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

SIX-DAY TO FIVE DAY STREET DELIVERY AND RELATED SERVICE CHANGES, 2010	Docket No. N2010-1

RESPONSES OF THE UNITED STATES POSTAL SERVICE TO QUESTIONS 1–16, 18 OF CHAIRMAN'S INFORMATION REQUEST NO. 6
(July 9, 2010)

The United States Postal Service hereby provides its responses to Questions 1–16 and 18 of Chairman's Information Request No. 6, dated June 25, 2010. Answers were sought no later than today. Each question is stated verbatim and is followed by the response. A response to Question 17 will be filed when available.

The responses are sponsored by witnesses in this docket as follows:

Question 1 – Whiteman (USPS-T-9)
Questions 2-6, 10 – Granholm (USPS-T-3)
Question 7 – Neri (USPS-T-4)
Questions 8-9, 11-16, 18 – Bradley (USPS-T-6)
Question 17 – Colvin (USPS-T-7)

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorney:

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July 9, 2010

RESPONSE OF POSTAL SERVICE WITNESS WHITEMAN
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 1:

In the past three years, has the Postal Service or its Postal Customer Council(s) conducted studies on the likelihood of postal patrons seeking alternative methods for: (1) mail delivery; (2) bill payments; (3) receiving magazines and/or newspapers; and/or (4) communicating with others? If so, please provide a copy of the studies.

RESPONSE:

The Postal Service has not "conducted studies on the likelihood of postal patrons seeking alternative methods for …" use of the mail, as described in this question. The Postal Service has conducted studies on the substitution by other means of the delivery of mail. These studies include the Household Diary Study and the studies referred to in the response of the United States Postal Service to NALC/USPS T2-32–33, redirected from witness Corbett (June 23, 2010). See also the response to Chairman's Information Request No. 5, Question 2 (June 25, 2010).

To my knowledge, Postal Customer Council(s) have not conducted any such studies.

RESPONSE OF POSTAL SERVICE WITNESS GRANHOLM
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 2:

Please refer to the response to question 1 of CHIR No. 2. Please confirm that those routes currently served by three-day-a-week delivery on Tuesday, Thursday, and Saturday will continue to receive three-day-a-week delivery on Tuesday, Thursday, and Saturday in a five-day environment. If not confirmed, please explain.

RESPONSE:

Not confirmed. It is expected that tri-weekly mail service routes will continue to exist under Five Day Delivery and will maintain current service levels, although Saturday delivery will be replaced by another day of the week. (Mon - Wed - Fri).

RESPONSE OF POSTAL SERVICE WITNESS GRANHOLM
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 3:

In USPS-LR-N2010-1/3, worksheet "Saturday Workhours" in file "City Delivery Library Reference.xls" cell D8 shows the formula .68 = .59 + (10/60*.5256) for city carrier daily office workhours that are classified as non-volume variable. To explain the calculation, footnote 2, page 3 of file "City. Delivery.Support.pdf" from the same library reference states:

> DOIS data for August and September 2009 show an average of .59 workhours of Fixed Office Time per route and that 52.56 percent of City routes are in units that have elected to take a 10 minute office break. Combining the Fixed Office Time with the average office break time yields .68 hours of total Fixed Office Time.

Please provide the data and the calculations used to derive the .59 and .5256 fractions indicated above.

RESPONSE:

A) The total number of routes in DOIS (at the time of the original response) = 148,049.

B) The sum of fixed office time, not including office break, for these routes = 86,939.54 hours.

C) The average fixed office time for these routes, not including office breaks = 86,939.54 / 148,049 = .587 hours (35.23 minutes).

D) The number of routes that have an office break of 10 minutes = 77,814.

E) The percentage of total routes that have an office break:

77,814 / 148,049 = .52559 = 52.56%.

F) The sum of all office break hours = 77,814 * .1666 = 12,968.48 hours.

G) The sum of all fixed office hours including office breaks = 86,939.54 + 12,968.48 = 99,908.02 hours.

H) The average fixed office time for all routes including office breaks =

99,908.02 / 148,049 = .674 hours (40.49 minutes).

All of the above numbers are daily numbers.

RESPONSE OF POSTAL SERVICE WITNESS GRANHOLM
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 4:

The response to question 2(a) of CHIR No. 4 contains the allowance factors applied to the appropriate workload levels (volume or non-volume measures) for cells identified in the Rural Route Evaluation Worksheet (PO-603 Exhibit 531.3). Please indicate how these data, cell by cell, are used to calculate the average number of boxes and volume factors, contained in cells D11 and D12, respectively, in worksheets "K RTS", "J RTS", "H RTS", and "AUX RTS" contained in file "Library_Ref_Route_Structures.xlsx". Because the average number of boxes and volume factor variables are shown as hardcoded values in the indicated cells, please show all formulas used to derive these values from the Rural Route Evaluation Worksheet.

RESPONSE:

The average number of boxes and volume factors were taken directly from the Rural Route Master Listing (PP 21 FY 09), and no formulas were utilized when entering this data into the spreadsheets.

RESPONSE OF POSTAL SERVICE WITNESS GRANHOLM
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 5:

Please refer to USPS-LR-N2010-1/3. For the FY 2008 and FY 2009 DOIS data used in the USPS-T-3 analysis, please produce an EXCEL spreadsheet with a table and chart containing the following variables, identifying those weeks with a holiday:

a. Total volume by week;
b. Total street hours by week;
c. Total routes by week; and
d. Productivity by week.

RESPONSE:

I am informed that the requested tables and chart are presented in the EXCEL file attached electronically as ChIR.6.q5andq6.xls. I would like to point out that the method of measuring productivity in this attachment utilizes volume data. Another way of measuring productivity would be to utilize the number of delivery points. I personally would prefer this latter method, but I have been informed that it is not currently practical to provide weekly productivity figures in this fashion.

RESPONSE OF POSTAL SERVICE WITNESS GRANHOLM
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 6:

Please state the estimated productivity, by week, for FY 2008 and FY 2009 after elimination of Saturday delivery, using the implied absorption factor in the USPS-T-3 analysis.

RESPONSE:

I am informed that the requested information is presented below, and is also presented in the Excel file attached electronically as Chir6.q5andq6.xls. I would like to point out that the method of measuring productivity in this attachment utilizes volume data. Another way of measuring productivity would be to utilize the number of delivery points. I personally would prefer this latter method, but I have been informed that it is not currently practical to provide weekly productivity figures in this fashion.

FY	Week	Dates	Days in Week	5 Day Productivity
2008	1	10/1/2007-10/5/2007	5	
2008	2	10/6/2007-10/12/2007	7	670.77
2008	3	10/13/2007-10/19/2007	7	582.46
2008	4	10/20/2007-10/26/2007	7	592.18
2008	5	10/27/2007-11/2/2007	7	649.25
2008	6	11/3/2007-11/9/2007	7	618.27
2008	7	11/10/2007-11/16/2007	7	699.67
2008	8	11/17/2007-11/22/2007	7	876.13
2008	9	11/24/2007-11/30/2007	7	588.08
2008	10	12/1/2007-12/7/2007	7	598.46
2008	11	12/8/2007-12/14/2007	7	582.88
2008	12	12/15/2007-12/21/2007	7	529.46
2008	13	12/22/2007-12/28/2007	7	536.39
2008	14	12/29/2007-1/4/2008	7	553.95
2008	15	1/5/2008-1/11/2008	7	558.72
2008	16	1/12/2008-1/18/2008	7	571.18
2008	17	1/19/2008-1/25/2008	7	631.57

2008	18	1/26/2008-2/1/2008	7	559.86
2008	19	2/2/2008-2/8/2008	7	552.21
2008	20	2/9/2008-2/15/2008	7	525.47
2008	21	2/16/2008-2/22/2008	7	615.13
2008	22	2/23/2009-2/29/2009	7	530.34
2008	23	3/1/2007-3/7/2007	7	536.72
2008	24	3/8/2008-3/14/2008	7	548.30
2008	25	3/15/2008-3/21/2008	7	534.30
2008	26	3/22/2008-3/28/2008	7	521.81
2008	27	3/29/2008-4/4/2008	7	520.81
2008	28	4/5/2008-4/11/2008	7	534.30
2008	29	4/12/2008-4/18/2008	7	525.57
2008	30	4/19/2008-4/25/2008	7	523.20
2008	31	4/26/2008-5/2/2008	7	529.99
2008	32	5/3/2008-5/9/2008	7	541.07
2008	33	5/10/2008-5/16/2008	7	528.80
2008	34	5/17/2008-5/23/2008	7	504.10
2008	35	5/24/2008-5/30/2008	7	549.76
2008	36	5/31/2008-6/6/2008	7	505.51
2008	37	6/7/2008-6/13/2008	7	484.88
2008	38	6/14/2008-6/20/2008	7	474.39
2008	39	6/21/2008-6/27/2008	7	476.42
2008	40	6/28/2008-7/4/2008	7	482.99
2008	41	7/5/2008-7/11/2008	7	512.04
2008	42	7/12/2008-7/18/2008	7	500.12
2008	43	7/19/2008-7/25/2008	7	474.12
2008	44	7/26/2008-8/1/2008	7	479.30
2008	45	8/2/2008-8/8/2008	7	503.66
2008	46	8/9/2008-8/15/2008	7	495.52
2008	47	8/16/2008-8/22/2008	7	488.53
2008	48	8/23/2008-8/29/2008	7	491.86
2008	49	8/30-2008-9/5/2008	7	558.25
2008	50	9/6/2008-9/12/2008	7	522.91
2008	51	9/13/2008-9/19/2008	7	513.77
2008	52	9/20/2008-9/26/2008	7	503.51
2008	53	9/27/2008-9/30/2008	4	
2009	1	10/1/2008-10/3/2008	3	
2009	2	10/4/2008-10/10/2008	7	504.96
2009	3	10/11/2008-10/17/2008	7	581.55
2009	4	10/18/2008-10/24/2008	7	512.90
2009	5	10/25/2008-10/31/2008	7	543.13

2009	6	11/1/2008-11/7/2008	7	503.55
2009	7	11/8/2008-11/14/2008	7	574.82
2009	8	11/15/2008-11/21/2008	7	505.76
2009	9	11/22/2008-11/28/2008	7	550.19
2009	10	11/29/2008-12/5/2008	7	497.96
2009	11	12/6/2008-12/12/2008	7	489.54
2009	12	12/13/2008-12/19/2008	7	438.00
2009	13	12/20/2008-12/26/2008	7	441.05
2009	14	12/27/2008-1/2/2009	7	437.02
2009	15	1/3/2009-1/9/2009	7	433.76
2009	16	1/10/2009-1/16/2009	7	459.17
2009	17	1/17/2009-1/23/2009	7	510.39
2009	18	1/24/2009-1/30/2009	7	450.99
2009	19	1/31/2009-2/6/2009	7	457.34
2009	20	2/7/2009-2/13/2009	7	442.22
2009	21	2/14/2009-2/20/2009	7	485.57
2009	22	2/21/2009-2/27/2009	7	432.25
2009	23	2/28/2009-3/6/2009	7	439.43
2009	24	3/7/2009-3/13/2009	7	445.92
2009	25	3/14/2009-3/20/2009	7	433.20
2009	26	3/21/2009-3/27/2009	7	419.46
2009	27	3/28/2009-4/3/2009	7	434.27
2009	28	4/4/2009-4/10/2009	7	437.49
2009	29	4/11/2009-4/17/2009	7	438.02
2009	30	4/18/2009-4/24/2009	7	436.09
2009	31	4/25/2009-5/1/2009	7	442.28
2009	32	5/2/2009-5/8/2009	7	445.82
2009	33	5/9/2009-5/15/2009	7	436.01
2009	34	5/16/2009-5/22/2009	7	417.75
2009	35	5/23/2009-5/29/2009	7	435.33
2009	36	5/30/2009-6/5/2009	7	414.58
2009	37	6/6/2009-6/12/2009	7	414.33
2009	38	6/13/2009-6/19/2009	7	398.30
2009	39	6/20-2009-6/26/2009	7	389.84
2009	40	6/27/2009-7/3/2009	7	388.31
2009	41	7/4/2009-7/10/2009	7	369.55
2009	42	7/11/2009-7/17/2009	7	416.17
2009	43	7/18/2009-7/24/2009	7	388.50
2009	44	7/25/2009-7/31/2009	7	391.37
2009	45	8/1/2009-8/7/2009	7	406.62
2009	46	8/8/2009-8/14/2009	7	417.73

2009	47	8/15/2009-8/21/2009	7	407.71
2009	48	8/22/2009-8/28/2009	7	407.68
2009	49	8/29/2009-9/4/2009	7	418.49
2009	50	9/5/2009-9/11/2009	7	478.48
2009	51	9/12/2009-9/18/2009	7	452.56
2009	52	9/19/2009-9/25/2009	7	436.30
2009	53	9/26/2009-9/30/2009	5	

RESPONSE OF POSTAL SERVICE WITNESS NERI
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 7:

Witness Neri demonstrates the calculation of the net savings in mail processing workhours for a 5-day delivery environment in library reference USPS-LR-N2010-1/5 and an accompanying workbook entitled:"Mail_processing_background_3_30_10.xls". The following separate analyses are conducted:

- 2-week Columbus Day Holiday Analysis for shape-based outgoing operations;
- 6-month Saturday workhours savings analysis for 15 operational groups;
- 4-week Monday–Friday trend analysis for regions and Operation 010 only;
- 4-week Monday vs. Saturday productivity analysis for 6 operational groups;
- 6-month PQ 1&2 vs. PQ 3&4 analysis to calculate the 1.88 second half of the fiscal year mail volume discount factor; and
- P.O. Box addressed mail volume destined for Saturday delivery analysis for a single Friday (Saturday morning) in October.

In order to verify and test the robustness of these results, please provide daily MODS volumes and workhours for the same operations at the same sites used in the analyses for FY 2006 through FY 2009.

RESPONSE:

The requested data is contained in library reference USPS-LR-N2010-1/NP9, which is being filed under seal with an application for non-public treatment. The eight data files included in the library reference are summarized below:

- ChIR6_7_Columbus_Holiday.txt – This data is provided for the 2-week Columbus Day Holiday Analysis. Data was pulled from the Monday and Tuesday for the four Columbus Day holiday weeks and the same for the weeks prior to the holiday.

- ChIR6_7_Sat_Save_OPN_Groups.txt – This is part 1 of the data extract for the 6-month Saturday workhours savings analysis. Data was pulled for each Saturday in the four years. This represents the first 7 of the 15 operational groups. The data is grouped by the

groups as noted in the spreadsheet and is only from those offices represented.

- ChIR6_7_Sat_Save_Dist_Groups.txt – This is part 2 of the data extract for the 6-month Saturday workhours savings analysis. Data was pulled for each Saturday in the four years. This represents groups 8 through 13 of the 15 operational groups. The data is grouped by the groups as noted in the spreadsheet and is only from those offices represented.

- ChIR6_7_Sat_Save_Supv.txt – This is part 3 of the data extract for the 6-month Saturday workhours savings analysis. Data was pulled for each Saturday in the four years. This represents the 14th of the 15 operational groups. The data is grouped by the groups as noted in the spreadsheet and is only from those offices represented.

- ChIR6_7_Sat_Save_LDC18.txt – This is part 4 of the 6-month Saturday workhours savings analysis. Data was pulled for each Saturday in the four years. This represents the 15th of the 15 operational groups. The data is grouped by the groups as noted in the spreadsheet and is only from those offices represented.

- ChIR6_7_010_Trend.txt – This is the data extract for the Monday—Friday trend analysis for Operation 010. Data was pulled for all Mondays through Fridays in the four years and only for Operation 010. Area names are included to match the spreadsheet.

- ChIR6_7_Mon_vs_Sat_Prod.txt – This is the data extract for the Monday vs. Saturday productivity analysis. Data was pulled for each Monday and Saturday in the four years. The data is grouped by the six operational groups as shown in the spreadsheet.

- ChIR6_7_Discount_Factor.txt – This is the data extract for the 6-month PQ 1&2 vs. PQ 3&4 analysis. Data was pulled for each day in the four years and for all operations in Function 1.

There is no data extract in response to the last analysis requested in Question 7 – P.O. Box addressed mail volume destined for Saturday delivery for a single Friday in October – because this analysis was not predicated on any MODS data. Nonetheless, similar data will be provided in response to Question 4 of Chairman's Information Request No. 7.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 8:

Please consider the following hypothetical scenario. Assume for a given time period (t) that there are T_i number of truck trips for the "i^{th}" type of transportation under a six day delivery environment. Suppose that excess capacity in the system exists for that type of transportation, such that a lower T_i' number of trips would be needed at full capacity under the same environment and volume level. The Postal Service commits to eliminate excess capacity and, therefore, reduce the number of truck trips for that type of transportation by $T_i - T_i'$ and bank the related savings. Separately, the Service also decides to eliminate Saturday delivery. With no excess capacity, the resulting number of truck trips with five day delivery is T_i'' where $T_i'' < T_i'$. Therefore the total reduction in the number of truck trips from both projects is:

$$T_i - T_i'' = (T_i - T_i') + (T_i' - T_i''). \quad (1)$$

Because trip savings are yielded from both projects, please state whether the total savings $T_i - T_i''$ should be considered: (a) joint to both projects and unattributable to each; (b) divisible to each project according to the two component terms shown on the right hand side of (1); or (c) divisible to each project according to some other method.

RESPONSE:

The question appears to be equating excess capacity in the highway transportation network with empty space on the highway transportation network. The two are not necessarily the same. A highway transportation network can be correctly sized and still have empty space. This can occur, for example, if daily volumes to be transported fluctuate by the day of the week or the day of the month. In general, it is cheaper to set the cubic capacity for the "heaviest" day and then have empty space on other days than it is to adjust the cubic capacity on a daily basis. In addition, daily volumes are not known with certainty, so to prevent service failures some empty space is incorporated in a right-sized network.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

The hypothetical presented in this question presupposes two changes in network capacity, but does not identify the timing of the two hypothetical changes. Yet, the timing is important in sorting which cost savings goes to which cause. To make this point concrete, consider the following hypothetical example. A postal service currently has a three-day network of which the middle day is the heaviest of the week. The network is thus sized for that day. In addition, there is some variation in that day's volume, so the postal service also includes a cushion, setting the average utilization on the heaviest day at 80 percent of capacity. Finally suppose that the cost of a unit of capacity is $1.50 and that the postal network runs 52 weeks per year with each of the three days being served each week. The total cost and utilization for that transportation network is given below:

Three Day Network -- Original Size

	Day 1	Day 2	Day 3	Total
Capacity	100	100	100	300
Avg. Used Capacity	50	80	30	160
Cost	$7,800	$7,800	$7,800	$23,400

Now consider the two cost reduction programs posed in the hypothetical scenario given in the question. The postal service is considering reducing the number of days of service from three to two and it is considering reducing the size of the network so that capacity utilization on the heaviest day rises to 88.9 percent. As we will see, the total cost savings from these two cost-saving strategies is $9,360 but the apportionment between the two programs depends upon which is done first. For example, suppose that the postal service first

decides to move to two-day delivery. The size of the network stays the same but costs are reduced due to the reduction in service. As shown below, the cost of the network falls to $15,600, a savings of $7,800.

Two Day Network - Original Size

	Day 1	Day 2	Day 3	Total
Capacity	100	100	0	200
Avg. Used Capacity	80	80	0	160
Cost	$7,800	$7,800	$0	$15,600

Now suppose that the postal service downsizes to reach 88.9% average capacity utilization on the heaviest day. That is done by reducing capacity from 100 to 90. The total cost of operating the downsized network is $14,040, for a cost savings of $1,560. Together the two programs yield a cost saving of $9,360.

Now consider the opposite ordering, if the downsizing comes first, the postal service will be operating a three-day network with an average capacity utilization of 88.9% on the heaviest day at a cost of $21,060. This generates a cost saving of $2,340.

Three Day Network -- Down Sized

	Day 1	Day 2	Day 3	Total
Capacity	90	90	90	270
Avg. Used Capacity	50	80	30	160
Cost	$7,020	$7,020	$7,020	$21,060

The postal service now moves to two day-delivery in the down sized network. As shown above, this two-day network costs $14,040 for a cost saving

of $7,020. For convenience, the two results are summarized below.

Two Day First Then Downsize

Five Day Savings	$7,800
Downsize Savings	$1,560
Total	$9,360

Downsize First Then Two Day

Downsize Savings	$2,340
Five Day Savings	$7,020
Total	$9,360

This example shows how the assignment of the cost savings depends upon the order in which the changes take place. Of course, what matters for the hypothetical postal service is the total cost savings, which is the same regardless of the ordering.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 9:

In response to question 2 of CHIR No. 3, witness Bradley states that traditional volume variability analysis to model the cost effects of eliminating Saturday delivery suffers from a methodological weakness in that the traditional analysis focuses on cost effects that occur at the margin, rather than cost effects of large changes in volume that require network reconfiguration. As corroboration for this view, he cites the Commission's comments at pages 128-29 of its Report on Universal Postal Service and the Postal Monopoly, issued December 19, 2008. In the pages cited, the Commission assumes that changing the number of delivery days would shift enough volume to require "a basic reconfiguration of the delivery function." According to the Postal Service, however, eliminating Saturday delivery will not require reconfiguration of the delivery function. USPS-T-6 at 12-13. It asserts that the number of routes served by a given delivery unit on remaining delivery days will not change, and that volume peaks will be successfully mitigated using an array of short-run techniques such as use of flexible employees, overtime, and delivery deferral. *See* USPS-T-3 at 4, 11, 16 and USPS-LR-N2010-1/3 at 4. The Postal Service asserts that substantial reconfiguration of the transportation network to handle volume peaks will not be required, since no additional trips will be needed on remaining delivery days in either the purchased transportation or VSD networks. USPS-T-6 at 41. Substantial reconfiguration of the mail processing network will not be required, since no new mail processing operations or sort schemes will be needed on remaining delivery days. USPS-T-7 at 14-15. If the Postal Service views 5-day delivery as a sustained mode of operation, and if the Postal Service does not expect to make substantial changes to its mail processing, transportation, or delivery networks to deal with day-of-the-week volume peaks, what remaining obstacles would there be to applying volume variability (marginal) analysis to model the cost effect of within-week fluctuations in volume?

RESPONSE:

In order to best answer the question, it is important to attempt to be clear on what is being proposed in terms of the "volume variability" or "marginal" approach. The traditional usage of these terms is to refer to the change in total cost associated with a sustained change in national annual originating volume. I think all would now agree that this traditional approach to "volume variability" analysis may not be the best way to analyze the cost savings from moving to

five-day delivery because such a shift is much more of an operational change than an annual volume change. Broadly speaking, there is no change in national originating volume, suggesting, in the traditional approach, that there are no changes in cost. In addition, the traditional approach to volume variability holds everything but volume constant. That means the traditional approach is holding things like the number of delivery points or the number of days of delivery constant. This last assumption is obviously violated when analyzing a shift to five-day delivery.

However, my understanding of the proposed "volume variability" approach for city carriers, which has evolved through a series of Chairman's Information Requests, is that it is something different than the traditional approach. As I understand this newly proposed approach, it amounts to suggesting that one could measure the change in daily cost as a function of the change in the daily amount of a cost driver. For example, in city carriers, the daily cost driver is mail delivered on city routes (which is quite different from originating volume) and the daily cost is the labor cost for city carrier street or office time. This approach requires new models across the functions and, quite likely, new and different "variabilities." The various Chairman's Information Requests have explored how these new models for city carrier costs could be specified and estimated.

Even with respect to this new approach, though, some concerns remain. My understanding of the admonition from the Postal Regulatory Commission cited in the question is that studies of the cost savings from five-day delivery

should at least allow for the possibility that there will be important operational changes in response to the proposed service change. Therefore, the methodology laid out in my testimony is sufficiently general so that it is consistent with whatever degree of network reconfiguration the Postal Service is required to perform in moving to five-day delivery. Because of its structure, this level of generality may not hold for the marginal approach and it might miss some of the operational changes. For example, it is not clear how the marginal approach would embody each the four different types of operational changes that I outlined in my testimony:[1]

> In general, four types of operational responses should be considered. The first type is analysis of which operations would be eliminated or curtailed on Saturday as a result of eliminating of regular delivery service on that day. The second type is analysis of the structure of operations required for those services, like Express Mail Delivery, that continue to be provided. The third type is analysis of the operations on the other days of the week that could be influence by the migration of mail from Saturday to those days. The fourth type is a change in the consumption of indirect resources such as supervisors, vehicles, or buildings. Each of the previous three types of operational changes could affect not only direct labor costs but also indirect costs.

The first type of analysis was attempted, for the most part, by the USO studies by IBM and GMU cited in my testimony. There was a general recognition that the institutional labor costs associated with Saturday delivery would be saved. However, it is not clear how the proposed volume variability approach would capture this effect. An example of the second type of analysis is the cost

[1] See, "Direct Testimony Michael D. Bradley on Behalf of the United States Postal Service," Docket No. N2010-1, USPS-T-6 at 7.

associated with continuing Saturday Express Mail delivery. Again, the proposed volume variability approach is silent on this cost effect even though it is highly unlikely that the FY09 average Express Mail city carrier volume variable cost per piece would apply to Saturday in a five-day environment.

The third type of analysis is what the new proposed volume variability analysis is designed to capture, as I understand it. It is an attempt to measure how costs will rise on the other days of the week from the shift in volume. Even here, however, concern remains about how well the existing models capture the impact in a five-day environment. I think this is what the Commission was getting at when it stated:

> This calls for a very different model—one that concerns itself with major changes in total workload and how the processing and delivery functions would be reorganized to meet them. Delivery activities that are fixed over infinitely small changes in volume may not remain fixed in the new environment. Delivery activities that vary linearly over very small ranges of volume may become curvilinear in the new environment, and may increase or decrease at the margin.

The fourth type of analysis on indirect costs would also likely need to go beyond the proposed new volume variability analysis. The proposed approach does not address how indirect costs effects would be captured without an operational analysis of the factors, like buildings, that cause those costs to arise. Finally, I would suggest that one could argue whether the question takes a somewhat limited view of what constitutes a "reconfiguration of the delivery function." While it is certainly true that the Postal Service operational experts expect to handle the move to five-day delivery without material changes in the number of routes in either city or rural delivery, it is also true that the shift to five-

day delivery does not imply "business as usual." The Postal Service is expecting to save nearly 50 million hours for city carriers and 18 million hours for rural carriers. This in itself might justify calling the reconfiguration of the delivery network "substantial." I think there is a credible alternative view (and perhaps what the Commission had in mind) that marginal costs are based on certain conditions, like arrival profiles, volume patterns across the days of the week, and seasonal variations in volume. In this view, shifting volumes from Saturday to Monday and other days of the week would represent a substantial operational shift even if the number of routes stayed the same.

RESPONSE OF POSTAL SERVICE WITNESS GRANHOLM
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 10:

In FY 2009, under its Carrier Optimal Routing (COR) initiative, the Postal Service undertook a comprehensive review of its delivery network and eliminated a substantial percentage of its city delivery carrier routes.

a. Please describe in detail the functions that the COR software performed and the data to which it was applied.

b. Please provide a copy of the COR software program with documentation and a copy of the dataset to which it was applied.

c. What role did the data and software used in the COR initiative play in the Postal Service's estimate of the savings from eliminating Saturday delivery?

RESPONSE:

a. The Postal Service did undertake a comprehensive review of its delivery network, but the Carrier Optimal Routing (COR) program was not part of the umbrella used for this effort. Rather, COR was the tool used to perform the individual route adjustments which allowed for the elimination of routes.

COR is designed to reduce workhours and fuel energy costs by creating optimized carrier delivery and travel paths in 5-Digit City Delivery Zones. The COR program designs compact, contiguous and safe city delivery routes utilizing specifically designed sets of algorithms that incorporate USPS rules and regulations. It also decreases unnecessary travel and reduces unnecessary park points and relays, thus reducing fuel consumption.

COR has been utilized in city delivery zones nationwide since 2005. COR is used as a tool in the route adjustment process, but was not utilized in a comprehensive review of the postal delivery network.

COR is able to reduce unnecessary travel when creating routes and carrier Lines of Travel (LOT) through a series of algorithmic functions and menu options. The algorithms are designed to utilize selected defaults that encourage right-hand turns as the optimal option and discourage left-hand turns and U-turns. COR minimizes the number of intersections that are traversed and avoids unnecessary turns through on-coming traffic. The COR program also provides user input and program options that allow certain delivery types to be delivered at specific times during the day when travel patterns and lines of travel are created. This allows particular delivery categories, such as Business routes, to avoid delivering in congested areas during times of high traffic volume cycles. The COR program presents options that allow the users to modify travel paths to customize delivery for specific delivery routes and zones.

b. As stated above, COR was not utilized to compile the comprehensive review of the delivery network. Rather, it utilized sets of data unique to each ZIP Code for adjusting routes in each office. The data reside at each of the 74 districts in their COR computers. COR is resident on a dedicated computer in each district. COR software can be distributed, but it is licensed and the coding for the algorithms is proprietary. Due to its proprietary nature and the complexity of the software, it may be more appropriate to provide a demonstration of COR to the PRC.

Specifically, the COR databases are developed from data that is initially provided from a graphic database company, NAVTEQ. The Postal Service purchased the last database from NAVTEQ in January, 2009. By 5-Digit Zip

Code, the data is imported and then physically validated and an Alternate Address Table (AAT) is developed. The AAT is necessary in order to provide USPS an opportunity to deliver to the actual delivery locations instead of the addresses assigned by the municipalities. After validation and corrections to the graphic database the Postal Service must have a complete picture of all delivery locations and where the mail is physically delivered. To complete the validation process, route data is imported from the Delivery Operations Information System (DOIS), which includes the actual carrier street performance as well as additional AMS data including Sector/Segment information. The Postal Service also imports data from the DPS machines to utilize volumes in making the most accurate route adjustments once it begins adjusting routes.

c. The data and software used in COR played no role in the Postal Service's estimate of the savings from eliminating Saturday delivery. As noted above, COR is used at the ZIP code or route level to adjust assignments. It is not a macro model that one can use to look at the delivery network.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 11:

Please refer to the Response to CHIR No. 3, question 3. The response to section (b) of that question states that fixed in-office time per route would vary proportionately to the number of routes, if that fixed time were the same for each route. The response to (c) states that institutional time for the delivery unit would also vary by the number of routes.

a. Do these responses imply that all fixed in-office time, whether classified as fixed per route or institutional, varies proportionately with respect to the number of routes? If not, please explain.

b. If so, is there any distinction between institutional fixed and route fixed time? Please explain.

c. If the word "street" is substituted for "in-office" in (a) through (f) of question 3, would all the same responses apply, but now with respect to street time? If not, please explain.

RESPONSE:

a. No. Fixed office time is a "short-run" operational concept that refers to activities that an individual carrier performs each day there is delivery on his or her route and are independent of the amount of volume delivered. As explained in the previous response, if one assumes that the amount of fixed time per route is the same for all routes, then the total amount of fixed time is proportional to the number of routes. Institutional time, in contrast, is a long-run product costing concept and is defined as the difference between total office time and volume variable office time. To my knowledge, it is not measured on a route basis.

b. I am not familiar with the term "institutional fixed." It would appear to be a mixing of an operations term (fixed office time) and product costing term (institutional cost) and would appear to be mixing cost concepts measured at

different time horizons.

c. No. For example, one part of street time, called network travel time, is considered fixed with respect to a delivery unit's area of delivery and is not affected by changes in the number of routes in that delivery unit.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 12:

Please provide the file for the SAS program used to construct the translog model described in the response to question 9, CHIR No. 3.

RESPONSE:

A pdf version of the file was provided in the Appendix to the Question 9 Response. Please see the page entitled, "SAS Program Used to Estimate the Model and Calculate the Daily Elasticities." I thus assume that this request is for a different electronic version of the file; therefore, a Microsoft word version is included with this response. It is entitled CHIR.6.Q12.docx.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 13:

Please refer to the capacity variabilities by contract type shown on page 44 of USPS-T-6. Did the transportation cost analysis, described by witness Bradley in USPS-T-18, Docket No. R2000-1, include effects from any surface transportation excess capacity existing at the time the analysis was undertaken? If so, please explain how excess capacity effects were incorporated into the analysis.

RESPONSE:

Yes. Excess capacity, to the extent it exists, would be part of empty space. Empty space is treated in two ways in the transportation analysis. First, following Commission directive, empty space is treated as part of transportation capacity and is as volume variable as employed space. In other words, the Commission has specified that empty space is volume variable to the same degree as employed space and thus is part of the attributable cost basis. For example, the Commission has stated:[2]

> The Commission has found that capacity as a whole varies as volume changes. We recognize that the peaking patterns in the volume do result in unutilized capacity throughout the system. However, if volume (including the peak) increases, the Postal Service reacts by acquiring additional capacity, which will turn out to be a mixture of used and unused capacity.

Second, the cost of empty space is attributed to products through the use of the TRACS data. Information from TRACS is used to distribute attributable empty space costs to individual products. This also has been explained by the Commission:[3]

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[2] See PRC OP., R84-1, Vol.1 at 243.
[3] See PRC OP., R90-1, Vol.1 at III-161.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

From time to time, proposals have been made that the costs thought to be associated with this space should be treated as institutional. The problem is particularly difficult because the capacity not holding mail can be expected to change, even on one trip. On the many contracts that involve more than one stop, mail is loaded and unloaded at various facilities. Therefore, at some points the truck may be more full than at others. See Tr. 5/1538

With TRACS, all unused capacity is accounted for and distributed to the mail on the sampled vehicle.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 14:

Page 45 of USPS-T-6 presents the Postal Service's calculation for the annualized cost change for contract type "i" from eliminating a portion of Saturday and Sunday surface transportation as:

$\text{Cost Savings}_i = \varepsilon_i * [\%\Delta\text{CFM}] * \text{Baseline Cost}_i$
where:

Cost Savings_i = annualized cost savings for contract type
ε_i = capacity variability for contract type
$\%\Delta\text{CFM}$ = percent change in cubic feet-miles
Baseline Cost_i = annualized baseline cost for contract type i for either Saturday or Sunday.

The Postal Service uses this calculation to estimate surface transportation cost savings for Saturday and Sunday using the percent capacity reductions shown on page 42 and the capacity variabilities shown on page 44. Please consider the following extension to this calculation to estimate system level cost impacts from shifting Saturday and Sunday affected cubic feet-miles of transportation to week days. For any day t (including Saturday and Sunday) annualized cost savings from changing cubic feet-miles of transportation on that day by fraction $\Delta\text{CFM}_t/\text{CFM}_t$ is :

$$\text{Cost Savings}_t = \varepsilon_t * (\Delta\text{CFM}_t/\text{CFM}_t) * \text{Baseline Cost}_t$$

The formula applies at the contract type level, therefore the i subscript is dropped.

The total annualized effect can be determined by summing the daily effects across all days in the week. Therefore total annualized cost savings from redistributing cubic feet-miles of transportation among delivery days can be shown as:

$$\text{Total Cost Savings} = \sum \varepsilon_t * (\Delta\text{CFM}_t/\text{CFM}_t) * \text{Baseline Cost}_t$$

where the annualized daily cost savings are summed (from t = 1 to t = 7) to represent total cost savings. Next, assume a constant capacity variability (as with a constant elasticity model). Then, the last can be expressed as:

$$\text{Total Cost Savings} = \varepsilon * \text{Total Baseline Cost} * \sum (\Delta\text{CFM}_t/\text{CFM}_t) * (\text{Baseline Cost}_t/\text{Total Baseline Cost}), \quad (1)$$

where Total Baseline Cost = $\sum$ Baseline Cost_t. Also assume no loss of the cubic foot miles of transportation from the redistribution. Then $\sum\Delta\text{CFM}_t = 0$, or equivalently:

$$0 = \sum(\Delta CFM_t/CFM_t)*(CFM_t/CFM\ total), \qquad (2)$$

where CFM total = $\sum CFM_t$. Notice in this set-up, that if CFM_t/CFM total = Baseline $Cost_t$/Total Baseline Cost for each day, then net savings in transportation costs are zero when comparing (1) and (2) above. This happens because the added costs from redistributing CFM of transportation from weekends to weekdays exactly offsets the cost savings on Saturdays and Sundays (the absorption factor is zero). This would occur when cubic foot miles transported each day are the same. In that case, marginal costs for each day are the same, and therefore cost impacts must sum to zero. Therefore any net cost savings depends on daily CFM, from Monday through Friday, being greater than daily CFM for Saturday and Sunday.

Assuming zero excess capacity for surface transportation, please comment on the usefulness of the above approach for estimating systems savings of surface transportation costs in an analytically coherent structure. Also because the above technique yields a first order approximation of cost impacts, are other methods available that yield estimates of the cost impact that do not depend on point estimates of marginal costs? For example, knowing the capacity variabilities on page 44, can a constant elasticity model be calibrated to yield non-marginal estimates of cost impacts. If so, please explain or provide such a structure.

RESPONSE:

I believe that the method presented in USPS-T-6 already has the ability to embody the two goals set out in this question, analyzing cost savings under (1) a constant elasticity approach and (2) assuming there is no excess capacity. In fact, not only is the method presented in USPS-T-6 a "constant elasticity" approach as defined in this question, it is also able to incorporate the "zero excess capacity" assumption (by which I assume you mean zero empty space). To the extent that additional cubic foot-miles would need to be added on other days in response to moving Saturday's volumes to those days, the estimated reductions in CFM would be reduced. In the extreme assumption made in this question, that just as much moving capacity would need to be added other days

as is saved on Saturday and Sunday, then the percentage change in CFM would be zero and the cost savings would be zero, just as specified in the question. Thus, if the goal is to argue that the Postal Service would not have any transportation cost savings from moving to five-day delivery, one need only assume that there will be no savings in cubic foot-miles of transportation following that operational change. Of course, this could be a somewhat difficult assumption to justify in the face of material empty space on other days of the week.

Finally given that purchased highway contract costs are incurred on an annual basis, there would seem to be no advantage in moving to a daily model.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 15:

Page 42 of USPS-T-6 displays a table containing percent capacity reductions in surface transportation for Saturday and Sunday when eliminating Saturday delivery. Reductions are shown by contract type, and are defined in terms of cubic feet-miles. By contrast, in response to GCA/USPS-T5-5(a), witness Grossmann explains that the values shown in the table are percent reductions in the number of trips by contract type on Saturday and Sunday. Please reconcile these two different notions of transportation capacity and describe when one measure of capacity is preferred over the other to estimate transportation cost savings.

RESPONSE:

As I understand it, there is no difference in the notions of transportation capacity used by witness Grossmann and by me. As witness Grossman explained in his response to Chairman's Information Request No. 5, Question 6, he is assuming that the reduction in trips will be commensurate with the reduction in cubic foot-miles. That is, we both use cubic foot-miles as our measure of capacity, and changes in this measure are used by both of us in analyzing the network reconfiguration and the reduction in costs.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 16:

Please refer to pages 35 and 36 of USPS-T-6 and the table shown on page 44 of the same document. At the bottom of page 35, the annual Saturday cost for each route trip is stated as "the product of its route miles (RM), frequency (Freq) and its cost per mile". The table on page 44 shows the capacity variabilities for each contract type with capacity defined in terms of cubic feet-miles.

a. With respect to route trip costs, does the stated formula imply that Saturday (or Sunday) costs for each route trip are proportional to changes in the corresponding number of trips (the frequency variable)? If not, please explain.

b. Because all capacity variabilities shown in the table are less than 100 percent, does any percent decline in the frequency variable result in a percent decline in the corresponding cubic feet-miles that is greater? If not, please explain.

RESPONSE:

a. No. Calculating total annual baseline Saturday or Sunday costs (as those formulas do) does not require any change in the number of trips. The formulas show that to get the annual cost for a particular day of the week on a given route-trip, one takes the cost per trip (cost per mile times route miles) and multiplies that trip cost times the number of times that trip runs in a year. For example, suppose that the cost per mile for a trip was $1.00 and the trip ran a total of 100 miles. Then, the daily cost for the trip would be $100. If the trip ran for 52 Saturdays in a year, then the annual Saturday cost would be $5,200. Further, suppose that the route trip also ran Monday through Friday for 52 weeks in a year. Then, the total annual cost of the route trip is $100*6*52 = $31,200. The Saturday proportion of the annual cost for the route trip is then $5,200/$31,200, or 16.67 percent.

b. No. The capacity variabilities listed in the Table on page 44 measure the percentage change in cost associated with a given percentage change in cubic foot-miles. The capacity variabilities do not measure how total cubic foot-miles change as its individual components change.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO CHAIRMAN'S INFORMATION REQUEST NO. 6

QUESTION 18:

Please refer to the second page of the SAS program filed as Appendix to Response to CHIR No. 3, question 9. At the top of the second page, the following SAS code appears:

```
Data USPSD; Set USPS;
if HRS_OFC lt 10000 then delete;
```

a. Please confirm that the SAS Data set USPSD contains all observations in data set "USPS" less those observations where total office hours are less than the numeric value of 10000. If you cannot confirm, please explain.

b. Please confirm that the regression results presented as a response to question 9 were developed using data set USPSD. If you cannot confirm, please explain.

c. Were regression results developed using data set USPS? If so, please provide these results and any explanatory documentation.

RESPONSE:

a. Confirmed.

b. Confirmed.

c. No.