

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

POSTAL RATE AND FEE CHANGES, 2006

Docket No. R2006-1

DIRECT TESTIMONY
OF
JOSEPH E. NASH
ON BEHALF OF
UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

AUTOBIOGRAPHICAL SKETCH..... ii

ASSOCIATED LIBRARY REFERENCES iv

 USPS LR-L-37: Estimation of Priority Mail Weight and Average Haul by Zone... iv

 USPS LR-L-38: Interconnectivity of Long Haul Priority Mail with HCR
 Transportation iv

 USPS LR-L-122: Calculation of the Intra-SCF Priority Mail Percentage in
 Zone 1 iv

ROADMAP v

I. PURPOSE AND SCOPE..... 1

II. FY2005 PRIORITY MAIL AIR WEIGHT AND AVERAGE HUAL BY ZONE2

III. INTERCONNECTIVITY OF LONG HAUL PRIORITY MAIL WITH HCR
TRANSPORTATION9

IV. CALCULATION OF THE INTRA-SCF PRIORITY MAIL PERCENTAGE IN
ZONE 1 11

1 AUTOBIOGRAPHICAL SKETCH

2 My name is Joseph E Nash and I am a Senior Consultant in the Public Sector
3 Practice at International Business Machines Business Consulting Services (IBM) in
4 Fairfax, Virginia. I have been with IBM since 2002 when its predecessor firm,
5 PricewaterhouseCoopers (PwC) Consulting was acquired. I was with PwC
6 Consulting since 1998.

7 My work at IBM has been devoted to serving the United States Postal Service
8 and I am a member of IBM's Postal Service account team. I have worked on many
9 projects for the United States Postal Service, specializing in transportation network
10 operations, cost estimation, and financial analysis. I have been working with the
11 Postal Service to establish and implement the transportation agreement with FedEx.
12 This work has consisted of financial and operational consulting designed to estimate
13 the financial implications of the agreement and to assist in developing the
14 implementation plan.

15 My experience with the Postal Service includes volume variable cost analysis
16 in transportation. I have participated in Rate Case proceedings during the last few
17 years. In R2005-1, I presented testimony on several transportation cost related
18 issues. The analyses I testified to included the derivation of FedEx day turn
19 variability, changes to the CNET distribution key, the calculation of the Alaska air
20 adjustment factors, the development of the distribution of weight by zone of Priority
21 Mail moved on air transportation, the treatment of Amtrak costs beyond the base
22 year, an update of surface density factors, and an update of Plant Load distribution
23 keys. I provided analytical support to several Postal Service witnesses in the area of

1 transportation costing during the R2000-1 and R2001-1 omnibus rate cases
2 (Witnesses Pickett, Xie, and Bradley in R2000-1; Witnesses Pickett, Bradley, Takis,
3 and Hatfield in R2001-1).

4 Over the past six years, I have visited a number of Postal Service field offices
5 including airport mail facilities (AMFs), bulk mail centers (BMCs), processing and
6 distribution centers (P&DCs), associate post offices (AOs), and mailer plants.
7 During these visits, I observed transportation operations, mail processing operations,
8 and delivery operations.

9 I received a bachelor's degree in Economics from The College of William and
10 Mary in 1998, *magna cum laude*.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

ROADMAP

The following roadmap discusses how my analysis is used and to whom I provide my analysis:

1. Estimation of Priority Mail Weight and Average Haul by Zone: The weight distribution and average haul are provided to witness Scherer (USPS-T-33) to distribute distance- and non-distance-related transportation costs.
2. Interconnectivity of Long Haul Priority Mail with HCR Transportation: The estimated percentage of highway distance-related transportation cost that was incurred in connection with air travel is provided to witness Scherer (USPS-T-33) to adjust distance-related transportation cost across zones.
3. Calculation of the Intra-SCF Priority Mail Percentage in Zone 1: The calculated percentage of intra-SCF Priority Mail in zone 1 relative to all Priority Mail in zone 1 is provided to witness Scherer (USPS-T-33) to adjust distance-related highway transportation cost in zone 1.

1 I. PURPOSE AND SCOPE

2 The purpose of my testimony and the library references I sponsor is to
3 provide certain information related to Priority Mail transportation costs. There are
4 three issues discussed in my testimony:

- 5 1. Update the methodology and calculation of the weight distribution and
6 average haul by zone for Priority Mail moved on air transportation
- 7 2. Estimate the share of highway Priority Mail pound-miles
8 interconnecting with air transportation
- 9 3. Calculate the Intra-SCF Priority Mail percentage in Zone 1

10 The programs and spreadsheets used to make these changes are described
11 in detail in Library References USPS-L-37, USPS-L-38 and USPS-L-122.

1 II. FY2005 PRIORITY MAIL AIR WEIGHT AND AVERAGE HUAL BY ZONE

2 In this testimony, I calculate Priority Mail air weight and average haul by zone
3 for the transportation cost pools that are distance related and non-distance related.
4 There is an established methodology for this calculation that has been applied in
5 past rate cases, but the update I propose uses a new and improved methodology.

6

7 **A. Overview of the Proposed New Methodology**

8 The new methodology is an improvement as it rectifies a deficiency in the
9 established methodology. To illustrate the deficiency consider that the established
10 methodology for the Priority Mail air weight and average haul by zone calculation is
11 to assign air system Priority Mail weight to zones based on the Great Circle Distance
12 (GCD) between transportation origin and destination.¹ Once this assignment has
13 been made, the weight by zone is summed to produce the weight distribution.
14 Average haul is calculated as the average miles weighted by the mail pounds of
15 each zone.

16 However, it has recently been recognized by the Postal Service that a large
17 amount of Priority Mail in the air system assigned as zone 1 and zone 2 is actually
18 offshore connecting volume from the continental United States to the Caribbean. For
19 example, mail travelling from Seattle on a commercial airline is sent to San Juan and
20 then reassigned to a different commercial air carrier for transportation from San Juan

¹ Transportation origin or destination is not necessarily equal to mail origin or destination. For example, for Priority Mail from Seattle to San Juan and then reassigned to St. Thomas, the transportation origin and destination are first Seattle and San Juan and then San Juan and St. Thomas, while the mail origin and destination are Seattle and St. Thomas. See the next paragraph for a detailed discussion.

1 to St. Thomas. In the established methodology, this off-shore Priority Mail air weight
2 is incorrectly double counted first as long zone volume on the trip from Seattle to
3 San Juan and then as short zone volume on the trip from San Juan to St. Thomas.
4 The correct assignment would have the mail solely distributed to the long haul zone.
5 The proposed new methodology addresses this issue by using a supplementary
6 data system to determine the proportion of Priority Mail air weight that is offshore
7 and redistributes that mail (by weight) to long haul zones. Same as in the Caribbean,
8 the offshore Priority Mail air weight is also double counted in Hawaii and Alaska. The
9 proposed methodology addresses this issue in all three offshore locations.

10 Another improvement of the proposed methodology is that it corrects the
11 Priority Mail zone assignments according to how the Priority Mail is priced by the
12 Postal Service. In the established methodology, the Priority Mail weight is
13 exaggerated in long haul zones because zones are assigned based on GCD
14 mileages. As a result, a Priority Mail piece from Honolulu to Guam is distributed to
15 zone 8 in the established methodology, as the distance is over 3000 miles. However,
16 it should be distributed to zone 1 because the Postal Service prices all intra-Hawaii
17 Priority Mail in zone 1.

18 In addition, the updated calculation uses more recent operational data that
19 covers a broader set of air operations.
20

21 **B. Application to the Individual Air Networks**

22 The distribution of weight by zone and average haul by zone is performed for
23 each air network. These air networks are FedEx, Commercial Air (excluding intra-

1 Caribbean), Intra-Hawaii, Intra-Caribbean and Intra-Alaska. The calculations rely
2 upon three data systems: Enterprise Data Warehouse (EDW), the Surface Air Mail
3 System Alaska (SAMS Alaska), and ODIS/RPW. EDW and SAMS provide
4 operational Priority Mail air data. However, since off-shore Priority Mail in the intra-
5 Hawaii, intra-Caribbean and intra-Alaska air network are double counted by the two
6 operational data systems, I use ODIS/RPW, which provides all end-to-end Priority
7 mail data (though not by transportation mode) to help identify true intra-regional vs.
8 off-shore Priority Mail air weight.

9 The Priority Mail air weight distributions for FedEx and Commercial Air are
10 calculated with operational data (EDW). Priority Mail on FedEx is identified by carrier
11 code while Priority Mail on Commercial Air is obtained by excluding FedEx, Air Taxi
12 to/from Billings, MT¹, intra-Caribbean, and intra-Hawaii from the EDW operational
13 Priority Mail air data. Using the established methodology as applied in past cases,
14 the FedEx and Commercial Air Priority Mail air weight are classified into zones
15 based on the GCD between origin and destination to produce weight distribution of
16 FedEx and Commercial Air weight distribution.

17 Weight distributions for Hawaii, the Caribbean and Alaska require segregation
18 of the true intra-regional Priority Mail weight and the off-shore weight from the totals
19 obtained from operational data. These weights are then distributed to the
20 appropriate zones. As a first step, I calculate the weight distribution of intra-Hawaii,
21 intra-Caribbean and intra-Alaska using the same method as for FedEx and

¹ Air Taxi of Billings, MT is removed from the Commercial Air cost pool because the volume is double counted in the data system and there is no sufficient data to adjust that.

1 Commercial Air (using EDW operational data for intra-Hawaii and intra-Caribbean
2 and SAMS¹ operational data for intra-Alaska).

3 Because the operational data do not include the linkage between the
4 transportation of mail within the offshore region (Caribbean, Hawaii or Alaska) and
5 its transportation to or from the continental U.S., an estimate must be constructed.
6 The proposed methodology uses ODIS/RPW data for this estimate because it
7 provides end-to-end Priority Mail flows (but not by transportation mode). These data
8 permit estimation of the percentage of Priority Mail weight that travels within the
9 offshore regions versus the percentage that travels from the continental U.S. to the
10 islands, for each zone.

11 Because the ODIS/RPW data contain not only Priority Mail that is flown, but
12 also Priority Mail that is trucked, I assume that the same percentage of Priority Mail
13 uses air vs. highway transportation when travelling within the offshore regions as
14 when travelling between the offshore regions and the continental U.S.

15 The ODIS/RPW weight distribution for Hawaii and the Caribbean shows that
16 all Priority Mail travelling within the two areas occurs in zone 1. This is because the
17 Postal Service prices all intra-Hawaii and intra-Caribbean Priority Mail as zone 1
18 mail. So, the only adjustment to the weight by zone distribution for intra-Hawaii and
19 intra-Caribbean is to redistribute the total weight obtained from operational data by
20 the ODIS/RPW weight distribution.

21 Alaska is different from Hawaii and the Caribbean in that it is a large land
22 mass, so the intra-Alaska Priority Mail is distributed to more than one zone. Because

¹ In Alaska operational data systems, First Class and Express Mail are also treated as "Priority". To estimate the true Priority Mail air weight in Alaska, I have scaled the total SAMS Priority Mail air weight by the TRACS Priority Mail intra-Alaska preferential key.

1 of this, the redistribution of Alaska Priority Mail air weight is more complex. In the
2 first step, total intra-Alaska Priority Mail air weight obtained from operational data is
3 split into true intra-Alaska weight and off-shore Alaska weight. This split is made by
4 applying the relevant percentages obtained from ODIS/RPW. Then, the intra-Alaska
5 part of Priority Mail air weight is redistributed to the various zones based on the
6 operational intra-Alaska weight distribution, and the off-shore Alaska Priority Mail air
7 weight is redistributed to the off-shore zones based on the ODIS/RPW distribution.

8 Once the weight distribution for the networks is finished, the next step is to
9 calculate the average haul by zone for each of the networks.

10 The average hauls for the FedEx and Commercial Air networks are calculated
11 using the established methodology. The basis for the calculation is the pound
12 weighted average GCD for each zone.

13 For Alaska, Hawaii and the Caribbean, the average haul by zone is first
14 calculated for each of the three off-shore locations using the same method used for
15 FedEx and Commercial Air. However, because all the adjusted intra-Hawaii and
16 intra-Caribbean Priority Mail is distributed to zone 1, one average mileage across
17 zones is calculated for each of these off-shore regions. This average number is then
18 applied to both the intra-Hawaii/intra-Caribbean zone (zone 1) and the off-shore
19 zones. For Alaska, the average calculated mileage is used only as the average haul
20 for the redistributed off-shore Alaska zones. Since the intra-Alaska volume is
21 redistributed to various zones, individual average hauls are needed for each zone. I

1 use the average haul by zone calculated above with the operational data for those
2 intra-Alaska zones.¹

3
4 **C. Consolidating the distributions by network for distance related**
5 **cost pools and non-distance related cost pools.**

6 Once the weight distribution and average haul for each individual air network
7 has been calculated, the last step is to consolidate them into two sets of
8 distributions, one for distance-related cost pools and the other for non-distance-
9 related cost pools².

10 This is accomplished in two steps. In the first step, I retain the FedEx weight
11 and average haul by zone calculated above and aggregate Commercial Air, intra-
12 Hawaii, intra-Caribbean and intra-Alaska into one network, called "All Other". For the
13 "All Other" aggregate, I produce one weight distribution and average haul by zone
14 with off-shore Priority Mail and one weight distribution without off-shore Priority Mail.
15 The weight distribution with off-shore Priority Mail is obtained by adding up the
16 Commercial Air and the redistributed Hawaii, Alaska and the Caribbean Priority Mail
17 weight by zone. Average haul for the "All Other" aggregate with off-shore Priority
18 Mail included is calculated as the average of the "average haul" for each network
19 weighted by the Priority Mail weight of that network by zone. The weight distribution
20 for "All Other" without off-shore Priority Mail included is obtained by adding up the

¹ The reason I use operational data instead of ODIS/RPW data is that ODIS/RPW contains volumes that are trucked.

² These two distributions are provided to the Priority Mail rate design witness to allocate distance and non-distance related transportation cost.

1 Commercial Air, and the redistributed true intra-Hawaii, intra-Alaska and intra-
2 Caribbean Priority Mail weight by zone.

3 The second step is to produce two sets of distributions for distance- and non-
4 distance-related cost pools with FedEx and “All Other” distributions. The weight
5 distribution and average haul by zone for the “All Other” aggregate with off-shore
6 Priority Mail included is used for distance related cost pools. The reason I include
7 the off-shore Priority Mail is to ensure that all elements generating distance related
8 costs on a pound-mile basis are included. Although it appears that the off-shore
9 Priority Mail is double counted, it is not really double counted when distributing
10 pound-mile based costs. With the off-shore Priority Mail weight distributed to the
11 correct zone and miles associated with each segment, the pound-miles of the
12 Priority Mail travelling from the continental U.S. to the off-shore regions (or vice-
13 versa) and the pound-miles of this very same Priority Mail travelling within the region
14 as an extension add up to be just the right amount of pound-miles incurring the
15 distance related cost. For the non-distance related cost pool, however, the weight
16 distribution is obtained by adding up the FedEx weight distribution and “All Other”
17 weight distribution without off-shore Priority Mail. The reason to include both FedEx
18 and “All other” is not only because FedEx is non-distance related as contracted, but
19 also because the other networks in the “All Other” aggregate contain non-distance
20 related cost elements. I exclude the off-shore Priority Mail weight from the non-
21 distance related cost pools because the off-shore Priority Mail weight would be
22 double counted in this instance.

1 Library Reference LR-L-37 contains a detailed implementation procedure,
2 computer program and results for these calculations.

3 III. INTERCONNECTIVITY OF LONG HAUL PRIORITY MAIL WITH HCR 4 TRANSPORTATION

5 Traditional Priority Mail rate design has distributed all “distance-related”
6 ground transportation costs to the zones in which trucks are typically used for end-
7 to-end transportation, namely zones 1 - 4. However, some of these costs are
8 actually incurred in connection with air travel, as mail is trucked either to or from an
9 air mail facility. Because these costs are incurred for mail travelling over the air
10 network, they should be distributed to zones based upon the distance the mail
11 travels, rather than based upon the distance the truck travels. To correct this error, I
12 conducted an analysis to estimate the proportion of distance-related highway Priority
13 Mail cost connecting with air transportation.

14 This estimation is based on ODIS/RPW, which provides end-to-end Priority
15 Mail volume data. ODIS/RPW pound-miles for Priority mail are thus used to
16 calculate the percentage of highway transportation cost that should be distributed to
17 longer zones. Pound-miles are used as a reasonable proxy for cube-miles, which is
18 the way in which highway transportation costs are incurred.

19 A general assumption of this approach is that Priority Mail travelling within
20 zones 1 - 4 only uses highway transportation, while Priority Mail travelling within
21 zones 5 - 8 uses air transportation, with connecting highway transportation between
22 origin/destination and the air facilities. Priority Mail in the highway group (zones 1 -
23 4) is classified into Inter-SCF or Intra-SCF based on the Domestic Mail Manual

1 (DMM) L005 SCF labelling list¹. If the origin and destination of a Priority Mail piece
2 are served by the same SCF, the piece is classified as Intra-SCF. Otherwise, it is
3 considered to be Inter-SCF. The pound-miles in the highway group are calculated as
4 the product of Priority Mail pounds and the miles between the origin and destination
5 SCF.

6 In the air group (zones 5-8), each Priority Mail origin is matched to a FedEx
7 day air facility using mapping data provided by Network Operations. Priority Mail is
8 considered to travel via highway between the origin and the air facility for a
9 connection to long haul air transportation. Then, Priority Mail in the air group is
10 divided into air interconnecting with Inter-SCF highway transportation and air
11 interconnecting with Intra-SCF highway transportation. This is based on the SCF
12 grouping of the mail origin and the FedEx air facility mapped to that origin, indicated
13 by the L005 SCF grouping labelling list. The Priority Mail pound-miles in the air
14 group are calculated as the product of Priority Mail pounds and the associated
15 distances between the mail origin and the FedEx air facility. To simplify the
16 calculation, only interconnectivity at the origin side is examined. This assumes that
17 interconnectivity at the destination side mirrors the origin side.²

18 Finally, the percentage of distance-related highway costs incurred in
19 connection with air transportation is calculated by dividing the Inter-SCF pound-miles
20 in the interconnecting group by the total of inter-SCF pound-miles in both groups.
21 The percentage calculated is 14.13%.

¹ L005 describes the service area by individual 3-digit ZIP Code prefix for mail destined to a sectional center facility (SCF).

² The calculation is done only for inter-SCF Priority Mail pound-miles in both the ground and the air group because intra-SCF costs are not distance related.

1 Library Reference LR-L-38 contains the computer program and results.

2 IV. CALCULATION OF THE INTRA-SCF PRIORITY MAIL PERCENTAGE IN
3 ZONE 1

4 The Postal Service treats intra-SCF transportation costs as non-distance
5 related. Because of this, for Priority Mail rate-making purposes, intra-SCF Priority
6 Mail cubic volume in zone 1 should be excluded from the distribution of distance-
7 related highway transportation costs. In this testimony, I calculate the percentage of
8 intra-SCF Priority Mail weight (as a proxy for cubic volume) relative to all Priority Mail
9 in zone 1. This calculated percentage is provided to Priority Mail rate design witness
10 Scherer (USPS-T-33) to adjust the distribution of distance related transportation
11 costs in zone 1.

12 The calculation is based on FY05 zone 1 Priority Mail data extracted from the
13 ODIS/RPW data system. ODIS/RPW provides 3-digit ZIP to 3-digit ZIP Priority Mail
14 weight along with Postal Service designated zones. All ODIS/RPW Priority Mail
15 weight in zone 1 is classified as intra-SCF or inter-SCF based on the L005 SCF
16 grouping list. If the origin and destination of a Priority Mail piece are served by the
17 same SCF according to the L005 labelling list, this piece is classified as intra-SCF;
18 otherwise, it is considered inter-SCF. The percentage of intra-SCF Priority Mail in
19 zone 1 is calculated by dividing the total weight of intra-SCF Priority Mail by the total
20 weight of all Priority Mail in zone 1.

21 The percentage of Zone 1 Priority Mail, by weight, that is intra-SCF calculated
22 is 55.64%. Library Reference LR-L-122 contains computer program and results.

23