development, part of the Finance Department at the United States Postal Service. I have testified before the Postal Rate Commission on several occasions.

In Docket No. R2000-1, I testified as the Postal Service’s witness on rate level proposals. I testified on rate design for Parcel Post in Docket Nos. R97-1 and MC97-2, Parcel Reclassification Reform. I designed rates for both domestic and international Express Mail in 1990, and testified on behalf of the Postal Service on domestic Express Mail rate design in Docket No. R90-1. I was a rebuttal witness on behalf of the Postal Service in Docket No. MC93-1, the Bulk Small Parcel Service case. At the request of the Internal Revenue Service, I provided testimony on revenue forgone and rate development for preferred rate mail categories, to be used in the case of *United Cancer Council v. Commissioner*, Docket No. 2008-91 X.

I joined the Postal Service in 1987 as an Economist in the Rate Development Division, subsequently renamed Pricing, where I worked on revenue forgone and rate design issues. I also completed a detail assignment in Forecasting. Prior to joining the Postal Service, I was employed with the economic consulting firm of Robert R. Nathan Associates. I had also worked as a statistician at the Bureau of the Census and as an economic analyst with the International Trade Commission. I received a Bachelor’s Degree in economics and psychology from Washington University in St. Louis, Missouri and completed a Master’s Degree in economics at Brown University.

1 **I. PURPOSE AND SCOPE OF TESTIMONY**

2 The purpose of my testimony is to supply witnesses Moeller (USPS-T-32) and
3 Hope (USPS-T-31) with the cost data necessary to support the proposed Standard Mail
4 destination entry discounts. This testimony also provides the costing support for the
5 destination entry discounts proposed for Periodicals by pricing witness Taufique (USPS-
6 T-34), including a new discount for Periodicals entered at the destination area
7 distribution center (ADC).

8 The cost avoidances presented in this testimony are developed in library
9 reference USPS LR-J-68, which was prepared by me and incorporated by reference in
10 my testimony.

11

12 **II. STANDARD MAIL DESTINATION ENTRY COST SAVINGS**

13 **A. Background**

14 The destination entry discounts first introduced for third-class mail (Standard
15 Mail) in Docket No. R90-1 by witness Mitchell were supported by cost savings estimates
16 developed in that docket by postal witness Acheson. Witness Acheson developed
17 estimates of costs saved when postal-provided transportation was bypassed. He also
18 estimated nontransportation savings in the form of mail processing costs saved when
19 container handlings are avoided at various intermediate facilities.

20 In the most recent omnibus rate case, Docket No. R2000-1, postal witness Crum
21 adapted the models, which were first used by witness Acheson in Docket No. R90-1
22 and subsequently revised and presented in Docket Nos. MC95-1 and R97-1. In
23 general, the cost methodology that was used by witness Crum in Docket No. R2000-1
24 has again been used in this docket to develop the destination dropship cost savings for
25 Standard Mail. The changes in the estimated cost avoidances are due to the use of
26 new input data and updates of parameters to reflect the most recent available data and
27 a different test year.

1 **B. Standard Mail Destination Entry Transportation Cost Savings**

2 The analysis of transportation cost savings provided in this case uses the same
3 approach first presented by witness Acheson in Docket No. R90-1, and most recently
4 employed by witness Crum in Docket No. R2000-1. The first step in this approach is to
5 calculate the total transportation cost that the Postal Service would avoid if all Standard
6 Mail were entered by the mailers at the destination delivery unit (DDU). Under these
7 circumstances, the Postal Service would avoid most purchased transportation costs
8 (cost segment 14) and certain postal-owned vehicle costs (cost segment 8).

9 The total cost per pound of transporting all Standard Mail to the destination
10 delivery unit in the test year is calculated in Appendix B, Table 2 of LR-J-68 by dividing
11 the test year adjusted Standard Mail transportation costs by total test year Standard
12 Mail pounds. As witness Crum noted, some of the transportation costs are incurred on
13 the basis of weight, whereas the costs in the Highway and Railroad cost segments are
14 incurred on the basis of cubic feet. However, for these purposes, as witness Crum
15 explained, weight is considered to be an adequate proxy for costs incurred on the basis
16 of cubic feet, due to the relative uniformity of the material comprising Standard Mail
17 (paper) and the relatively similar density.

18 The total cost per pound of transporting all Standard Mail to the destination
19 delivery unit is viewed as the weighted average of the unit costs of transporting
20 Standard Mail entered at different upstream facilities. The development of an equation
21 to represent this summation of costs is shown at Table 9 of Appendix B of library
22 reference USPS LR-J-68.

23 In the equation, $(Y^{\text{origin}} * X^{\text{origin}}) + (Y^{\text{DBMC}} * X^{\text{DBMC}}) + (Y^{\text{DSCF}} * X^{\text{DSCF}}) = Z^{\text{T}}$, the unit
24 cost to the Postal Service of transporting all Standard Mail to the destination delivery
25 unit is Z^{T} . Y^{origin} is the percentage of mail dropshipped to non-destination facilities or
26 plantloaded to all facilities; X^{origin} is the unit cost to the Postal Service of transporting
27 Y^{origin} mail to the destination delivery unit. The percentage of Standard Mail
28 dropshipped to a destination BMC is Y^{DBMC} , and the unit cost to the Postal Service of
29 transporting that mail to the destination delivery unit is X^{DBMC} . The percentage of
30 Standard Mail dropshipped to a destination SCF is Y^{DSCF} , and the unit cost to the Postal
31 Service of transporting that mail to the destination delivery unit is X^{DSCF} .

1 All of the variables in the transportation equation are estimated except for X^{origin} ,
2 which represents the costs avoided by mail that is dropshipped to the DDU. This is the
3 variable for which the equation is solved, and the basis for the calculation of the cost
4 avoidances. For example, the value of $(X^{\text{origin}} - X^{\text{DBMC}})$ represents the costs avoided by
5 mail that is dropshipped to the DBMC, and $(X^{\text{origin}} - X^{\text{DSCF}})$ represents the costs avoided
6 by mail that is dropshipped to the DSCF.

7 An entry profile for Standard Mail, provided in Appendix A, Table 1 of LR-J-68,
8 gives the distribution of test year Standard Mail pounds by entry point. These pounds
9 are then distributed to flowpaths describing the set of facilities through which the mail
10 travels on the way to the destination delivery unit, and to the type of transportation leg in
11 Appendix B, using the flowpaths provided in Tables 2 and 3 of Appendix A. These
12 flowpaths are essentially the same ones presented in Docket Nos. R97-1 and R2000-1.
13 The summary of the distribution of pounds to flowpath and transportation leg is provided
14 in Table 3 of Appendix B.

15 The distribution of pounds is then matched with the costs by transportation
16 category. The base year transportation costs by account from the Base Year Cost and
17 Revenue Analysis (CRA) report, as presented in the testimony and workpapers of
18 witness Meehan (USPS-T-11), are translated into test year costs using projection
19 factors developed in Table 5 of Appendix B. These projection factors represent the ratio
20 of the test year cost segment 14 components as presented by witness Patelunas
21 (USPS-T-11) to their base year counterparts. The estimated test year volume variable
22 transportation costs are adjusted based on the proportion of intra-SCF and Postal-
23 Owned Vehicle costs that support the transportation network of Standard Mail pieces
24 and are not incurred in other types of activities such as delivery. The adjusted test year
25 volume variable transportation costs are divided into three categories: intra-BMC, intra-
26 SCF and Other in Table 8 of Appendix B. Only the costs on the intra-BMC and intra-
27 SCF transportation legs are needed in order to solve the transportation cost equation.

28 The cost per pound by transportation category is estimated in Table 9 of
29 Appendix B by matching the test year pounds by transportation category developed in
30 Table 3 with the test year costs developed in Table 8. The equation is then solved for
31 the cost per pound of transporting mail entered at origin facilities to the destination

1 delivery unit, given the proportions of mail entered at destination SCFs, destination
2 BMCs and origin facilities. The cost savings estimated for DBMC, DSCF and DDU
3 entry are developed by subtraction. As shown in Table 9, the potential transportation
4 cost savings are:

5	DBMC-entered.....	\$0.0970 per pound
6	DSCF-entered	\$0.1124 per pound
7	DDU-entered	\$0.1391 per pound

8 **C. Standard Mail Destination Entry Non-Transportation Cost Savings**

9 The nontransportation cost savings associated with destination entry of Standard
10 Mail are estimated using the equation first presented in Docket No. R90-1 by witness
11 Acheson and most recently used by witness Crum in Docket No. R2000-1. The
12 equation estimates the total cost per pound of crossdocking Standard Mail. The
13 equation for the nontransportation portion of the cost savings is virtually identical to the
14 transportation cost equation. The first step in this approach is to calculate the total
15 crossdocking cost that the Postal Service would avoid if all Standard Mail were entered
16 by the mailers at the destination delivery unit (DDU).

17 The total cost per pound of crossdocking all Standard Mail before it reaches the
18 destination delivery unit in the test year is calculated in Appendix C, Table 4 of LR-J-68
19 by dividing the test year Standard Mail total handling cost by total test year Standard
20 Mail pounds. The total test year handling cost is developed by reference to the same
21 mail flows used to estimate the transportation cost savings. The percent of Standard
22 Mail pounds that is transported on each of the mail flows is calculated. The weighted
23 average unit costs of handling sacks, trays and pallets at the intermediate facilities are
24 calculated in Appendices C and D, and are used to determine the total handling costs at
25 the intermediate facilities. The mail characteristics data provided in Tables 8 and 9 of
26 Appendix C are used to weight the unit costs.

27 The total cost per pound of crossdocking all Standard Mail before it reaches the
28 destination delivery unit is viewed as the weighted average of the unit costs of
29 crossdocking Standard Mail entered at different upstream facilities. The development of
30 an equation to represent this summation of costs is shown at Table 1 of Appendix C of
31 library reference LR-J-68.

1 In the equation, $(Y^{\text{origin}} * X^{\text{origin}}) + (Y^{\text{DBMC}} * X^{\text{DBMC}}) + (Y^{\text{DSCF}} * X^{\text{DSCF}}) = Z^{\text{T}}$, the unit
 2 cost to the Postal Service of crossdocking all Standard Mail before it reaches the
 3 destination delivery unit is Z^{T} . Y^{origin} is the percentage of mail dropshipped to non-
 4 destination facilities or plantloaded to all facilities; X^{origin} is the unit cost to the Postal
 5 Service of crossdocking this mail on its way to the destination delivery unit. The
 6 percentage of Standard Mail dropshipped to a destination BMC is Y^{DBMC} , and the unit
 7 cost to the Postal Service of crossdocking that mail before it reaches the destination
 8 delivery unit is X^{DBMC} . The percentage of Standard Mail dropshipped to a destination
 9 SCF is Y^{DSCF} , and the unit cost to the Postal Service of crossdocking that mail on the
 10 way to the destination delivery unit is X^{DSCF} .

11 All of the variables in the non-transportation equation are estimated except for
 12 X^{origin} , which represents the costs avoided by mail that is dropshipped to the DDU. This
 13 is the variable for which the equation is solved, and the basis for the calculation of the
 14 cost avoidances. For example, the value of $(X^{\text{origin}} - X^{\text{DBMC}})$ represents the crossdocking
 15 costs avoided by mail that is dropshipped to the DBMC, and $(X^{\text{origin}} - X^{\text{DSCF}})$ represents
 16 the crossdocking costs avoided by mail that is dropshipped to the DSCF. As shown in
 17 Table 1 of Appendix C of LR-J-68, the potential non-transportation cost savings
 18 associated with dropshipping Standard Mail are:

19	DBMC-entered.....	\$0.0204 per pound
20	DSCF-entered	\$0.0348 per pound
21	DDU-entered	\$0.0457 per pound

22 **D. Total Standard Mail Dropshipping Cost Avoidances**

23 The transportation costs and non-transportation costs potentially avoided by
 24 Standard Mail when it is entered at downstream facilities have both been estimated on a
 25 per pound basis. Thus, they can be added together to provide witnesses Moeller and
 26 Hope with estimated, per-pound destination-entry cost savings for use in developing
 27 proposed rates. When the transportation and non-transportation portions are summed,
 28 the resulting estimated test year cost avoidances for dropshipping Standard Mail are:

29	DBMC-entered.....	\$0.1174 per pound
30	DSCF-entered	\$0.1472 per pound
31	DDU-entered	\$0.1848 per pound

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III. PERIODICALS DESTINATION ENTRY NON-TRANSPORTATION COST SAVINGS

A. Background

In Docket No. R84-1, the Postal Service first proposed a discount for second-class mail (Periodicals) that is entered by the mailer at the destination SCF. The cost analysis presented in that docket in support of the discount was prepared by postal witness Byrne. This cost analysis was revised in Docket No. R87-1 and was expanded in Docket No. R90-1 by witness Acheson to incorporate a savings estimate to support a discount for destination delivery unit entry. Updated versions of this analysis were presented in Docket Nos. MC95-1, R97-1, and most recently by witness Crum in Docket No. R2000-1.

B. Approach to Calculating Periodicals Dropship Cost Avoidances

The methodology used to develop the Periodicals dropship cost avoidances in this case is the same as was used in the previous cases, with the exception that a cost avoidance for entry at the destination Area Distribution Center (DADC) has been incorporated. Periodicals that are entered by mailers at origin SCFs or intermediate facilities upstream from the destination SCF must undergo mail processing operations of a bulk transfer type, such as crossdocking, at the non-destination facilities. By entering their Periodicals at destination facilities, mailers save the Postal Service the cost of these bulk transfer operations. The purpose of this testimony is to estimate the mail processing savings associated with destination entry of Periodicals and supply witness Taufique with these figures so that he can combine the mail processing cost savings with his estimates of transportation savings to develop rates for destination-entered Periodicals.

The types of bulk transfer handlings incurred at non-destination facilities include the unloading of Periodicals containers (pallets, sacks and trays) from trucks at inbound docks, movement of these containers through the facilities to the outbound docks, and loading these containers to trucks at the outbound docks. In this case, the possible combinations of containers, facilities and container movements have been modeled

1 using the models last presented by witness Crum in Docket No. R2000-1. The models
2 incorporate estimates of productivities for BMC and SCF crossdocking operations,
3 adjusted by the appropriate volume variability estimates; container conversion factors;
4 container volume proportions derived from a new mail entry profile provided in LR-J-
5 114; and other data, such as updated wage rates and piggyback factors. The inputs
6 used in the models appear in Tables 1 and 2 of Appendix F of LR-J-68. The models
7 develop average costs for handlings at the BMC and at the SCF, using the estimated
8 proportions of Periodicals in each type of container and incurring each type of handling.
9 These weighted average costs are then used in combination to derive the costs avoided
10 at each possible type of destination entry facility.

11 **C. Assumptions Used in Periodicals Dropship Models**

12 The savings estimates generated in Appendix F of library reference LR-J-68 are
13 calculated relative to Zone 1&2 Periodicals mail processing costs. In previous
14 proceedings, the Postal Service has estimated that non-destination SCF Zone 1&2
15 Periodicals will incur one transfer through a non-destination transfer hub before it is
16 dispatched to the appropriate destination SCF. The costs of crossdocking mail at a
17 BMC are used as proxies for the costs of crossdocking mail at transfer hubs because it
18 is assumed that most transfer hubs are BMCs.

19 In previous proceedings, it has been assumed that 20 percent of non-destination
20 SCF Zone 1&2 Periodicals incur a trip through a non-destination SCF/ADC before being
21 dispatched to the destination SCF. It has also been assumed that 3.14 percent of non-
22 destination SCF Zone 1&2 Periodicals go directly from the destination transfer hub to
23 the destination DDU, bypassing intermediate handlings at the destination ADC or
24 destination SCF. Those assumptions were utilized in the current calculations.

25 In Docket No. R2000-1, witness Stralberg testified on behalf of Publishing
26 Mailers that the dropship cost avoidance models should be adjusted to account for the
27 fact that mailers are expected to unload their own trucks when they drop Periodicals at
28 destination delivery units. (See Docket No. R2000-1, Tr. 24/11403-05.) An adjustment
29 commensurate with witness Stralberg's observation has been made to this model. This
30 adjustment appears in Table 5 of Appendix F and is incorporated into the estimated
31 DDU cost avoidance calculation in Table 6 of the same Appendix.

1 **D. Cost Savings Associated with Destination ADC Entry**

2 In this docket, the Postal Service is proposing that a rate category be introduced
3 for Periodicals that are entered at the destination Area Distribution Center (ADC). (See
4 testimony of witness Taufique, USPS-T-34.) Mail entered at the DADC is assumed to
5 bypass a crossdocking at the destination transfer hub. The calculation of the costs
6 avoided by DADC entry incorporates the adjustments for the 3.14 percent of the time
7 that Periodicals are assumed to go straight from the transfer hub to the DDU and the 80
8 percent of the time that Periodicals are assumed to go straight from the transfer hub to
9 the DSCF, bypassing the DADC.

10 **E. Estimated Periodicals Non-Transportation Dropship Cost Savings**

11 The results of the estimation Periodicals non-transportation dropship cost
12 savings appear in Table 6 of Appendix F of LR-J-68, and are summarized below:

13	DADC-entered	\$0.0034 per piece or \$0.0072 per pound
14	DSCF-entered	\$0.0165 per piece or \$0.0350 per pound
15	DDU-entered	\$0.0341 per piece or \$0.0748 per pound

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