

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

POSTAL RATE AND FEE CHANGES

Docket No. R2006-1

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

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ASSOCIATED LIBRARY REFERENCES

USPS-LR-L-88: Dropship Cost Avoidances for Standard Mail and Periodicals

The cost studies contained in this library reference include the updated calculation of the transportation and non-transportation components of Standard Mail dropship cost avoidances, and the non-transportation component of Periodicals dropship cost avoidances. This library reference performs the same role in this case as did USPS-LR-K-88 in Docket No. R2005-1.

USPS-LR-L-89: Parcel Post and Bound Printed Matter Transportation Costs, and Development of Costs for Bulk Parcel Return Service

The cost studies contained in this library reference include the updated calculation of the transportation costs associated with the rate categories of Parcel Post, the transportation costs of Bound Printed Matter, and the cost of Bulk Parcel Return Service. This library reference performs the same role in this case as did USPS-LR-K-89 in Docket No. R2005-1.

USPS-LR-L-90: Description and Program Documentation of Cube-Weight Relationship Estimation

The purpose of this library reference is to describe and document the regression analyses used to estimate the cubic feet per piece at different weight increments for Inter-BMC, Intra-BMC, and Parcel Select Parcel Post. The results of this analysis are used in USPS-LR-L-89 to develop the distribution of transportation costs to the rate categories within Parcel Post. This library reference is an update of the analyses presented in USPS-LR-K-90 in Docket No. R2005-1.

**DIRECT TESTIMONY
OF
VIRGINIA J. MAYES**

AUTOBIOGRAPHICAL SKETCH

My name is Virginia J. Mayes. I am the Manager of Special Studies in Corporate Financial Planning, part of the Finance Department at the United States Postal Service Headquarters. I have previously testified before the Postal Rate Commission on several occasions.

In Docket No. R2005-1, I provided testimony on the estimated cost avoidances used to support the Standard Mail and Periodicals destination entry discounts, the transportation costs for Parcel Post and Bound Printed Matter, and the estimated costs of Bulk Parcel Return Service. In Docket No. R2001-1, I testified on the estimated cost avoidances used to support the Standard Mail and Periodicals destination entry discounts. 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 MC97-1, 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 This testimony presents the updated calculation of the transportation and non-
3 transportation components of Standard Mail destination entry cost avoidances, the non-
4 transportation component of Periodicals destination entry cost avoidances, the transportation
5 costs for Parcel Post and for Bound Printed Matter, and the costs of Bulk Parcel Return
6 Service for the test year 2008. The non-transportation cost avoidances for Standard Mail
7 dropship activity are provided to witness Talmo (USPS-T-27). The cost avoidances
8 associated with Standard Mail dropship activity are provided to witness Kiefer (USPS-T-36).
9 The nontransportation cost avoidances associated with Periodicals dropship activity are
10 provided witness Tang (USPS-T-35). The transportation costs of Parcel Post are provided to
11 witnesses Kiefer (USPS-T-37) and Miller (USPS-T-21). The transportation costs of Bound
12 Printed Matter are provided to witness Yeh (USPS-T-38), and the costs of Bulk Parcel Return
13 Service are provided to witness Berkeley (USPS-T-39). The Parcel Post transportation costs
14 are also relied upon by witness Page (USPS-T-23) for use in developing the final adjustments
15 to the rollforward cost forecasting model.

16 **II. GUIDE TO TESTIMONY**

17 The cost models used to estimate the dropship cost avoidances for Standard Mail and
18 Periodicals are found in the Category 2 library reference USPS-LR-L-88. The Parcel Post
19 and Bound Printed Matter transportation cost analyses and the estimation of the cost of Bulk
20 Parcel Return Service are found in the Category 2 library reference USPS-LR-L-89. In
21 addition to these two library references, I am also sponsoring library reference USPS-LR-L-
22 90. Library reference USPS-LR-L-90 contains the description and program documentation of
23 the estimation of the cube-weight relationships for the major rate categories within Parcel
24 Post. The results of the cube-weight analyses are used in the development of the Parcel
25 Post transportation costs in USPS-LR-L-88.

26 In addition to the material described above, the cost models also rely on data inputs
27 that have been generated by other postal witnesses in this case. Witness Loutsch (USPS-T-
28 6) provides productive hourly wage rates (USPS-LR-L-50); Witness Thress (USPS-T-7,
29 Attachment A) provides base year volumes and test year volume forecasts; Witness Smith
30 (USPS-T-13) provides piggyback factors (USPS-LR-L-52); Witness Van-Ty-Smith (USPS-T-
31 11) provides deaveraged wage rates, overhead factors and premium pay factors (USPS-LR-
32 L-55), and volume variability factors (USPS-T-11, Table 1); Witness Kiefer (USPS-T-36)

1 provides the volumes that shift from Standard Mail to First-Class Mail as a result of
2 Negotiated Service Agreements, used to adjust the test year volumes; Witness Miller (USPS-
3 T-21) provides the Media Mail average modeled cost and adjustment factors (USPS-LR-L-
4 46); Witness Waterbury (USPS-T-10) provides test year transportation costs (USPS-LR-L-7);
5 Witness Milanovich (USPS-T-9) provides base year transportation costs (USPS-LR-L-5); and
6 Witness Page (USPS-T-23) provides the calculated final adjustments to Standard Mail Cost
7 Segments 8 and 14 (USPS-L-59). I also rely on USPS-LR-L-91 and USPS-LR-L-92
8 (sponsored by witness Loetscher, USPS-T-28) for the mail entry profile of Standard Mail and
9 data on the characteristics of Periodicals Mail; on USPS-LR-L-77 (a Category 1 library
10 reference) for the billing determinants for Parcel Post and Bound Printed Matter; and on the
11 detailed Parcel Post data provided in USPS-LR-L-47 (sponsored by witness Miller, USPS-T-
12 21) for use in developing the estimated cube-weight relationships provided in USPS-LR-L-90.

13 14 **III. STANDARD MAIL DESTINATION ENTRY COST AVOIDANCES**

15 This testimony is an update of the Standard Mail destination entry cost avoidance
16 testimony presented in Docket No. R2005-1, USPS-T-25. In general, the cost methodology
17 that was presented by witness Crum (USPS-T-27) in Docket No. R2000-1 has been used
18 again in this docket to develop the destination entry cost avoidances for Standard Mail. The
19 changes in the estimated cost avoidances from those presented in Docket No. R2005-1 are
20 due to the use of new input data and updates of parameters to reflect the most recent
21 available data and a different test year.

22 **A. Standard Mail Destination Entry Transportation Cost Avoidances**

23 The analysis of transportation cost avoidances provided in this case uses the same
24 approach first presented by witness Acheson in Docket No. R90-1, and most recently by
25 witness Mayes (USPS-T-25) in Docket No. R2005-1. The first step in this approach is to
26 calculate the total transportation cost that the Postal Service would avoid if all Standard Mail
27 were entered by the mailers at the destination delivery unit (DDU), the furthest downstream
28 entry point. Under these circumstances, the Postal Service would avoid most purchased
29 transportation costs (cost segment 14) and certain postal-owned vehicle costs (cost segment
30 8).

31 The total cost per pound of transporting all Standard Mail to the destination delivery
32 unit in the test year is calculated in Appendix B, Table 2 of USPS-LR-L-88 by dividing the test

1 year adjusted Standard Mail transportation costs by total test year Standard Mail pounds. As
2 was noted by witness Crum in Docket No. R2000-1, some transportation costs are incurred
3 on the basis of weight, but the costs in the highway and railroad cost components are
4 incurred on the basis of cubic feet. However, for these purposes, weight is considered to be
5 an adequate proxy for costs incurred on the basis of cubic feet, due to the relative uniformity
6 of the material comprising Standard Mail and the relatively similar density.

7 The total cost per pound of transporting all Standard Mail to the destination delivery
8 unit is viewed as the weighted average of the unit costs of transporting Standard Mail entered
9 at different upstream facilities. The development of an equation to represent this summation
10 of costs is shown at Table 9 of Appendix B of library reference USPS-LR-L-88.

11 In the equation noted, $(Y^{\text{origin}} * X^{\text{origin}}) + (Y^{\text{DBMC}} * X^{\text{DBMC}}) + (Y^{\text{DSCF}} * X^{\text{DSCF}}) = Z^{\text{T}}$, the unit
12 cost to the Postal Service of transporting all Standard Mail to the destination delivery unit is
13 Z^{T} . Y^{origin} is the percentage of mail dropshipped to non-destination facilities or plantloaded to
14 all facilities (in a plantload situation, the Postal Service is providing the transportation); X^{origin}
15 is the unit cost to the Postal Service of transporting Y^{origin} mail to the destination delivery unit.
16 The percentages of Standard Mail dropshipped to destination bulk mail centers (BMC) and to
17 destination sectional center facilities (DSCF) are Y^{DBMC} and Y^{DSCF} , respectively, and the unit
18 costs to the Postal Service of transporting that mail to the DBMC and DSCF are X^{DBMC} and
19 X^{DSCF} , respectively.

20 All of the variables in the transportation equation are estimated except for X^{origin} , which
21 represents the costs avoided by mail that is dropshipped to the DDU. This is the variable for
22 which the equation is solved, and the basis for the calculation of the cost avoidances. For
23 example, the costs avoided by mail that is dropshipped to the DBMC can be represented as
24 the value of $(X^{\text{origin}} - X^{\text{DBMC}})$.

25 An entry profile for Standard Mail, provided in Appendix A, Table 1 of USPS-LR-L-88,
26 gives the distribution of test year Standard Mail pounds by entry point. These pounds are
27 then distributed to flowpaths describing the set of facilities through which the mail travels on
28 the way to the destination delivery unit, and to the type of transportation leg in Appendix B,
29 using the flowpaths provided in Tables 2 and 3 of Appendix A. These flowpaths are
30 essentially the same ones presented in the analyses since Docket No. R97-1. The summary
31 of the distribution of pounds to flowpath and transportation leg is provided in Table 3 of
32 Appendix B.

1 The distribution of pounds is then matched with the costs by transportation category.
2 The transportation costs by account from the base year Cost and Revenue Analysis (CRA)
3 report, as presented in the testimony and workpapers of witness Milanovich (USPS-T-9), are
4 translated into test year costs using projection factors developed in Table 5 of Appendix B.
5 These projection factors represent the ratio of the test year cost segment 14 components as
6 presented by witness Waterbury (USPS-T-10) to their base year counterparts. The estimated
7 test year volume variable transportation costs are adjusted based on the proportion of intra-
8 SCF and postal-owned vehicle costs that support the transportation network of Standard Mail
9 pieces and are not incurred in other types of activities such as delivery. The adjusted test
10 year volume variable transportation costs are divided into three categories: intra-BMC, intra-
11 SCF and Other (Appendix B, Table 8). Only the costs on the intra-BMC and intra-SCF
12 transportation legs are necessary to solve the transportation cost equation.

13 The cost per pound by transportation category is estimated in Table 9 of Appendix B
14 by matching the test year pounds by transportation category developed in Table 3 with the
15 test year costs developed in Table 8. The equation is then solved for the cost per pound of
16 transporting mail entered at origin facilities to the destination delivery unit, given the
17 proportions of mail entered at destination SCFs, destination BMCs and origin facilities. The
18 cost avoidances estimated for DBMC, DSCF and DDU entry are developed by subtraction.
19 The potential transportation cost avoidances are provided in Table 1 at the end of this
20 testimony.

21 **B. Standard Mail Destination Entry Non-Transportation Cost Avoidances**

22 The non-transportation cost avoidances associated with destination entry of Standard
23 Mail are estimated using the equation first presented in Docket No. R90-1 by witness
24 Acheson and most recently presented by witness Mayes in Docket No. R2005-1 (USPS-T-
25 25). The equation estimates the total cost per pound of crossdocking Standard Mail. The
26 equation for the non-transportation portion of the destination entry cost avoidance is virtually
27 identical in approach to the transportation cost equation. The first step is to calculate the total
28 crossdocking cost that the Postal Service would avoid if all Standard Mail were entered by
29 mailers at the destination delivery unit (DDU).

30 The total cost per pound of crossdocking all Standard Mail before it reaches the
31 destination delivery unit in the test year is calculated in Appendix C, Table 4 of USPS-LR-L-
32 88 by dividing the test year Standard Mail total handling cost by total test year Standard Mail
33 pounds. The total test year handling cost is developed by reference to the same mailflows

1 used to estimate the transportation cost portion of the destination entry cost avoidances. The
2 percent of Standard Mail pounds that is transported on each of the mailflows is calculated.
3 The weighted average unit costs of handling sacks, trays and pallets at the intermediate
4 facilities are calculated in Appendices C and D, and are used to determine the total handling
5 costs at the intermediate facilities. The mail characteristics data provided in Tables 8 and 9
6 of Appendix C are used to weight the unit costs.

7 The total cost per pound of crossdocking all Standard Mail before it reaches the
8 destination delivery unit is viewed as the weighted average of the unit costs of crossdocking
9 Standard Mail entered at different upstream facilities. The development of an equation to
10 represent this summation of costs is shown at Table 1 of Appendix C of USPS-LR-L-88.

11 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 cost to
12 the Postal Service of crossdocking all Standard Mail before it reaches the destination
13 delivery unit is Z^{T} . Y^{origin} is the percentage of mail dropshipped to non-destination facilities or
14 plantloaded to all facilities; X^{origin} is the unit cost to the Postal Service of crossdocking Y^{origin}
15 mail on its way to the destination delivery unit. The percentages of Standard Mail
16 dropshipped to destination bulk mail centers (BMC) and to destination sectional center
17 facilities (DSCF) are Y^{DBMC} and Y^{DSCF} , respectively, and the unit costs to the Postal Service of
18 crossdocking that mail before it reaches the destination delivery unit are X^{DBMC} and X^{DSCF} ,
19 respectively.

20 All of the variables in the non-transportation equation are estimated except for X^{origin} ,
21 which represents the costs avoided by mail that is dropshipped to the DDU. This is the
22 variable for which the equation is solved, and the basis for the calculation of the cost
23 avoidances. The cost avoidances are calculated as the difference between X^{origin} and the
24 crossdocking costs estimated to be incurred at each of the destination facilities. For
25 example, the value of $(X^{\text{origin}} - X^{\text{DBMC}})$ represents the crossdocking costs avoided by mail that
26 is dropshipped to the DBMC. The potential non-transportation cost avoidances associated
27 with destination entry of Standard Mail are provided in Table 1 at the end of this testimony.

28 As both the transportation costs and the non-transportation costs potentially avoided
29 by Standard Mail when it is entered at downstream facilities have been estimated on a per-
30 pound basis, they can be added together to develop the estimated per-pound destination
31 entry cost avoidances. The results of adding the transportation and non-transportation cost
32 avoidances together are provided in Table 1 at the end of this testimony.

1 **IV. PERIODICALS DESTINATION ENTRY NON-TRANSPORTATION COST**
2 **AVOIDANCES**

3
4 This testimony is an update of the Periodicals destination entry non-transportation cost
5 avoidance testimony presented in Docket No. R2005-1, USPS-T-25. A discount for
6 Periodicals based on entry at the destination SCF was first developed in Docket No. R84-1
7 based on the cost work prepared by witness Byrne. The cost analysis was revised in Docket
8 No. R87-1 and by witness Acheson in Docket No. R90-1, at which time a savings estimate
9 was developed to support the destination delivery unit discount. Updated versions of the
10 analysis were presented in Docket Nos. MC95-1, R97-1, R2000-1, R2001-1, and R2005-1.
11 In Docket No. R2001-1, a cost avoidance for entry at the destination Area Distribution Center
12 (DADC) was introduced.

13 **A. Approach to Calculating Periodicals Destination Entry Cost Avoidances**

14 In general, the cost methodology that was presented by witness Mayes (USPS-T-25)
15 in Docket No. R2005-1 has been used again in this docket to develop the destination entry
16 non-transportation cost avoidances for Periodicals. Periodicals that are entered by mailers at
17 origin SCFs or intermediate facilities upstream from the destination SCF must undergo mail
18 processing operations of a bulk transfer type, such as crossdocking, at the non-destination
19 facilities. By entering their Periodicals at destination facilities, mailers save the Postal Service
20 the cost of these bulk transfer operations. The purpose of this testimony is to update the
21 estimated mail processing cost avoidances associated with the destination entry of
22 Periodicals. The changes in the estimated cost avoidances from those presented in Docket
23 No. R2005-1 are due to the use of new input data and updates of parameters to reflect the
24 most recent available data and a different test year.

25 The types of bulk transfer handlings incurred at non-destination facilities include the
26 unloading of Periodicals containers (pallets, sacks and trays) from trucks at inbound docks,
27 movement of these containers through the facilities to the outbound docks, and loading these
28 containers onto trucks at the outbound docks. In this case, the possible combinations of
29 containers, facilities and container movements have been modeled using Appendix F of
30 USPS-LR-L-88. The models incorporate estimates of productivities for BMC and SCF
31 crossdocking operations, adjusted by the appropriate volume variability estimates; container
32 conversion factors; container volume proportions derived from the mail entry profile provided
33 in USPS-LR-L-91; and other data, such as updated wage rates and piggyback factors. The

1 inputs used in the models appear in Tables 1 and 2 of Appendix F. The models develop
2 average costs for handlings at the BMC and at the SCF, using the estimated proportions of
3 Periodicals in each type of container and incurring each type of handling. These weighted
4 average costs are then used in combination to derive the costs avoided at each possible type
5 of destination entry facility.

6 **B. Assumptions Used in Periodicals Destination Entry Models**

7 The savings estimates generated in Appendix F of library reference USPS-LR-L-88 are
8 calculated relative to Zone 1&2 Periodicals mail processing costs. In previous proceedings,
9 the Postal Service has estimated that non-destination SCF Zone 1&2 Periodicals will incur
10 one transfer through a non-destination transfer hub before it is dispatched to the appropriate
11 destination SCF. The costs of crossdocking mail at a BMC are used as proxies for the costs
12 of crossdocking mail at transfer hubs because it has been assumed that most transfer hubs
13 are BMCs.

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

20 A discount for Periodicals entered at the destination Area Distribution Center (ADC)
21 was introduced in Docket No. R2001-1 by witness Taufique (USPS-T-34). The cost analysis
22 underlying that discount assumed that mail entered at the DADC bypassed a crossdocking at
23 the destination transfer hub. The calculation of the costs avoided by a DADC entry
24 incorporates the adjustments for the 3.14 percent of the time that Periodicals are assumed to
25 go straight from the transfer hub to the DDU and the 80 percent of the time that Periodicals
26 are assumed to go straight from the transfer hub to the DSCF, bypassing the DADC.

27 The results of the estimation of Periodicals destination entry non-transportation cost
28 avoidances on a per-pound basis appear in Table 1 at the end of this testimony.

1 **V. BOUND PRINTED MATTER TRANSPORTATION COSTS**

2
3 This testimony is an update of the development of transportation unit cost per pound
4 for the Bound Printed Matter (BPM) categories: non-dropship, DBMC, DSCF and DDU
5 presented in Docket No. R2005-1 by witness Mayes (USPS-T-25). In general, the cost
6 methodology from Docket No. R2005-1 is used again in this docket. The changes in the
7 estimated costs from those presented in Docket No. R2005-1 are due to the use of new input
8 data and updates of parameters to reflect the most recent available data and a different test
9 year. The cost model is provided in library reference USPS-LR-L-89, Attachment A.

10 The first step in developing the BPM transportation cost estimates is to divide base
11 year transportation costs (from USPS-LR-L-5) into four functions: local, intermediate, long-
12 distance zone-related (ZR) and long-distance non-zone-related (NZR). The next step in the
13 development requires estimating the test year highway, rail, water and air costs for each of
14 the four functions. Then the local and intermediate cost-per-pound-leg estimates are
15 developed. First, the average numbers of legs of transportation are estimated separately for
16 all BPM and for DBMC BPM. This is shown on page 1 of Attachment A. Next, the local cost-
17 per-pound-leg is calculated by dividing total BPM local costs by the product of BPM average
18 number of local legs and total BPM pounds. The intermediate cost-per-pound-leg is
19 calculated in the same manner. The results of these calculations are shown on page 4 of
20 Attachment A.

21 These cost-per-pound-leg estimates are then used to allocate local and intermediate
22 costs to BPM DBMC. Local DBMC costs are calculated by multiplying the local cost-per-
23 pound-leg by the DBMC average number of local legs and total DBMC cubic feet.
24 Intermediate DBMC costs are calculated by multiplying the intermediate cost-per-pound-leg
25 by the DBMC average number of intermediate legs and total DBMC cubic feet. Total DBMC
26 transportation costs are the sum of the local and intermediate costs.

27 The estimation of the DBMC cost per pound by zone begins with the allocation of the
28 local costs to zone using the percentage of BPM DBMC pounds per zone. DBMC
29 intermediate costs are assumed to be zone-related, and therefore are distributed to zone
30 using pound-miles. Costs per zone are then divided by total pounds in each zone to estimate
31 the unit cost per pound for each zone. See page 4 of Attachment A for these calculations.

32 DSCF and DDU BPM transportation costs are developed on page 5 of Attachment A.
33 The unit cost per pound is estimated and used to estimate the total DSCF and DDU costs.

1 The DSCF unit cost per pound is assumed to be the same as the local DBMC unit cost per
2 pound. Total DSCF costs are estimated by multiplying the unit cost per pound by total DSCF
3 pounds. DDU BPM pieces are assumed to avoid 83.6 percent of the DSCF unit cost per
4 pound. Total DDU costs are calculated as the DDU unit cost per pound multiplied by total
5 DDU pounds.

6 Total BPM non-dropship transportation costs are calculated to be the difference
7 between total BPM costs and “properly-dropped” BPM transportation costs. “Properly-
8 dropped” BPM transportation cost refers to the sum of DBMC, DSCF and DDU transportation
9 costs. Some BPM mail that does not meet the dropship requirements may still be entered at
10 the destination facility; hence, the sum of DBMC, DSCF and DDU is referred to as “properly
11 dropped”.

12 Unit transportation costs per pound per zone for non-dropship BPM are presented on
13 page 6 of Attachment A. Zone-related costs are distributed to zone using percent of pound-
14 miles. The unit costs per pound for zone-related costs are calculated by dividing the zone-
15 related costs by total pounds in each zone. Non-zone-related unit costs per pound are
16 calculated by dividing total non-zone-related costs by total non-dropship pounds. Since by
17 definition, non-zone-related costs do not vary by zone, this unit cost is identical for every
18 zone.

19 The summary of the Bound Printed Matter transportation unit costs per pound by zone
20 and rate category is provided in Table 1 at the end of this testimony.

21

22 **VI. PARCEL POST TRANSPORTATION COSTS**

23

24 This testimony is an update of the development of transportation cost analysis
25 provided by witness Mayes (USPS-T-25) in Docket No. R2005-1. This cost analysis uses the
26 transportation costs allocated to Parcel Post and develops the unit cost per cubic foot
27 estimates for each zone for each of the Parcel Post rate categories: Inter-BMC, Intra-BMC,
28 DBMC, DSCF and DDU. The changes in the estimated costs from those presented in Docket
29 No. R2005-1 are primarily due to the use of new input data and updates of parameters to
30 reflect the most recent available data and a different test year. Changes were also necessary
31 in order to more fully acknowledge Parcel Return Service. The data systems used to develop
32 the cubic feet and cubic foot mile estimates for Parcel Post as presented in USPS-LR-L-47
33 were unable to identify the Parcel Return Service (PRS) pieces and provide independently

1 estimated cubic feet and cubic foot miles for PRS. However, the volume of PRS as a
2 proportion of Parcel Select Parcel Post was not insignificant in FY 2005, and the
3 transportation costs incurred by the PRS pieces were attributed to Parcel Post. Thus, in
4 order to develop the estimated transportation costs for Parcel Select, including PRS, the
5 cubic feet and cubic foot miles associated with PRS had to be added to the Parcel Select
6 cubic feet and cubic foot mile data obtained from USPS-LR-L-47. This was achieved by
7 adding the PRS volume to the Parcel Select distributions from USPS-LR-L-47 at the same
8 cubic foot miles as USPS-LR-L-47 reported for Parcel Select. In some circumstances, the
9 billing determinants for PRS indicated nonzero volumes in weight and zone combinations for
10 which USPS-LR-L-47 indicated zero volumes (and cubic feet and cubic foot miles) for Parcel
11 Select. For such cells, the average hauls as reported in USPS-LR-L-47 for the zones were
12 multiplied by the PRS volumes as reported in the billing determinants and multiplied by the
13 regression analysis estimate of cubic feet per piece for DBMC pieces in order to develop the
14 estimated cubic foot miles. The cost model is provided in library reference USPS-LR-L-89,
15 Attachment B.

16 **A. Definitions of Transportation Cost Functions**

17 The Parcel Post transportation cost model employs the basic methodology developed
18 by witness Hatfield in Docket No. R97-1, incorporating two major concepts: dividing
19 transportation costs into transportation function (local, intermediate, and long distance) and
20 dividing costs into zone-related (ZR) and non-zone-related (NZR). The transportation
21 functions are defined in the Parcel Post transportation cost model as follows:

- 22 • Local: Costs associated with the transportation of parcels between facilities that
23 are within the service area of a Processing and Distribution Center (P&DC),
24 primarily between Associate Offices (AOs) and P&DCs. Local costs include the
25 costs of postal-owned vehicles (cost segment 8).
- 26 • Intermediate: Costs associated with the transportation of parcels between
27 facilities that are within the service area of a BMC, primarily between P&DCs
28 and BMCs.
- 29 • Long distance: Costs associated with the transportation of parcels between
30 facilities that are within the service areas of two different BMCs. Long distance
31 cost is associated only with Inter-BMC parcels.

1 The distance between the 3-digit origin and the 3-digit destination of a parcel is
2 measured in Great Circle Distance (GCD)¹. Distance as measured with GCD determines the
3 designation of zones, and can be quite different from the distance that a parcel actually
4 travels. Since the true cost of transportation is associated with the distance a parcel actually
5 travels, GCD is not always an accurate indicator of the cost incurred with transporting that
6 parcel. A distinction must be made between the instances in which the distance a parcel
7 travels is related to GCD (and is zone-related) and when it is not related to GCD (non-zone-
8 related). These distinctions are not necessary for DSCF and DDU since they are unzoned
9 rate categories and only incur local costs.

10 Local costs are non-zone-related for all Parcel Post rate categories. Intermediate
11 costs are considered non-zone-related for Inter-BMC and Intra-BMC, but are zone-related for
12 DBMC. Long distance costs are not relevant for Intra-BMC or DBMC. For Inter-BMC, the
13 majority of long distance costs are considered to be zone-related, but there are some
14 exceptions related to the Christmas Network and passenger air costs, noted on page 7 of
15 Attachment B.

16 **B. Methodology Used in Development of Parcel Post Transportation Costs**

17 The development of the Parcel Post transportation costs follows the methodology used
18 in Docket No. R2005-1. For a detailed discussion regarding this approach, please refer to
19 Docket No. R97-1, USPS-T-16.

20 The cube-weight relationships for the three major rate categories are used to estimate
21 the total cubic feet in each zone for each rate category, necessary to develop Parcel Post
22 transportation costs. The regression analysis used to estimate the cube-weight relationships
23 is described fully in USPS-LR-L-90. The cube-weight relationships are estimated for Intra-
24 BMC, Inter-BMC and Parcel Select (including DBMC, DSCF and DDU). Individual analyses
25 cannot be performed for DBMC, DSCF and DDU separately because the necessary detailed
26 cubic feet and weight data are not available for the three rate categories separately. The
27 model used to estimate each relationship is the same as the model recommended by the
28 Commission in Docket No. R94-1 (PRC Op., Docket No. R94-1, page V-116), and is the
29 same as the one used in Docket No. R2005-1 in USPS-LR-K-90. The results of the
30 regression analysis are shown in USPS-LR-L-90 and in USPS-LR-L-89, Attachment B. Page
31 1 of Attachment B displays the equation results, and page 2 shows the results graphically.

¹ DMM § GO301.1.

1 The number of cubic feet in each zone for each of the five rate categories (Inter-, Intra-
2 , DBMC, DSCF and DDU) must be developed in order to estimate the unit transportation cost
3 per cubic foot. I used the base year volume distributions for Parcel Post from the billing
4 determinants (USPS-LR-L-77) and adjusted the distributions wholesale by applying the ratio
5 of the test year before rates total Parcel Post volume to the base year total Parcel Post
6 volume to maintain a set of volume estimates by rate cell that was identical to that which was
7 implicitly assumed to underlie the forecasted costs in the rollforward model. The estimate of
8 cubic feet in each zone for each rate category was developed by multiplying the test year
9 before rates volume estimates in each rate cell (zone and weight increment combination) by
10 the corresponding estimated cubic feet per parcel from the cube-weight regression. As noted
11 above, the cubic feet and cubic foot miles associated with PRS had to be added to the Parcel
12 Select cubic feet and cubic foot mile data obtained from USPS-LR-L-47 by adding the PRS
13 volume to the Parcel Select distributions from USPS-LR-L-47 at the same cubic foot miles as
14 USPS-LR-L-47 reported for Parcel Select. In some circumstances, the billing determinants
15 for PRS indicated nonzero volumes in weight and zone combinations for which USPS-LR-L-
16 47 indicated zero volumes (and cubic feet and cubic foot miles) for Parcel Select. For such
17 cells, the average hauls as reported in USPS-LR-L-47 for the zones were multiplied by the
18 PRS volumes as reported in the billing determinants and multiplied by the regression analysis
19 estimate of cubic feet per piece for DBMC pieces in order to develop the estimated cubic foot
20 miles. These volume estimates are found at pages 17-19 of Attachment B of USPS-LR-L-
21 89.

22 These adjusted volume estimates were multiplied by the cubic feet per parcel by
23 weight increment from the regression equation to obtain the estimated cubic feet per parcel
24 by rate cell, shown on pages 3-5 of Attachment B. The total cubic feet per zone for each of
25 the rate categories are summarized on page 6 of Attachment B. This page also displays the
26 total cubic-foot miles for the Inter-BMC and DBMC rate categories. These data, obtained
27 from USPS-LR-L-47, are necessary to distribute the distance-related costs.

28 Base year transportation costs (USPS-LR-L-5) are separated into the transportation
29 functions: local, intermediate, long distance zone-related and long distance non-zone-related.
30 After the base year costs have been separated into the transportation functions, the
31 percentage of the costs associated with each of the transportation functions is calculated for
32 each of the transportation modes (highway, air, rail, water). These distribution keys are
33 shown on page 7 of Attachment B of USPS-LR-L-89. These distribution keys are then

1 applied to the forecasted test year transportation costs by cost component on page 8 of
2 Attachment B to allocate total test year costs to each transportation function. Test year
3 postal-owned vehicle costs (USPS-LR-L-7), including the appropriate piggybacked costs
4 (USPS-T-13), are added to local transportation costs on page 9 of Attachment B.

5 The resulting test year transportation costs by local, intermediate, long distance zone-
6 related and long distance non-zone-related are shown on page 9 of the attachment. Plant
7 load costs and Alaska non-preferential costs are not included in intermediate costs. This is
8 because these two costs are not allocated to all rate categories. By definition, DBMC, DSCF
9 and DDU Parcel Select Parcel Post must be dropped at the destination facility by the mailer.
10 Thus, plant load costs are only allocated to Inter-BMC and Intra-BMC rate categories. Alaska
11 non-preferential air costs are not allocated to DBMC because Parcel Post destinating in
12 Alaska is not eligible for the DBMC rate.

13 In order to distribute the test year costs to each rate category, the average number of
14 legs of transportation that a parcel in each rate category travels on each transportation
15 function must be estimated. For example, if a parcel follows the full path of the Inter-BMC
16 mailstream, it will incur costs associated with:

- 17 • 2 legs of local transportation (origin AO to origin plant and destination plant to DDU)
- 18 • 2 legs of intermediate transportation (origin plant to origin BMC and DBMC to DSCF),
19 and
- 20 • 1 leg of long distance transportation (Origin BMC to DBMC)

21 In actuality, not all parcels travel the full path associated with their mailstream. For
22 example, some Intra-BMC parcels are held out at the local AO and do not travel to their
23 service area BMC for mail processing. Attachment B, page 9 displays the assumed number
24 of legs for Parcel Post by rate category and transportation function.

25 Test year costs are assigned to the five rate categories (Inter-BMC, Intra-BMC, DBMC,
26 DSCF and DDU) on the basis of total cubic feet in the rate category and the number of legs
27 traveled in that transportation function. This distribution is also shown on page 9 of
28 Attachment B. The next step is to calculate the unit cost per cubic foot for each rate
29 category.

30 For Inter-BMC, the percentage of cubic feet in each zone is used to distribute the non-
31 zone-related costs (local, intermediate and long distance non-zone-related) costs to zones.
32 The distribution of the percentage of cubic foot miles to each zone is used to allocate the

1 zone-related long distance costs to each zone. The calculation of the unit cost per cubic foot
2 in each zone is performed by dividing the total transportation costs in each zone by the total
3 Inter-BMC cubic feet in each zone. These calculations are shown on page 10 of Attachment
4 B.

5 None of the Intra-BMC transportation costs are zone-related, so the methodology used
6 to calculate the Intra-BMC unit cost per cubic foot by zone differs from that used to develop
7 the Inter-BMC figures. It is assumed that half of the Intra-BMC parcels entered within the
8 Local zone (as defined in the rate charts) are held out at the AO. These held-out parcels will
9 avoid most of the transportation costs with the exception of the local (in the sense of
10 transportation function) costs that are incurred below the delivery unit. These costs, the intra-
11 city and box route costs, are pulled out of the local costs, and distributed separately.

12 The calculation of the Intra-BMC unit cost per cubic foot transportation cost estimates
13 takes place on page 11 of Attachment B of USPS-LR-L-89. The cubic feet in the Local zone
14 and the non-local zones (Zones 1&2 through Zone 5) are displayed, as are the average
15 number of local and intermediate transportation legs. Since half of the Local zone Intra-BMC
16 parcels incur zero legs of local transportation and half incur two legs of local transportation,
17 the average Local zone Intra-BMC will incur one leg of local transportation. The average
18 number of legs of transportation is multiplied by the cubic feet to develop the average cubic
19 feet legs for the Local and non-local zone pieces. The percentages of cubic foot legs in Local
20 and non-local zones are used to distribute local and intermediate costs to Local and non-local
21 zones.

22 The intermediate transportation costs per cubic foot by zone are developed by dividing
23 the intermediate transportation costs associated with Local zone parcels by the cubic feet
24 associated with Local zone parcels, and the intermediate transportation costs associated with
25 the non-local zone parcels by the non-local zone cubic feet. The same two calculations are
26 performed for the local transportation costs, dividing the Local zone local transportation costs
27 by the Local zone cubic feet, and the non-local zone local transportation costs by the non-
28 local zone cubic feet. But the local cost per cubic foot estimates also incorporate the intra-
29 city and box route costs by dividing these intra-city and box route costs by the total (Local
30 and non-local) cubic feet and adding the resulting unit cost per cubic foot to the calculated
31 local transportation unit cost estimates.

32 It is assumed that DBMC intermediate costs are zone-related and, thus, are allocated
33 to zone by cubic foot miles. DBMC local costs are assumed to be non-zone-related and are

1 allocated to zone by cubic feet. DBMC has no long-distance costs. The DBMC unit cost per
2 cubic foot by zone estimates are developed on page 12 of Attachment B of USPS-LR-L-89.

3 The calculation of the unit cost per cubic foot for DSCF parcels, shown on page 13 of
4 Attachment B, is simplified by virtue of the fact that DSCF is not zoned. Thus, there is no
5 need to develop the unit cost estimates by zone. Secondly, DSCF parcels only incur local
6 transportation costs. Thus, the unit cost per cubic foot is estimated by dividing the total local
7 DSCF costs by total DSCF cubic feet. Similarly, the DDU unit cost per cubic foot is estimated
8 by dividing the total DDU transportation cost by total DDU cubic feet, as shown on page 14 of
9 Attachment B of USPS-LR-L-89.

10 The summary of the Parcel Post unit transportation costs by cubic foot is provided in
11 Table 1 at the end of this document.

12 **VII. BULK PARCEL RETURN SERVICE COSTS**

13
14 Bulk Parcel Return Service (BPRS) was introduced in 1997 as a service available for
15 the return of Standard Mail parcels to the original sender. This testimony updates the
16 estimated BPRS cost, using the same methodology employed in Docket No. R2005-1
17 (USPS-T-25). Consistent with the Commission's methodology presented in the Docket No.
18 R2000-1 Decision and Recommended Opinion, the fixed CRA factor has been adjusted to
19 account for differences in the modeled costs of BPRS and Media Mail/Library Mail.

20 Collection costs are estimated using the collection costs of single-piece Standard Mail
21 as a proxy. This rate category ceased to exist as of January, 1999, so the data from 1998
22 are adjusted forward by applying a wage adjustment factor. The wage adjustment factor is
23 the ratio of the appropriate test year wage rate to the FY 1998 wage rate.

24 The mail processing costs are derived using mail processing mailflow models similar to
25 those for Parcel Post and Media Mail/Library Mail. The mail characteristics of BPRS as
26 collected in a 1998 study are used in the mail processing models. As witness Miller (USPS-
27 T-21) notes in his testimony, PIMS data and MODS data are not directly comparable for the
28 Primary Parcel Sorting Machine, Secondary Parcel Sorting Machine, and Sack Sorting
29 Machine operations. PIMS productivities for these operations were calculated using keying
30 work hours only, but the MODS productivities are now calculated using the work hours for
31 keying, sweeping, and other related activities. Consequently, the "sweep runouts" and "sack
32 and tie" tasks that were previously explicitly included in the cost models on pages 7 and 8 of

1 Attachment C of USPS-LR-L-89 have been deleted because they are now covered by the
2 MODS productivity figures.

3 As there is no line item for BPRS in the CRA, a proxy must be used for the
4 proportional and fixed CRA adjustment factors. Media Mail/Library Mail, which also contains
5 lightweight returns, was deemed to be the best proxy. The fixed CRA adjustment factor was
6 multiplied by the ratio of the BPRS modeled costs to the Media Mail/Library Mail modeled
7 costs, as developed by witness Miller (USPS-T-21) in USPS-LR-L-46. The adjusted fixed
8 CRA adjustment factor and the proportional adjustment factor are used to produce the mail
9 processing unit cost, as shown on page 2 of Attachment C of USPS-LR-L-89.

10 The delivery costs were estimated separately for each of the eight BPRS mailers in
11 existence during the data collection associated with the implementation of the BPRS product.
12 Half of the mailers picked up their returns, and for these mailers, the delivery cost was
13 assumed to be zero. However, this is not to imply that there are no costs associated with
14 mailers picking up their mail. The costs associated with the mailers picking up this mail were
15 not studied during the BPRS data collection study. The other half of the mailers had their
16 BPRS pieces delivered. The cost of a local leg of transportation is used to model the cost of
17 delivery to these mailers. The weighted average of the delivery cost of zero and the delivery
18 cost of one transportation leg results in the average delivery cost shown on page 13 of
19 Attachment C of USPS-LR-L-89.

20 For purposes of the BPRS study, the calculation of the postage due costs incorporates
21 the manual sortation of parcels into a container that only contains BPRS items; the steps
22 involved in calculating postage due; and the steps involved in auditing the postage due
23 calculations of the BPRS recipients. Because the BPRS mailers studied varied by daily
24 volume and type of postage due, a separate postage due cost was estimated for each BPRS
25 recipient. These calculations are displayed on pages 15 through 22 of Attachment C of
26 USPS-LR-L-89. A weighted average of these costs is developed on page 14 of Attachment
27 C by weighting the cost of postage due for each mailer by that mailer's weekly volume.

28 The resulting BPRS unit cost is shown in Table 1 at the end of this testimony.

1 **VIII. PROPOSED CHANGES RELATIVE TO PRC METHODOLOGY**

2
3 To the extent that, in response to Commission Rule 53, I discuss and compare Postal
4 Rate Commission (PRC) versions of costing materials in this testimony, I do not sponsor
5 those materials, or in any way endorse the methodologies used to prepare them. In its Order
6 No. 1380 adopting the roadmap rule, the Commission included the following statements
7 regarding the role played by Postal Service witnesses under these circumstances:

8 The comparison required by this exercise cannot be equated with sponsoring
9 the preexisting methodology. It merely identifies and gives context to the
10 proposed change, serving as a benchmark so that the impact can be assessed.
11 ... [W]itnesses submitting testimony under Rule 53(c) sponsor the proposed
12 methodological changes, not the preexisting methodology. That they may be
13 compelled to reference the pre-existing methodology does not mean that they
14 are sponsoring it. Order No. 1380 (August 7, 2003) at 7.
15

16 Therefore, although I may be compelled to refer to the PRC methodologies and
17 versions corresponding to the Postal Service proposals which are the subject of my
18 testimony, my testimony does not sponsor those PRC materials.

19 The PRC version of the estimated cost avoidances for Standard Mail and Periodicals
20 destination entry are contained in USPS-LR-L-112. The cost models contained in USPS-LR-
21 L-112 are expressed in the same format as the postal versions found in USPS-LR-L-88, with
22 the exception that several cost inputs have changed. The PRC version of the dropship cost
23 avoidance models rely on revised piggyback factors (USPS-LR-L-98), premium pay factors
24 (USPS-LR-L-100), and volume variability factors (USPS-T-11, Table 5). All other cost model
25 inputs are identical for both the postal and PRC versions of the dropship cost avoidance cost
26 models.

27 The PRC version of the estimated transportation costs for Parcel Post and Bound
28 Printed Matter, and the estimated cost of Bulk Parcel Return Service are contained in USPS-
29 LR-L-113. The cost models contained in USPS-LR-L-113 are expressed in the same format
30 as the postal versions provided in USPS-LR-L-89, with the exception that several cost inputs
31 have changed. The PRC version of the Parcel Post and Bound Printed Matter transportation
32 cost models and the PRC version of the cost model that estimates the cost of Bulk Parcel
33 Return Service rely on revised piggyback factors (USPS-LR-L-98), premium pay factors
34 (USPS-LR-L-100), base year cost data (USPS-LR-L-93), test year cost data (USPS-LR-L-
35 96), and volume variability factors (USPS-T-11, Table 5). All other cost model inputs are
36 identical for both the postal and PRC versions of these cost models.

TABLE 1:

OUTPUTS OF USPS COST MODELS AND PRC VERSION COST MODELS

COST ELEMENT	USPS MODEL OUTPUT	PRC VERSION MODEL OUTPUT
STANDARD MAIL DESTINATION ENTRY		
Transportation Cost Avoidances		
DDU	\$0.1824 per pound	\$0.1832 per pound
DSCF	\$0.1543 per pound	\$0.1551 per pound
DBMC	\$0.1350 per pound	\$0.1357 per pound
Non-transportation Cost Avoidances		
DDU	\$0.0587 per pound	\$0.0646 per pound
DSCF	\$0.0435 per pound	\$0.0475 per pound
DBMC	\$0.0218 per pound	\$0.0237 per pound
Total Cost Avoidances		
DDU	\$0.2412 per pound	\$0.2479 per pound
DSCF	\$0.1979 per pound	\$0.2026 per pound
DBMC	\$0.1567 per pound	\$0.1595 per pound
PERIODICALS DESTINATION ENTRY		
Non-transportation Cost Avoidances		
DADC	\$0.0065 per pound	\$0.0072 per pound
DSCF	\$0.0300 per pound	\$0.0327 per pound
DDU	\$0.0618 per pound	\$0.0674 per pound
BULK PARCEL RETURN SERVICE	\$1.227 per piece	\$1.286 per piece
BOUND PRINTED MATTER TRANSPORTATION COSTS		
DBMC		
Zone 1 and 2	\$0.062 per pound	\$0.063 per pound
Zone 3	\$0.105 per pound	\$0.105 per pound
Zone 4	\$0.137 per pound	\$0.137 per pound
Zone 5	\$0.258 per pound	\$0.258 per pound
DSCF	\$0.047 per pound	\$0.047 per pound
DDU	\$0.008 per pound	\$0.008 per pound
Non-Dropship		
Zone 1 and 2	\$0.134 per pound	\$0.135 per pound
Zone 3	\$0.145 per pound	\$0.145 per pound
Zone 4	\$0.158 per pound	\$0.159 per pound
Zone 5	\$0.180 per pound	\$0.181 per pound
Zone 6	\$0.203 per pound	\$0.203 per pound
Zone 7	\$0.228 per pound	\$0.229 per pound
Zone 8	\$0.279 per pound	\$0.280 per pound

TABLE 1 (cont'd):

PARCEL POST TRANSPORTATION COSTS		
Inter-BMC		
Zone 1 and 2	\$4.6938 per cubic foot	\$4.7117 per cubic foot
Zone 3	\$4.9336 per cubic foot	\$4.9510 per cubic foot
Zone 4	\$5.3502 per cubic foot	\$5.3667 per cubic foot
Zone 5	\$5.9438 per cubic foot	\$5.9590 per cubic foot
Zone 6	\$6.5446 per cubic foot	\$6.5586 per cubic foot
Zone 7	\$7.2755 per cubic foot	\$7.2880 per cubic foot
Zone 8	\$8.6361 per cubic foot	\$8.6457 per cubic foot
Intra-BMC		
Local	\$2.5512 per cubic foot	\$2.5533 per cubic foot
Zone 1 and 2	\$4.7737 per cubic foot	\$4.7768 per cubic foot
Zone 3	\$4.7737 per cubic foot	\$4.7768 per cubic foot
Zone 4	\$4.7737 per cubic foot	\$4.7768 per cubic foot
Zone 5	\$4.7737 per cubic foot	\$4.7768 per cubic foot
DBMC		
Zone 1 and 2	\$1.7150 per cubic foot	\$1.7174 per cubic foot
Zone 3	\$3.8257 per cubic foot	\$3.8253 per cubic foot
Zone 4	\$6.0637 per cubic foot	\$6.0604 per cubic foot
Zone 5	\$30.3419 per cubic foot	\$30.3066 per cubic foot
DSCF	\$1.0279 per cubic foot	\$1.0312 per cubic foot
DDU	\$0.1803 per cubic foot	\$0.1809 per cubic foot