

USPS-T-6

BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON DC 20268-0001

Six -Day to Five-Day Street Delivery
And Related Service Change

Docket No. N2001-1

**DIRECT TESTIMONY OF
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ON BEHALF OF THE
UNITED STATES POSTAL SERVICE**

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AUTOBIOGRAPHICAL SKETCH

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5 My name is Michael D. Bradley and I am Professor of Economics at
6 George Washington University. I have been teaching economics there since
7 1982 and I have published many articles using both economic theory and
8 econometrics. Postal economics is one of my major areas of research and my
9 work on postal economics has been cited by researchers around the world. I
10 have presented my research at professional conferences and I have given invited
11 lectures at both universities and government agencies. I also have extensive
12 experience directing research as I have served as the primary or secondary
13 advisor on over fifty dissertations.

14 Beyond my academic work, I have extensive experience investigating
15 real-world economic problems, as I have served as a consultant to financial and
16 manufacturing corporations, trade associations, and government agencies.

17 I received a B.S. in economics with honors from the University of
18 Delaware and as an undergraduate was awarded Phi Beta Kappa, Phi Kappa Phi
19 and Omicron Delta Epsilon for academic achievement in the field of economics. I
20 earned a Ph.D. in economics from the University of North Carolina and as a
21 graduate student I was an Alumni Graduate Fellow. While being a professor, I
22 have won both academic and nonacademic awards, including the Richard D.
23 Irwin Distinguished Paper Award, the American Gear Manufacturers ADEC
24 Award, a Banneker Award and the Tractenberg Prize.

1 I have been studying postal economics for twenty-five years, and I have
2 participated in many Postal Rate Commission proceedings. I have studied and
3 presented testimony on the costs of all of the major areas of Postal Service
4 activity: retail, transportation, processing and delivery. In Docket No. R84-1, I
5 helped in the preparation of testimony about purchased transportation and in
6 Docket No. R87-1, I testified on behalf of the Postal Service concerning the costs
7 of purchased transportation. In Docket No. R90-1, I presented rebuttal testimony
8 in the area of city carrier load time costs. In the Docket No. R90-1 remand, I
9 presented testimony concerning the methods of city carrier costing.

10 I returned to transportation costing in Docket No. MC91-3. There, I
11 presented testimony on the existence of a distance taper in postal transportation
12 costs. In Docket No. R94-1, I presented both direct and rebuttal testimony on an
13 econometric model of access costs. More recently, in Docket R97-1, I presented
14 three pieces of testimony. I presented both direct and rebuttal testimony in the
15 area of mail processing costs. I also presented direct testimony on the costs of
16 purchased highway transportation. In Docket No. R2000-1, I again presented
17 three pieces of testimony. I presented direct testimony on the theory and
18 methods of calculating incremental cost, and I presented direct and rebuttal
19 testimony on the econometric estimation of purchased highway transportation
20 variabilities. In Docket No. R2001-1, I presented testimony on city carrier costs.
21 In Docket No. R2005-1, I presented three pieces of testimony. I presented direct
22 and rebuttal testimony in the area of city carrier costs and I presented direct
23 testimony that covered the analytical foundations of the attribution of both

1 purchased transportation costs and window service costs. Finally, in Docket No.
2 R2006-1, I again presented three pieces of testimony. I presented two pieces of
3 direct testimony, one on window service costs and one on transportation costs
4 and piece of rebuttal testimony on window service costs. In addition to my
5 appearances before the Commission, I presented testimony to the President's
6 Commission on the United States Postal Service, The Canada Post Mandate
7 Review, and the NAFTA Tribunal on Claims by United Parcel Service against the
8 Government of Canada.

9 Of particular relevance to this testimony, I recently provided the analytical
10 basis and directed the research for a Postal Service study on the quantitative
11 aspects of the its universal service obligation. This study including estimating the
12 Postal Service's delivery cost savings from moving to five-day delivery.

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PURPOSE AND SCOPE

The purposes of my testimony are to present the methodology that the Postal Service is using to calculate the cost savings created by moving to five-day delivery and to present estimates of the cost savings in the areas of city carrier delivery, rural carrier delivery, and transportation.

ASSOCIATED LIBRARY REFERENCES

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I am sponsoring the following Library References which are associated with this testimony:

USPS-LR- N2010-1/6 Calculation of City and Rural Carrier Cost Savings

USPS-LR- N2010-1/7 Calculation of Air Transportation Cost Savings (Public Version)

USPS-LR- N2010-1/8 Purchased Highway Transportation Costs by Day of Week

USPS-LR- N2010-1/9 Highway Transportation Costs Savings

Non-Public Library Reference

USPS-LR-N2010-1/NP1 Calculation of Air Transportation Cost Savings (Non-Public Version)

1 **I. DETERMINING THE APPROPRIATE METHODOLOGY FOR**
2 **MEASURING THE COST SAVINGS CAUSED BY CEASING**
3 **SATURDAY DELIVERY.**

4
5 **A. Articulating the Task**

6
7 The calculation of the cost savings created by elimination of regular
8 Saturday delivery is an important part of an overall analysis of such a service
9 change. The essence of this calculation is anticipating the reduction in cost that
10 could be accomplished through reducing regular delivery to five days.¹

11 Ultimately, the cost response depends upon the operational response of
12 the Postal Service to the service change. This means that the preferred
13 approach to estimating the cost savings would have as its foundation a detailed
14 operational analysis of the service change. Once the set of operational changes
15 is established, the cost implications can then be calculated.

16 Cessation of Saturday delivery eliminates the need from a number of
17 transportation, mail processing, and delivery activities that previously took place
18 on Saturday. However, the volume of mail to be delivered is not directly
19 changed. Thus, some of the activities that formerly took place on Saturday will
20 now have to be accomplished on the over five delivery days. An operational
21 analysis must consider not only the changes that will take place on Saturday but
22 also the changes that will take place on the other days of the week.

¹ The term “five-day” delivery is literally open-ended, in the sense that it permits elimination of service on any of the six current delivery days. However, the Postal Service has determined that Saturday will be the day on which service is eliminated, so for the purposes of this testimony, the phrase “five-day” delivery should be interpreted as the situation in which regular delivery is provided on a Monday through Friday basis.

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2 **B. Review of Previous Work**
3

4 Previous estimates of the cost savings generated by moving to five-day
5 delivery have been sponsored by both the Postal Service and the Postal
6 Regulatory Commission (PRC). Both government agencies sponsored this work
7 as part of a larger examination of the cost of the Postal Service's universal
8 service obligation.

9 The PRC work was done by a group of consultants assembled by the
10 School of Public Policy at George Mason University, and the Postal Service work
11 was done by IBM Global Business Services.² Although there were some
12 differences in implementation, both studies approached the calculation of the
13 cost savings from five-day delivery in the same general way. First, both studies
14 focused on the cost of delivery. Second, both studies started with the Postal
15 Service's Cost and Revenue Analysis model which identifies costs as being
16 either "attributable" (volume related) or "institutional."

17 Both the IBM and the GMU studies employed the basic assumption that
18 "institutional" costs for city and rural carriers are related to the number of days of
19 delivery and not volume. Thus, both studies assumed that moving to five-day
20 delivery would allow the Postal Service to reduce the institutional costs in
21 delivery by approximately one sixth.

² See, "Study on Universal Postal Service and The Postal Monopoly," George Mason University School of Public Policy, November 2008 and "Quantitative Analysis of the Universal Service Obligation," IBM Global Business Services, October 8, 2008. I provided the analytical foundations and directed the research for the IBM study.

1 The studies did differ, however, on their approach to attributable costs.
2 The GMU study assumed no change in attributable cost. The IBM study, in
3 contrast, allowed for the possibility that delivery costs are incurred nonlinearly
4 due to economies of density, and thus allowed for the possibility that some
5 attributable costs might also be saved as the Postal Service increases its
6 average volume per delivery point. Finally, both approaches used the CRA's
7 “piggyback” methodology to calculate the impact on direct costs.³

8 Given the similarity in methods, it is not surprising that the two studies
9 provided delivery cost savings estimates in the same neighborhood, ranging from
10 \$2.5b to \$3.5b, with the primary difference arising from alternative assumptions
11 about the amount of attributable cost that would be transferred from Saturday to
12 the other days of the week.

13 While these studies were very valuable and should be commended for
14 providing important initial estimates of the cost savings from five-day delivery,
15 they both suffer from a methodological weakness. Specifically, they both analyze
16 the reduction in cost from moving to five-day delivery as if it were a “volume-
17 variability” problem. In fact, just the opposite is true. Volume is not changing in
18 this cost-saving analysis; what is changing is the operational procedures through
19 which that volume is delivered.⁴

³ The GMU analysis also included a separate, but related, analysis of potential volume, revenue and contribution losses associated with a reduction in the number of delivery days. When this magnitude is subtracted from the cost savings, a measure of the net income or net profit effect of moving to 5-day delivery is produced.

⁴ It is quite possible, and even likely, that movement to five-day delivery could have an effect on the volume of mail. If this volume change is anticipated to be

1 This suggests that a somewhat different approach should be followed, one
2 that focuses on the operational reaction to the service change. This important
3 point was recognized by the PRC in its USO report:⁵

4 What has not been explicitly recognized by either
5 GMU or IBM is that models used to find the volume
6 variability of individual products for pricing purposes
7 solve a different problem than the one posed by
8 changing the frequency of delivery throughout the
9 network. The first modeling approach is designed to
10 measure the effect on costs of adding the next piece
11 of volume. This is measured to provide the basis for
12 an economically efficient price signal that can guide
13 the buying decision of the mailer. Changing the
14 frequency of delivery throughout the network involves
15 not just huge increments of volume, but also a basic
16 reconfiguring of the delivery function to deal with huge
17 increment of volume.

18 This calls for a very different model—one that
19 concerns itself with major changes in total workload
20 and how the processing and delivery functions would
21 be reorganized to meet them. Delivery activities that
22 are fixed over infinitely small changes in volume may
23 not remain fixed in the new environment. Delivery
24 activities that vary linearly over very small ranges of
25 volume may become curvilinear in the new
26 environment, and may increase or decrease at the
27 margin.
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material, a subsequent, volume variability analysis could be done within the five-day environment. It is my understanding that the Postal Service anticipates a very small change in volume as a result of moving to five-day delivery, so no subsequent analysis is required. If such an analysis were performed, it would add to the estimated cost savings because it would measure the reduction in cost associated with the reduction in volume. This is one example of how the Postal Service's estimated cost savings could be considered conservative.

⁵ See, "Report on Universal Postal Service and the Postal Monopoly," Postal Regulatory Commission, December 19, 2008 at 128-129.

1 This testimony presents a methodology, followed by the Postal Service in
2 this docket, which attempts to follow the PRC's admonition. While this new
3 methodology relies upon the general cost structure of postal costs developed by
4 Postal Service and the Postal Regulatory Commission (as embodied in the
5 Annual Compliance Determinations), it does not rely upon the volume variability
6 analysis that underlies it. Rather, it recognizes that movement to five-day
7 delivery is an operational change, not a volume change. It thus relies upon a
8 detailed operational analysis of how Postal Service operations would react to
9 five-day delivery. The methodology then specifies construction of a model
10 specifically to calculate the cost implications of the operational changes.

11

12 **C. Specifying the Methodology**

13 Estimating the cost savings associated with eliminating Saturday delivery
14 is not a direct cost measurement. Because that environment does not yet exist,
15 no data exist for directly measuring costs in a five-day delivery environment. This
16 means that estimation of the cost savings is necessarily a forward-looking
17 exercise that requires anticipation of changes in operations.

18 As the PRC has pointed out, the traditional attributable cost approach will
19 not be sufficient to identify the changes in cost. Instead, a detailed operational
20 analysis of the anticipated response to the service change is required. This
21 analysis will determine what the five-day operating environment would look like
22 and will form the basis for the cost savings calculations.

23

24

1 The methodology for estimating the cost savings has three steps:
2
3

4 1. Establish the appropriate baseline for the six-day delivery
5 environment.
6

7 Because costs in a five-day environment cannot be directly observed, the
8 cost savings associated with that service change must be found by examining
9 the change in operations and costs that it causes. This means that analysis of
10 the cost impacts of the operational changes requires a baseline cost model that
11 reflects the current six-day environment. In addition, the cost model must be
12 sufficiently disaggregated to allow separate investigation of the changes in the
13 relevant functional areas like city carrier deliver, mail processing, or
14 transportation.

15 Fortunately, the Postal Service and Postal Rate Commission have already
16 developed such model. It is the cost model that is submitted by the Postal
17 Service and finalized by the Postal Rate Commission as part of the Annual
18 Compliance Review (ACR). The ACR model for FY2009 is the most recent
19 detailed reflection of costs caused by the provision of the entire menus of the
20 Postal Service's products in a six-day delivery environment. It also has a
21 detailed structure that includes identification of costs by separate functional
22 activities and it covers all Postal Service operations. The appropriate baseline is
23 thus comprised of those parts of the ACR model that cover the operations
24 affected by a change to five-day delivery.

1
2
3 2. Review the operational response to five-day delivery to
4 identify possible cost implications of the operational
5 changes.
6

7 While the logical place to begin an analysis of cost savings from reduced
8 number of delivery days is in the delivery function, a switch to five-day delivery
9 potentially has a cost impact in other places in the Postal Service's operations
10 besides city and rural delivery. Calculation of the expected cost impact thus
11 requires a review of the operational response in areas like mail processing,
12 transportation, and post office operations.

13 In general, four types of operational responses should be considered. The
14 first type is analysis of which operations would be eliminated or curtailed on
15 Saturday as a result of eliminating regular delivery service on that day. The
16 second type is analysis of the structure of operations required for those services,
17 like Express Mail Delivery, that continue to be provided. The third type is
18 analysis of the operations on the other days of the week that could be influenced
19 by the migration of mail from Saturday to those days. The fourth type is a change
20 in the consumption of indirect resources such as supervisors, vehicles, or
21 buildings caused by the change in operations. Each of the previous three types
22 of operational changes could affect not only direct labor costs but also indirect
23 costs and such changes should be included in the overall cost savings.

24 Each of these types of operational changes could have cost implications.
25 For example, elimination or curtailment of operations on Saturday would reduce

1 costs on Saturday, whereas adding resources to existing operations on other
2 days to handle the migrated mail would increase costs on those days.

3
4 3. Calculate the cost impacts of the operational changes and
5 sum them.
6

7 The final step in calculating the cost savings is to determine the cost
8 implications of each of the operational changes. In the case of direct labor
9 changes, this step involves determining the number of hours saved or added and
10 determining the appropriate wage to multiply against the hour savings. In the
11 case of direct non-labor cost this involves determining the amount of the non-
12 labor resource saved or added and the resulting change in the cost of the
13 resource. Finally, in the case of indirect costs, determining the cost implications
14 means either linking the cost change to the underlying direct cost or determining
15 the amount of the resource saved.

16 Depending upon the nature of the operational change, the cost savings
17 can be found for each activity in one of two ways. First, the savings may be
18 found by directly measuring the change in cost. Second, they may be found by
19 calculating the five-day cost and then subtracting that from the corresponding six-
20 day baseline cost. The overall cost saving is just the sum of the cost savings in
21 the various cost components.

22 **II. ESTIMATING THE CITY CARRIER DELIVERY COST SAVINGS FROM**
23 **MOVING TO FIVE-DAY DELIVERY.**
24

25 In this section, I apply the cost saving calculation methodology to city carrier
26 delivery costs to estimate the five-day costs savings.

1

A. Establish the City Carrier Baseline for the Six-Day Delivery Environment.

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The baselines upon which the total costs and total hours for city carrier delivery are based are the relevant sections of the FY2009 ACR model.

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However, the costs and hours in the ACR model are at a higher level of

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aggregation than is required for determining the cost implications of the operation

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response. Specifically, the ACR does not differentiate costs by day of the week.

10

Therefore, additional analysis is required for constructing a breakout of hours

11

sufficiently detailed to match the operational analysis.

12

Specifically, the total FY2009 hours are disaggregated to street and office

13

activities and to days of the week through use of the FY2009 Delivery Operation

14

Information System (DOIS) data. In other words, the total FY2009 city carrier

15

hours are split to the city carrier office and street activities, by day of week,

16

through use of the corresponding FY2009 DOIS proportions.

17

Development of the baseline costs and hours for city carriers starts with

18

six FY2009 ACR components dealing with city carriers.

19

20

FY2009 Components Containing City Carrier Costs

<i>Component Name</i>	In-Office Direct Labor	In-Office Support Overhead	In-Office Support Other	Network Travel	Delivery Activities	Delivery Support
<i>Component Number</i>	(43)	(44)	(604)	(54)	(46)	(280)
<i>Cost Segment</i>	6.1	6.2.2	6.2.3	7.1	7.2	7.3
<i>6-Day Direct Costs</i>	\$3,298,256	\$637,600	\$599,801	\$1,383,270	\$8,592,860	\$1,276,502

Source: FY2009 ACR. All figures in thousands.

21

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1
2 The baseline hours also come from FY2009 ACR, and total city carrier work
3 hours were 394,939,572.⁶ The proportions of hours from DOIS are used to
4 distribute these costs to office and street by day of week. The FY2009
5 proportions from DOIS are:⁷

6
7

FY2009 DOIS Hour Proportions

	Office	Street	Total
M-F	22.6%	61.4%	84.0%
Sat.	4.4%	11.6%	16.0%

8
9 *Source: Library Reference USPS-LR-N2010-1/6.*

10 Applying the DOIS proportions to the total FY2009 hours yields the breakout of
11 hours by day of week and office/street:

12
13

FY 2009 Hours By Day of Week and Function

	Office	Street
M-F	89,412,151	242,515,568
Sat.	17,287,323	45,724,530

14
15 *Source: Library Reference USPS-LR-N2010-1/6.*

⁶ See, "Direct Testimony Jeffery L. Colvin on Behalf of the United States Postal Service," Docket No. N2010-1, USPS-T-7 at Attachment 1.

⁷ These proportions are calculated in Library Reference USPS-LR- N2010-1/6.

1 Finally, the office and street hours are distributed to the cost components listed
 2 above on the basis of their relative sizes. In this way, a correspondence between
 3 the accrued costs and accrued hours is made. The proportions of accrued costs
 4 by cost component are used separately for office hours and street hours to
 5 produce the required hours' breakout. These breakouts serve as the baseline for
 6 estimating the impact of operational changes on city carrier hours.

7

Calculating Hours Under 6 Day Delivery -- ACR Model Structure

	In-Office Direct Labor	In-Office Support Overhead	In-Office Support Other	Network Travel	Delivery Activities	Delivery Support
Six Day M-F	65,019,058	12,569,113	11,823,980	29,812,090	185,192,442	27,511,037
Six Day Sat.	12,571,059	2,430,165	2,286,098	5,620,851	34,916,675	5,187,004
Total	77,590,117	14,999,279	14,110,078	35,432,940	220,109,117	32,698,041

8 *Source: Library Reference USPS-LR-N2010-1/6.*

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10 **B. Review the City Carrier Operational Response to Five-Day**
 11 **Delivery to Identify Possible Cost Implications of the**
 12 **Operational Changes.**

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⁸ For a detailed discussion of these operational responses, See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 and Library Reference USPS-LR-N2010-1/3.

1 general points from the operational analysis that are relevant. First, operations
2 experts anticipate that there will be no changes in the number of city routes,
3 vehicles, or facilities. The cessation of Saturday delivery means that city carriers
4 will not be casing or delivering mail on their regular routes on Saturdays. But
5 because the volume being delivered has not changed and because the same
6 routes must be served Monday through Friday, operations experts expect the
7 number of city routes to be unaffected by elimination of regular Saturday
8 delivery.⁹ Second, the only delivery activity taking place on Saturday is the
9 delivery of Express Mail pieces. These operations will follow the current
10 procedures for Sunday delivery of Express Mail and will be performed by part-
11 time carriers.¹⁰

12 In the view of operations experts, there are two types of office time, “Fixed
13 Office Time” (FOT) and “Variable Office Time” (VOT). Fixed office time includes
14 activities that are done on a daily basis on each route, regardless of the amount
15 of volume delivered.¹¹ These activities include things like inspecting the vehicle
16 or picking up keys. Variable office time includes the time require to case and
17 prepare mail for street delivery and is closely linked to the amount of volume to
18 be delivered.

19 Note that while these concepts have names that are similar to volume
20 variable and institutional office times included in the ACR model, they are very

⁹ See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 at 4.

¹⁰ Id., at 6.

¹¹ See, Library Reference USPS-LR-N2010-1/3 at 2.

1 different concepts. FOT captures the amount of time on an individual route that
2 does not vary with changes in daily volume. Institutional office time captures the
3 amount of time in an entire delivery unit that does not change with sustained
4 changes in volume over a three-year to five-year period. The most important
5 way the city carrier delivery network adjusts to changes in volume is through
6 route reconfiguration -- changes in the number of routes. This means that certain
7 amounts of time that are fixed on individual routes will vary with volume through
8 adjustment in the number of routes.

9 If one is attempting to measure the long-run response in carrier office time
10 to a change in volume, then “volume variable” and “institutional” costs are the
11 right concepts to use. In contrast, if one is attempting to measure the effect of a
12 change in daily service, for the same volume, then “FOT” and “VOT” are the right
13 concepts to use. Saturday’s FOT will be saved by elimination of Saturday
14 delivery. These are activities that are done once a delivery day, regardless of
15 volume.¹²

16 The migration of mail from Saturday to other days will not cause any
17 additional FOT on other days. This is not true for VOT. The mail that would
18 have had to been cased and/or prepared on Saturday will now be cased and/or
19 prepared on other days. If there are no productivity gains from increases in the
20 amount of mail case and/or prepared on a given day, then any VOT saved on

¹² See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 at 9 and Library Reference USPS-LR-N2010-1/3 at 3.

1 Saturday will be added on other days.¹³ Operational analysis of Saturday office
2 time in late FY2009 shows that, on average, city carriers spend 120 minutes in
3 the office. Of that, 41 minutes (or 34 percent) is FOT and 79 minutes (or 66
4 percent) is VOT.¹⁴

5 The operational and ACR model approaches to city carrier office time are
6 not as dissimilar as they might appear. The ACR model breaks office time into
7 two categories, Component 6.1, In-Office Direct Labor and 6.2, In-Office
8 Support.¹⁵ In-Office Direct Labor contains the time needed to case mail and
9 prepare it for delivery and most of these activities are considered directly volume
10 variable.¹⁶

11 The office time spent in preparing mail for delivery is directly related
12 to the number of pieces handled. Therefore, the operation is
13 considered fully variable with volume, and the corresponding costs
14 are classified as fully variable.

15
16 In contrast, In-Office Support is considered indirectly volume variable.¹⁷

17 Certain carrier office activities, such as obtaining keys and clocking in
18 and out, are unrelated to mail volume on any one route but are
19 considered as indirectly volume variable in part as described under
20 6.2 below. [Emphasis added.]
21

¹³ Id.

¹⁴ See, Library Reference USPS-LR-N2010-1/3 at 3, Table 1

¹⁵ See, "Summary Description of USPS Development of Costs by Segments and Components, Fiscal Year 2008," (July 1, 2009) at 6-2.

¹⁶ Id. About 92 percent of direct labor time is volume variable. The remaining 8 percent represents "activities [that] are considered fixed and their costs are classified as institutional. These include routine functions unrelated to mail volume such as maintaining route books and engaging in administrative activities unrelated to the handling of mail. They also include costs for leaving or preparing to leave from route and returning from route.

¹⁷ Id.

1 In concept, at least, there is a correspondence between the volume-variable In-
 2 Office Direct Labor time in the ACR model and VOT in the operational approach.
 3 Both capture activities like casing the mail that are associated with preparing it for
 4 delivery. Both are directly volume related. Similarly, there is a conceptual
 5 correspondence between In-Office Support in the ACR model and FOT in the
 6 operational approach. Both include indirect activities such as clocking in and out,
 7 breaks, and moving empty equipment. Both are considered fixed with respect to
 8 the volume of mail on any given route. The key difference is that the ACR model
 9 takes a longer-run approach and recognizes that In-Office Support costs vary as
 10 the total volume of mail changes.

11 Moreover, the correspondence would appear to be more than conceptual.
 12 As the following table shows, the proportion for volume variable direct labor time in
 13 the ACR model is quite close to the proportion of VOT in the operational
 14 approach.¹⁸

Operations Approach		ACR Model Approach	
Cost Classification	Proportion of Time	Cost Classification	Proportion of Cost
Variable Office Time	66.0%	Volume Variable In-Office Direct Labor	66.9%
Fixed Office Time	34.0%	Fixed In-Office Direct Labor and In-Office Support	33.1%

16 *Source: Library Reference USPS-LR-N2010-1/6.*

¹⁸ The ACR ratio is found by dividing the volume variable portion of direct labor (\$3,036,301,000) by total in-office costs (\$4,535,657,000).

1 Just as with office time, there are some non-volume-related activities that
2 are fixed on a daily basis on the street.¹⁹ A good example is network travel time,
3 the time it takes for carriers to drive between delivery sections and/or collection
4 and relay boxes. This travel must be done every delivery day, regardless of
5 volume. The Saturday times for these types of activities will be saved by
6 elimination of Saturday delivery. There are also some activities that could be
7 considered to be volume related in a long-run sense. However, operations
8 experts believe that almost all of this time will also be saved by elimination from
9 Saturday delivery.

10 In other words, transferring delivery of current Saturday volume to other
11 days of the week will not cause a transfer of much of this time to those days.
12 This is for two reasons. First, despite efforts to reduce the number of routes and
13 save delivery costs, the reduction of volume has outstripped the reduction in
14 street time capacity and there is available capacity on the street. This is not just
15 a historical artifact for FY2009. Operations believe that there will be available
16 capacity in the future despite the reduction in routes.²⁰

17 Second, there are substantial potential economies of density in street
18 delivery that allow street time productivities to rise as volume rise, as evidenced
19 by the sharp increase in street time productivity on the Tuesday's after Monday
20 holidays. This increase in productivity also facilitates handling Saturday's volume
21 on other days without an increase in street hours on those days. In sum,

¹⁹ See, Library Reference USPS-LR-N2010-1/3 at 3.

²⁰ See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 at 9 and Library Reference USPS-LR-N2010-1/3 at 13.

1 operations experts expect about 10 percent of Saturday's eligible delivery time to
2 be transferred to other days of the week.²¹

3 Finally, although no collections will be scheduled on Saturdays and
4 Sundays, the public will continue to put mail into collection boxes over the
5 weekend. This could create overflow situations in some locations. With the
6 elimination of scheduled collections over the weekend, operations experts
7 anticipate that Monday collections will probably be heavier than usual and some
8 additional street time will be required.²² For Express Mail collections, carriers
9 delivering Express Mail on Saturdays and holiday weekends will perform any
10 Express Mail collections that are scheduled.²³

11

12 **C. Calculate the Cost Impacts of the City Carrier Operational**
13 **Changes and Sum Them.**
14

15 Calculating the city carrier cost savings has two steps, calculation of the
16 hours saved and identification of the appropriate wage to use in valuing the
17 saved hours in dollars. The operational analysis is used to calculate the hourly
18 savings from moving to five-day delivery.

²¹ See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 at 9 and Library Reference USPS-LR-N2010-1/3 at 4-5.

²² See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 at 10 and Library Reference USPS-LR-N2010-1/3 at 5-6.

²³ See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 at 6.

1 For office time the calculation is straightforward. Recall that the
2 operational analysis determined that 34 percent of Saturday office time is Fixed
3 Office Time, which is not transferrable to other days of the week. This portion of
4 office time is saved. The other portion, Variable Office Time, is transferred to
5 other days. To capture this effect, 34 percent of Saturday hours in each of the
6 three in-office cost components, are saved and 66 percent of Saturday hours are
7 transferred to the other days of the week.

8 The street time calculation is similar but has a few additional refinements.
9 First, network travel time is solely route related. It is the time associated with
10 traversing the fixed portions of the route (in between delivery sections, collection
11 boxes and any other fixed stops). The Saturday time for network travel would not
12 be repeated on any other day when Saturday's volume is delivered on those
13 days. Operational analysis has estimated that no more than 10 percent of
14 delivery time will be transferred, so 10 percent of both the Delivery Activities and
15 Delivery Support should be transferred to the Monday through Friday cost.

16 These hours savings are mitigated by two additions to hours. First, based
17 upon the operational analysis of delivery and the estimated Saturday volumes of
18 Express Mail, the Saturday delivery of Express Mail will require just over 188
19 thousand hours.²⁴ In addition, operations experts anticipate the additional
20 collection time on Monday will add an additional 241, 625 hours.²⁵ With these
21 additions, the estimated hours required for city carried delivery in a five-day

²⁴ This value is calculated in Library Reference USPS-LR-N2010-1/3

²⁵ See, Library Reference USPS-LR-N2010-1/3 at 6.

1 environment, by cost component, are presented in the following table. Once the
 2 hours for city carrier delivery in a five-day environment are determined, simple
 3 subtraction provides the hour savings.

4

Calculating Hours under 5 Day Delivery -- ACR Model Structure

	In-Office Direct Labor	In-Office Support Overhead	In-Office Support Other		Network Travel	Delivery Activities	Delivery Support
5 Day M-F	73,315,957	14,173,022	13,332,805		29,812,090	188,894,483	28,060,989
5 Day Sat.	0	0	0		0	188,497	0
Total	73,315,957	14,173,022	13,332,805		29,812,090	189,082,980	28,060,989

Savings	4,274,160	826,256	777,273		5,620,851	31,026,137	4,637,052
---------	-----------	---------	---------	--	-----------	------------	-----------

5 *Source: Library Reference USPS-LR-N2010-1/6.*

6

7

The hours savings can then be used to calculate the cost savings. The
 8 traditional method is to assume the percentage reduction in cost matches the
 9 percentage reduction in hours. This approach is the same as assuming that the
 10 dollar savings per hour are at the average city carrier wage for FY2009.
 11 Operations experts, however, anticipate the hours savings will be for full time
 12 carriers so the appropriate wage for valuing saved hours is the full time regular
 13 wage.²⁶ Thus, the five day costs, and the cost savings, needs to take into
 14 account the appropriate wage. This means that the formula for calculating the
 15 five-day delivery cost is:

16

²⁶ See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 at 13.

$$\text{Five Day Cost} = (1 - \rho\omega) \left[\text{Six Day Cost} \right]$$

where ρ is percentage reduction in hours from moving to five day and ω is the ratio of the cost-saving wage to the average wage. The full time regular city carrier wage is 4.4% above the average wage. Thus, the formula for calculating five-day cost is:

$$\text{Five Day Cost} = (1 - 1.044\rho) \left[\text{Six Day Cost} \right]$$

Note that ρ will vary by cost component. With this formula the city carrier direct cost savings can be calculated by subtracting the five-day cost from the six-day cost:

	City Delivery Carriers Office Activity	City Delivery Carriers Street Activity
6-Day Direct Costs	\$4,535,657	\$11,252,631
5-Day Direct Costs	\$4,274,798	\$9,562,260
Saturday Express Mail Delivery Cost		\$6,878
Direct Cost Savings	\$260,859	\$1,683,493

Source: Library Reference USPS-LR-N2010-1/6. All figures in thousands

1 **III. ESTIMATING THE RURAL CARRIER DELIVERY COST SAVINGS**
 2 **FROM MOVING TO FIVE-DAY DELIVERY.**
 3

4 In this section, I apply the cost saving methodology to rural carrier delivery
 5 costs to estimate the five-day costs savings.
 6

7 **A. Establish the Rural Carrier Baseline for the Six-Day Delivery**
 8 **Environment.**
 9

10 As with city carriers, the baseline for rural carriers starts with the relevant
 11 sections of the FY2009 ACR model. There are three cost components that deal
 12 with rural carriers and they are presented below.
 13

Rural Carrier Cost Components in the FY2009 ACR Model			
<i>Component Name</i>	Evaluated Routes	Other Routes	Equipment Maintenance Allowance
<i>Component Number</i>	(69)	(70)	(73)
<i>Cost Segment</i>	10.1	10.2	10.3
<i>6-Day Direct Costs</i>	\$5,548,541	\$401,080	\$509,893

14 *Source: FY2009 ACR. All figures in thousands.*
 15

16 The baseline hours also come from FY2009 ACR, and total rural carrier
 17 work hours were 181,193,945.²⁷ Similar to the situation in city carriers, the rural
 18 carrier costs and hours in the ACR model are at a higher level of aggregation
 19 than is required for determining the cost implications of the operation response.

²⁷ See, "Direct Testimony Jeffery L. Colvin on Behalf of the United States Postal Service," Docket No. N2010-1, USPS-T-7.

1 Specifically, the ACR does not differentiate costs by day of the week or individual
2 rural route type. This latter distinction is key because the rural carrier operational
3 response to a five-day delivery varies by the rural route type. Therefore,
4 additional analysis is required for constructing a breakout of hours sufficiently
5 detailed to match the operational analysis.

6 Operations experts examined the structure of rural routes late in FY2009
7 and constructed a baseline distribution of hours across the rural route types.²⁸
8 This analysis was used to distribute the total ACR Model rural carrier hours
9 across route types by day of week.²⁹ This distribution is presented in the
10 following table that shows the number of routes by type times per route type for
11 Monday through Friday and for Saturday.

12

²⁸ The calculation of hours by route type is presented in Library Reference USPS-LR-N2010-1/4.

²⁹ The total hours calculated in the operational analysis is slightly less than the total FY2009 hours. This difference arises because the operations analysis was based upon data for the end of FY2009 and expanded to an annual basis rather than on the actual data for the whole year. The ratio of the actual FY2009 hours to the total hours in the operational analysis is 1.012 and this ratio was used to expand the operational hours to total FY2009 hours. See Library Reference USPS-LR-N2010-1/6.

Rural Carrier Hours by Route Type Under Six-Day Delivery

	K Routes	J Routes	H Routes	Aux Routes
# of Routes	30,956	21,197	16,193	6,980
Total Six-Day Hours M-F	69,739,991	43,982,944	29,653,436	7,601,673
Total Six-Day Hours Saturday	13,947,998	8,803,283	5,932,392	1,521,069
Total Six-Day Hours	83,687,989	52,786,228	35,585,828	9,122,743

Source: Library Reference USPS-LR-N2010-1/6.

These hours can be accumulated by ACR model categories by recognizing that route types H, J and K are included in the group entitled “Evaluated Routes” in ACR model terms and auxiliary routes are include the group called “Other Routes”. The operationally-based hours for the ACR model route categories are given in the following table.

Rural Carrier Hours by ACR Model Structure

	Evaluated Routes	Other Routes	Total
Total Six-Day Hours M-F	143,376,371	7,601,673	150,978,044
Total Six-Day Hours Saturday	28,683,673	1,521,069	30,204,743
Total Six-Day Hours	172,060,045	9,122,743	181,182,787

Source: Library Reference USPS-LR-N2010-1/6.

1

2 **B. Review the Rural Carrier Operational Response to Five-Day**
3 **Delivery to Identify Possible Cost Implications of the**
4 **Operational Changes.**
5

6 Operations experts have determined the way they anticipate that rural
7 carrier operations will respond to elimination of Saturday delivery.³⁰ The
8 operational responses will vary somewhat by rural route type but there are some
9 general points to consider before examining those responses. First, operations
10 experts anticipate that there will be no changes in the number of rural routes,
11 vehicles, or facilities. The cessation of Saturday delivery means that rural carriers
12 will not be casing or delivering mail on their regular routes on Saturdays. But
13 because the same routes must be served on Monday through Friday, operations
14 experts expect the number of rural routes to be unaffected by elimination of
15 regular Saturday delivery.³¹ Second, the only rural delivery activities taking place
16 on Saturday would be deliveries of Express Mail. These operations will follow
17 the current procedures for Sunday delivery of Express Mail and will be performed
18 by Rural Carrier Associates (RCAs).³²

³⁰ For a detailed discussion of these operational responses, See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3 and Library Reference USPS-LR-N2010-1/4.

³¹ See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3. at 4.

³² Id. at 6.

1 Third, witness Granholm has indicated that there are potential contractual
2 issues associated with moving to five-day delivery.³³ The National Rural Letter
3 Carrier Association (NRLCA) agreement has requirements to adhere to when
4 there is a change in the number of delivery days. The operational analysis of
5 rural carriers thus represents operations experts' anticipation of what would likely
6 come out of those contractual issues. In addition, witness Granholm as indicated
7 that the rural evaluation factors must be discussed and re-evaluated for
8 negotiation.³⁴

9 However, the anticipated operational response does not include any
10 changes in the evaluation factors. This approach is "conservative" in the sense
11 that it does not allow for any cost savings arising from re-evaluation of the
12 evaluation factors. However, given that densities will have increased on rural
13 routes, it is likely that the volume-related time per piece to deliver the mail will
14 fall. It is also possible that this time reduction would show up eventually in
15 reduced evaluation factors and to the extent it does, volume related costs would
16 be saved.

17 Like city carriers, rural carriers have a set of "fixed" or route-related
18 activities and volume related activities.³⁵ The cessation of Saturday delivery
19 allows the Postal Service to save the route-related activities. However, because
20 rural carriers are essentially paid on a "per-piece" basis, the operational analysis

³³ Id., at 9.

³⁴ Id., at 10.

³⁵ These activities correspond to the "fixed" and "variable" rural carrier evaluation factors in the ACR model.

1 indicates that it is unlikely that any volume related costs would be saved as these
2 costs would be incurred on the other delivery days.

3 Operations experts believe that, as in the ACR model, “fixed” or route-
4 related or time is about 60 percent of overall rural carrier time. However, the
5 hours actually saved by route type depend on the specific breakout of route-
6 related and volume-related time on that route type.

7 Although the reduction in hours comes solely from saving Saturday’s
8 route-related time for each type of rural route, the dollar savings will vary based
9 upon the type of rural route as well as the nature of the hours saved. To
10 understand how this works, one must recognize that there are four types of rural
11 routes:

12

13 H Route: In a two week period, regular carriers work Monday
14 through Saturday both weeks.

15

16 J Route: In a two week period, regular carriers work Monday
17 through Friday both weeks and one Saturday. An
18 RCA works one Saturday

19

20 K Route: In a two week period, regular carriers work Monday
21 through Friday both weeks An RCA works both
22 Saturdays.

23

24 Auxiliary Route: In a two week period, RCAs work Monday through
25 Saturday both weeks.

26

27 The cost savings (as opposed to the hours savings) on each route type
28 will depend upon the wages of the eliminated carrier hours. On an H route, the
29 dollars savings will be at a regular carrier wage because only regular carriers

1 work on Saturdays. On a J route, the dollar savings will be split between regular
2 carrier wages and RCA wages because both types of carriers work on
3 Saturdays. On the Saturdays that regular carriers work, the dollar savings will
4 be at the regular carrier wage. (Note that the savings are just for the fixed
5 portion of the route, the variable portion is done on the other days at the regular
6 carrier wage). On the Saturdays that RCAs work, the dollar savings will be at
7 RCA wage for the fixed portion. However, for the volume-related portion, there
8 will actually be a cost increase because the hours will be transferred from an
9 RCA carrier on Saturday to a regular carrier on one the other days of the week.
10 There is a cost increase for each hour transferred because regular carriers earn
11 a higher wage than RCAs.

12 On K routes there will be very little dollar savings for the hour savings.
13 That is because the hour savings for Saturday delivery will be at the RCA wage
14 rate, but the additional hours on Monday through Friday will be paid at the
15 regular carrier wage rate. The total cost for the volume related time actually
16 increases, but this increase is not quite large enough to offset the decline in
17 route-related cost, so there is a modest cost reduction. On Auxiliary routes, the
18 dollar savings will be at the RCA wage rate.

19

1
23 **C. Calculate the Cost Impacts of the Rural Carrier Operational**
4 **Changes and Sum Them.**
5

6 Because of the structure of the labor complement, the cost savings in rural
7 carrier operations depend both upon the total hours saved and the type of labor
8 saved. The hours savings are based upon a detailed operational analysis of the
9 change in staffing, by route type, associated with moving to five-day delivery.³⁶
10 In essence, the operational study captures the saving of Saturday's "fixed"
11 activities and the transfer to other days of Saturday's "variable" activities. This
12 analysis yielded the following estimate of the required hours, by route type, in a
13 five-day environment.

14

Hours by Route Type Under Five Day Delivery

	K Routes	J Routes	H Routes	Aux Routes
5 Day Per Route M-F	46.30	42.63	37.47	22.31
5 Day Per Route Sat.	0.00	0.00	0.00	0.00
Total 5 Day M-F	75,443,027	47,564,508	31,937,748	8,196,874
Total 5 Day Sat	0	0	0	0
Total	75,443,027	47,564,508	31,937,748	8,196,874

15

Source: Library Reference USPS-LR-N2010-1/6.

16

This operational analysis is the basis for total hour savings. The total six-
17 day and five-day hours can be added up across route types and cumulated by
18 ACR model categories. In addition, the number of hours estimated to delivery

³⁶ See, Library Reference USPS-LR-N2010-1/4.

1 Saturday Express Mail must be included.³⁷ Together, these values lead to the
 2 calculation of total hours saved in rural carrier delivery.

3

Total Rural Carrier Hours Saved in the ACR Model Structure

	Evaluated Routes	Other Routes	Total
Total 6-Day Hours	172,060,045	9,122,743	181,182,787
Total 5-Day Hours	154,945,284	8,196,874	163,142,158
Saturday Express Mail Hours			67,645
Hours Saved	17,114,761	925,868	17,972,984

Source: Library Reference USPS-LR-N2010-1/6.

4

5 These hours savings are used to calculate the costs savings. Like in city
 6 carriers, the operations experts anticipate that the wages of saved hours will not
 7 match the average wage, so the percentage reduction in cost will not exactly
 8 match the percentage reduction in hours.³⁸

9 The key issue is the nature of the hours saved. If the saved hours are for
 10 regular rural carriers, the cost savings will be greater than if the saved hours are
 11 for Rural Carrier Associates. In other words, the cost savings will depend upon
 12 the distribution of hours savings across regular rural carriers and RCAs.

³⁷ Operations experts have determined that 67,645 rural carrier hours will be required to deliver Express Mail on Saturday in a five-day environment and that the work would be done by RCAs. See, Library Reference USPS-LR-N2010-1/4.

³⁸ Id.

1 The distribution of hours saved varies by route type, so an analysis of the
2 wage effect must proceed at the level of route type. To estimate the wage effect,
3 I use the operations experts' analysis of hours saved by route type and the
4 FY2009 wages of \$38.86 for regular rural carriers and \$20.18 for RCAs to
5 calculate the dollars saved per hour saved.³⁹

6 The following table presents the results of that analysis.⁴⁰ Note that for
7 some K routes, regular rural carrier costs actually increase in the five day
8 environment despite an overall reduction in hours. This result occurs because of
9 shifting of hours between the types of carriers used. What were Saturday RCA
10 hours in a six day environment become weekday regular carrier hours in a five
11 day environment.

³⁹ These wages rates are from the FY2009 ACR model. See, "Direct Testimony
Jeffery L. Colvin on Behalf of the United States Postal Service," Docket No.
N2010-1, USPS-T-7 at Attachment 1.

⁴⁰ The details of this analysis are presented in Library Reference USPS-LR-
N2010-1/4.

Total Rural Carrier Direct Labor Dollars Saved by Type of Route

Route Type	Hours Saved	Regular Carrier Dollars Saved	RCA Dollars Saved	Total Dollars Saved
K	8,138,883	(\$219,166,350)	\$278,048,069	\$58,881,719
J	5,153,603	\$31,397,134	\$87,689,457	\$119,086,591
H	3,603,914	\$140,039,257	\$0	\$140,039,257
Aux	916,393	\$0	\$18,491,829	\$18,491,829
Total	17,812,793	(\$47,729,960)	\$384,229,355	\$336,499,395

1 Source: Library Reference USPS-LR-N2010-1/6.
2

3 Division of the estimated total cost savings of \$336,499,395 by the
4 estimated total hours savings yields an average dollar saving per hour of \$18.89.
5 The overall average rural carrier wage in FY2009 was \$32.84.⁴¹ This means that
6 the dollars per hour saved is just 57.53 percent of the average wage and this
7 factor should be used to reduce the traditional cost savings calculation that uses
8 average wages. Inclusion of the wage adjustment in the cost savings formula
9 for rural carriers is done in the same way that it was done for city carriers. This
10 formula produces the labor cost savings.

11 There is a portion of rural carrier costs that do not involve labor costs.
12 These are payments to rural carriers for use of their private vehicles and are
13 called the Equipment Maintenance Allowance. Operational experts anticipate
14 that moving to five day delivery would reduce the use of private vehicles by one-

⁴¹ Id.

1 sixth and thus anticipate a one-sixth reduction in the Equipment Maintenance
 2 Allowance.⁴² Adding the EMA to the labor cost savings provides the overall
 3 direct savings for rural carriers. Those savings, by cost component are presented
 4 in the following table.

5

Cost Savings for Rural Carriers

	Evaluated Routes	Other Routes	Equipment Maintenance Allowance
6-Day Total Direct Costs	\$5,548,541	\$401,080	\$509,893
5-Day Direct Costs	\$5,231,017	\$377,661	\$424,911
Saturday Express Mail Delivery Cost	\$1,365		
Direct Cost Savings	\$316,159	\$23,419	\$84,982

Source: Library Reference USPS-LR-N2010-1/6.

6

⁴² See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3. at 10.

1
2 **IV. ESTIMATING THE TRANSPORTATION COST SAVINGS FROM**
3 **MOVING TO FIVE-DAY DELIVERY.**
4

5 In this section, I apply the cost saving methodology to transportation costs
6 to estimate the five-day costs savings.
7

8 **A. Establish the Transportation Baseline for the Six-Day Delivery**
9 **Environment.**
10

11 As with city and rural carriers, the baseline will be total costs for the
12 relevant portions of the air and highway transportation networks from the FY2009
13 ACR model. Air costs can be taken directly from the FY2009 ACR, but some
14 additional effort is required to determine the baseline for purchased highway
15 transportation costs. The highway cost savings will occur on Saturday and
16 Sunday, but the purchased highway transportation costs in the FY2009 ACR are
17 for all days. The Saturday and Sunday costs for the relevant portions of the
18 purchased highway transportation network must be developed to provide the
19 baseline for calculating the cost savings. Similarly, the Saturday hours and miles
20 driven for the Vehicle Service Driver portion of the highway transportation
21 network must be developed.⁴³

⁴³ Operations experts have determined that there will be no savings in a five-day environment for the Sunday transportation in the Vehicle Service Driver part of the highway network. See, Direct Testimony of Luke T. Grossmann on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-5.

1 In the six-day environment that existed in FY2009, the Postal
2 Service transported mail on Sunday on both its FedEx and CAIR air networks.
3 The total cost of transporting that mail was \$150.6 million.⁴⁴

4 The baseline for purchased highway transportation costs is the cost of
5 transporting mail on the highway network on Saturday and Sunday in a six-day
6 environment. Purchased highway transportation costs are contracted on an
7 annual basis and costs are not normally recorded on a day of week basis.
8 However, these costs can be developed through review of the individual contract
9 specifications in Transportation Contract Surface System (TCSS). The
10 specifications indicate the number of days that the contract runs annually and the
11 number of trips for particular days of the week. This information permits finding
12 the contracts that run on Saturday and Sunday.

13 Purchased highway route trips are specified in terms of their mileage, their
14 capacity, and their frequency. The mileage is determined by the routing of the
15 trip, the capacity is determined by the type of vehicle used, and the frequency is
16 determined by the number of days per week the trip runs. Note that the routing
17 and capacity are generally the same for all days of the week.

18 Calculation of the baseline six-day purchased highway transportation
19 costs starts with the FY2009 ACR costs by account category. The annual costs
20 for each account category are given in the following table.⁴⁵

⁴⁴ The details of the cost incurrence for Sunday air transportation are given in the non-public library reference USPS-LR-N2010-1/NP1.

⁴⁵ Operations experts anticipate that there will be no savings in Inter-BMC purchased highway transportation from elimination of Saturday delivery so that account category's costs are not included in the baseline.

FY2009 ACR Model Costs

Contract Type	Highway Transportation	Box Routes
INTER AREA	\$525,257,078	\$841,497
INTER CLUSTER	\$180,544,969	\$455,721
INTER P&DC	\$102,155,542	\$326,778
INTRA BMC	\$294,459,932	\$0
INTRA CSD	\$75,169,850	\$301,055,378
INTRA P&DC	\$960,502,057	\$8,291,948
Sum	\$2,138,089,427	\$310,971,322

Source: Library Reference USPS-LR-N2010-1/8.

1

2

Saturday and Sunday transportation represent only fractions of the annual cost for each account category so a subsequent analysis is required to identify those fractions.

3

4

The Saturday and Sunday fractions can found for each type of purchased highway transportation by identifying which route trips run on Saturday and which run on Sunday. This can be done using the detailed route trip information in the Postal Service's Transportation Cost Surface System (TCSS) database.

5

6

Consider calculating the Saturday proportions for Inter-P&DC transportation.

7

First, all the Inter-P&DC route trips that run on Saturday are identified. Then, the

8

route miles and cost per mile are extracted from TCSS. The annual Saturday

9

cost for each route trip is given by the product of its route miles (RM), its

10

11

12

1 frequency (Freq), and its cost per mile (ζ). The total Saturday cost for Inter-
 2 P&DC transportation is just the sum of the cost of the Saturday route trips for all
 3 Inter-P&DC contracts. More formally, if the “ith” type of transportation had “T”
 4 route trips, than the total Saturday cost would be given by:

5

6

7

$$\text{Saturday Cost}_i = \sum_{j=1}^T \zeta_{ij} * RM_{ij} * \text{Freq}_{ij}$$

8 Saturday’s proportion of the accounts annual cost is then easily derived:

9

10

11

12

13

$$\text{Saturday Proportion}_i = \frac{\sum_{j=1}^T \zeta_{ij} * RM_{ij} * \text{Freq}_{ij}}{\text{Total Annual Cost}_i}$$

14

15

16

17

18

19

When this exercise is repeated for each account category of purchased highway transportation, the annual Saturday and Sunday proportions for FY2009 are produced.⁴⁶ They are listed in the following table. Note that most account categories are made up of two types of routes, highway routes and box delivery routes. Thus, the above formula must be applied twice for those account categories, once for the highway routes and once for the box routes.

⁴⁶ The data sets and computer program used in these calculations is presented in Library Reference USPS-LR-N2010-1/8.

1
2

Saturday and Sunday Proportions of the Annual Cost for each Account Category for Highway Transportation and Box Routes

Contract Type	Transportation Type	Saturday Cost Proportions	Sunday Cost Proportions
INTER AREA	Highway	16.100%	12.980%
INTER CLUSTER	Highway	14.987%	11.574%
INTER P&DC	Highway	14.133%	9.297%
INTRA BMC	Highway	13.837%	12.484%
INTRA CSD	Highway	3.023%	0.633%
INTRA P&DC	Highway	14.506%	4.196%
INTER AREA	Box Route	0.026%	na
INTER CLUSTER	Box Route	0.043%	na
INTER P&DC	Box Route	0.053%	na
INTRA CSD	Box Route	13.294%	na
INTRA P&DC	Box Route	0.138%	na

Source: Library Reference USPS-LR-N2010-1/8. Note box route service is not provided on Sunday

3

4 When these proportions are multiplied by the annual costs for each account
5 category, the six-day baseline costs are produced:

1
2

Baseline Purchased Highway Transportation Costs for Six-Day Delivery

Contract Type	Transportation Type	Saturday Baseline Cost	Sunday Baseline Cost
INTER AREA	Highway	\$84,701,891	\$68,289,701
INTER CLUSTER	Highway	\$27,126,365	\$20,948,366
INTER P&DC	Highway	\$14,483,721	\$9,528,169
INTRA BMC	Highway	\$40,744,420	\$36,759,828
INTRA CSD	Highway	\$11,373,161	\$2,383,040
INTRA P&DC	Highway	\$140,532,230	\$40,652,333
INTER AREA	Box Route	\$139,320	\$0
INTER CLUSTER	Box Route	\$77,601	\$0
INTER P&DC	Box Route	\$53,939	\$0
INTRA CSD	Box Route	\$50,014,631	\$0
INTRA P&DC	Box Route	\$1,336,368	\$0

Source: Library Reference USPS-LR-N2010-1/8. Note box route service is not provided on Sunday

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Finally, the baseline costs for highway transportation provided by the Postal Service and not contracted (termed Vehicle Service Drivers or "VSD" in the ACR model) must be produced. There are two types of direct costs for this part of the network, labor costs for the drivers and fuel costs. The baseline direct costs are based upon the hours required for Vehicle Service drivers on Saturday

1 in FY2009. Total VSD driver hours were 15,386,263 in FY2009.⁴⁷ The
 2 proportion of VSD hours that were incurred for Saturday transportation service
 3 can be derived from the Postal Service TACS data base. In FY2009, 14.07
 4 percent of VSD hours were incurred on Saturday.⁴⁸ Combining the proportion
 5 with the total hours yields the baseline hours:
 6

FY2009 VSD Hours and Proportions

Days	Proportions	Amount
Saturday	14.07%	2,164,352
All Days	100%	15,386,263

Source: Library Reference USPS-LR-N2010-1/9.

7
 8 Postal Service Vehicle Service Drivers (VSD) worked 2,164,352 hours on
 9 Saturdays in FY2009. VSDs get paid an average of \$42.10 per hour, meaning
 10 that the FY2009 baseline Saturday labor cost for VSD operating time
 11 \$91,117,356. Similarly, in FY2009, VSDs drove 18,808,673 miles in vehicles that
 12 averaged 6.9 miles to the gallon. This means that Saturday VSD transportation
 13 required 2,725,895 gallons of fuel. At an average cost per gallon of \$2.45, the
 14 baseline cost for fuel for Saturday VSD transportation was \$6,671,627 in
 15 FY2009.

⁴⁷ See, "Direct Testimony Jeffery L. Colvin on Behalf of the United States Postal Service," Docket No. N2010-1, USPS-T-7.

⁴⁸ See, Direct Testimony of Luke T. Grossmann on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-5.

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2 **B. Review the Transportation Response to Five-Day Delivery to**
3 **Identify Possible Cost Implications of the Operational**
4 **Changes.**
5

6 Transportation experts performed an operational analysis of how the mail
7 that is currently transported on Sunday would travel across the air network on
8 Tuesday and found an opportunity for cost savings.⁴⁹

9 In the highway network, the need for both purchased transportation and
10 Postal Service transportation will be reduced by elimination of Saturday delivery.
11 Operations experts have determined that the reductions in the purchased
12 highway transportation network will take place on both Saturday and Sunday and
13 that the reductions in needed transportation will depend upon the nature of the
14 transportation.

15 For example, there will be larger reduction on Saturday in the amount of
16 local transportation, like Intra-P&DC then there will be in longer haul, inter facility
17 transportation, like Inter-Cluster. This is because an important part of local
18 transportation is made up of trips from processing facilities to delivery units.
19 Without Saturday delivery of mail, these trips will not be needed. In contrast,
20 longer haul transportation is reduced simply because origin mail will not be
21 processed on Saturday.⁵⁰

⁴⁹ See, Library Reference USPS-LR-N2010-1/7 at 1.

⁵⁰ See, Direct Testimony of Luke T. Grossmann on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-5 at 12.

1 Similarly, Vehicle Service Driver transportation needs will be reduced on
2 Saturday. The part of VSD that consists of transportation of mail to delivery units
3 on Saturday will not be required in a five-day delivery environment. However,
4 VSD trips will still be needed for box mail, Express Mail, some collections, and
5 parcel delivery.⁵¹

6 Operations experts have determined that there is sufficient capacity on
7 both the purchased highway transportation network and the Postal Service's
8 VSD network such that the mail that would have been moved on Saturday and
9 Sunday can be moved on the remaining days of the week without any additional
10 trips. Thus, there are no offsetting highway transportation costs incurred on
11 other days that would reduce the savings from reducing Saturday and Sunday
12 transportation.⁵²

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14 **C. Calculate the Cost Impacts of the Transportation Operational**
15 **Changes and Sum Them.**
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18 The cost savings in air transportation is the difference between the cost
19 transporting the mail by air in a six-day environment and in a five-day
20 environment. These cost savings are a bit over a million dollars a week for a
21 total cost savings of \$62,346.523 per year.⁵³

⁵¹ Id., at 10.

⁵² Id., at 11.

⁵³ The calculation of these cost savings is presented in the non-public library reference, USPS-LR-N2010-1/NP1.

1 As described above, cost savings in purchased highway transportation
 2 arise because the need for Saturday and Sunday transportation is reduced in a
 3 five-day delivery environment. Operations experts reviewed the different contract
 4 types and determine the appropriate proportions of Saturday and Sunday
 5 transportation that would no longer be needed if the Postal Service ceased
 6 Saturday delivery. Such a reduction means that the cubic foot-miles of highway
 7 transportation will be reduced. The following table reproduces the operations
 8 experts' anticipation of the percentage reduction in needed cubic foot-miles of
 9 transportation by account category.⁵⁴

**Reductions in Required Highway Transportation
 Caused by Moving to Five-Day Delivery**

Contract Type	Saturday Reductions in CFM	Sunday Reductions in CFM
INTER AREA	20%	80%
INTER CLUSTER	30%	80%
INTER P&DC	30%	80%
INTRA BMC	40%	50%
INTRA CSD	60%	80%
INTRA P&DC	60%	80%

Source: Library Reference USPS-LR-N2010-1/9

⁵⁴ See, Direct Testimony of Luke T. Grossmann on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-5 at 12.

1 Similarly, operations experts have determined that without Saturday
2 delivery there will be no need for box route contracts to run on Saturday, so 100
3 percent of that transportation capacity will be saved.⁵⁵

4 The reduction in required transportation capacity can then be used to find
5 the reduction in cost. For example, if contract transportation costs are directly
6 proportional to capacity, then the percentage reductions in Saturday and Sunday
7 CFM would also be the percentage reduction in Saturday and Sundays costs.
8 Research by the Postal Service and the Postal Regulatory Commission suggests
9 otherwise.

10 A substantial body of evidence indicates that variation in purchased
11 highway transportation cost is less than the variations in capacity. When the
12 Postal Service was adding capacity to its highway network, cost went up less
13 quickly than volume. Now, when the Postal service is eliminating capacity from
14 the network, cost goes down more slowly than capacity. The relationship
15 between cost and capacity is given by:

16

17

$$\% \Delta \text{Cost}_i = \epsilon_i \% \Delta \text{Capacity}_i,$$

18

19 where ϵ is known as the “capacity variability” and capacity is measured by cubic
20 foot-miles of provided transportation. Capacity variabilities have been estimated

⁵⁵ There is no box route service on Sundays.

1 by the Postal Service and approved by the Postal Regulatory Commission.⁵⁶
 2 They are presented in the following table.

3

Contract Type	Capacity Variability
INTER AREA	91.3%
INTER CLUSTER	90.4%
INTER P&DC	84.1%
INTRA BMC	98.3%
INTRA CSD	70.6%
INTRA P&DC	70.2%

4

Source: Library Reference USPS-LR-N2010-1/9.

5

6 With this formulation the annual cost savings are given by the following equation:

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⁵⁶ In the approved methodology, the capacity variabilities for inter-Area, inter-Cluster, and inter-P&DC are the cost-weighted averages of the variabilities for tractor-trailer and van contract cost segments within those accounts. See Appendix A: Calculation of Variabilities for Split Cost Accounts, Direct Testimony of Michael D. Bradley on Behalf of the United States Postal Service, Docket No. 2000-1, USPS-T-18. In the ACR, the intra-CSD and the Intra-P&DC variabilities are the cost weighted averages of the variabilities for the box, city, van, and tractor trailer contract cost segments in those accounts. In the operations evaluation of cost savings from five day delivery, box route contracts are analyzed separately from the transportation contracts. Thus, the appropriate variabilities for analyzing just highway transportation costs are the cost weighted averages of the variabilities for the transportation (city, van, and tractor trailer) contract cost segments in those accounts. See Library Reference USPS-LR-N2020-1/9 for computational details.

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

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Use of the baseline cost for each account category derived above along with the capacity elasticities and percentage reduction in capacity needs yields the cost savings for regular purchased highway transportation cost.

	Saturday Cost Savings	Sunday Cost Savings
INTER AREA	\$15,466,565	\$49,878,797
INTER CLUSTER	\$7,356,670	\$15,149,858
INTER P&DC	\$3,654,243	\$6,410,552
INTRA BMC	\$16,020,706	\$18,067,455
INTRA CSD	\$4,818,807	\$1,346,258
INTRA P&DC	\$59,209,337	\$22,836,969
Total	\$106,526,328	\$113,689,891

9 *Source: Library Reference USPS-LR-N2010-1/9*

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Box route contracts function somewhat differently than highway transportation contracts and their primary cost driver is the number of boxes served, not the cubic foot-miles of capacity specified on the contract. The elimination of Saturday delivery directly eliminates the need for running these box route contracts on Saturday.

1 The variability for box route contracts is 31.9 percent indicating that
2 portion of their cost is associated with serving boxes and 68.1 percent of their
3 cost is route related. This means that eliminating Saturday delivery will save
4 68.1 percent of the cost of providing box route service on Saturday. The
5 remaining 31.9 percent will be transferred to other days. This leads to
6 \$35,154,486 in savings.

7 The last portion of the transportation network for which there are cost
8 savings is the VSD portion. Operations experts have determined that elimination
9 of Saturday delivery will reduce the need for Saturday VSD transportation by 42
10 percent. This means that there will be a 42 percent reduction in hours and miles
11 driven. Further, operations experts anticipate no additional cost on the other
12 days of the week to transport the mail that had been driven on the eliminated
13 Saturday trips.

14 Using the baseline cost for hours presented above and a 42 percent
15 reduction in Saturday VSD hours generates a cost savings of \$38,269,290. A 42
16 percent reduction in miles driven will generate a fuel costs savings of \$2,802,083.
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V. COMBINING DIRECT AND INDIRECT COST SAVINGS

Thus far, I have presented the calculation of direct cost savings for city carriers, rural carriers and transportation. However, this is not totality of cost savings associated with these functional areas. There are also indirect costs associated with each of these areas and, as a result, there are some savings of indirect costs in moving to five day delivery.

In previous attempts at estimating the cost savings from the Postal Service moving to five-day delivery, these indirect cost savings made use of the ACR model's "piggyback" to approach in indirect costs. Like the volume variable approach to direct costs, the piggyback approach is based upon a long-run analysis design to capture the way that indirect costs react to sustained changes in volume. The exercise of finding the indirect cost savings from elimination of Saturday delivery, in contrast, examines a service change on one day for a fixed amount of volume. For the same reasons that an operational approach to measuring the direct cost savings is preferred to the use of a volume variability approach, and operational approach to indirect cost savings is also preferred to use of the piggyback approach.

Another part of the operational analysis was thus to look at the components that comprise the traditional piggybacks and to see how the operations underlying those components would be affected by a move to five-day delivery. For city and rural carriers, there are 51 different ACR model components that are included in the piggybacks, but they can be meaningfully summarized into nine areas, Supervision, Administrative Labor, Facility-Related

1 Costs, Vehicle Maintenance Labor, Vehicle Maintenance Parts & Supplies,
2 Vehicle Depreciation, Other Equipment, Depreciation, Miscellaneous, and
3 Service Wide Costs. As explained by witness Colvin, an operational review of
4 these areas determined that the only one for which use of the standard
5 piggyback is appropriate is Service Wide Costs.⁵⁷

6 These differences come about because the response to the elimination of
7 one day of service is different from the response to a sustained change in
8 volume. For example, the ACR Model includes a long-run response in the
9 amount of building space for carriers and the number of vehicles that they use.
10 As volume declines, the Postal Service will reduce the number of routes and thus
11 will, eventually, reduce its need for carrier building space and vehicles. In
12 contrast, delivering the same amount of volume on different days does not
13 reduce the number of routes.⁵⁸ As a result, eliminating a delivery day does not
14 reduce the Postal Service's need for building space or vehicles as they are both
15 needed for delivery on the other days. The appropriate "piggyback" factor for
16 both building space (rent or depreciation) and vehicle depreciation is thus zero.

17 In other cases, there will be some cost savings, but not at the traditional
18 piggyback rate. For example, driving the vehicle fewer days per week will reduce
19 vehicle maintenance costs. An operational analysis determined how much

⁵⁷ See, "Direct Testimony Jeffery L. Colvin on Behalf of the United States Postal Service," Docket No. N2010-1, USPS-T-7 at 4.

⁵⁸ See, Direct Testimony of Dean Granholm on Behalf of the United States Postal Service, Docket No. N2010-1, USPS-T-3. at 4.

1 maintenance cost would fall.⁵⁹ The following table summarizes the results of the
 2 operational analysis for carrier indirect costs.

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Type of Cost	5-Day Piggyback Factor
Supervision	Operationally Determined
Administrative Labor	0
Facility-Related Costs ⁶⁰	0
Vehicle Maintenance Labor	Operationally Determined
Vehicle Maintenance Parts & Supplies	Operationally Determined
Vehicle Depreciation	0
Other Equipment Depreciation	0
Miscellaneous Costs	0
Service Wide Costs	10.7%

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Source: Library Reference USPS-LR-N2010-1/6.

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⁵⁹ For a presentation of indirect cost savings, see “Direct Testimony Jeffery L. Colvin on Behalf of the United States Postal Service,” Docket No. N2010-1, USPS-T-7.

⁶⁰ Facility-Related cost savings for rent and depreciation have been determined by operational analysis to be zero. However, some custodial and utilities expenses could be saved for those carrier locations that will be shutdown on Saturdays. (Some delivery units are co-located with retail operations that are open on Saturday so utilities and custodial savings are unlikely.) Thus, the assumption of no savings, leads to an understatement of cost savings. Similar arguments can be made that this approaches understates the cost savings for Administrative Labor and Miscellaneous Costs.

1 This general approach is first applied to carriers and then to transportation in the
2 next two subsections.

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A. Combining Direct and Indirect Costs for City and Rural Carriers.

8 Total city and rural carrier cost savings from moving to five-day delivery are
9 found by summing the direct and indirect carrier costs. Witness Colvin derives
10 the individual indirect costs for city and rural carriers and I combine them in
11 Library Reference USPS-LR-N2010-1/6. The following table presents the
12 indirect cost savings by cost area and shows that there are almost \$315 million in
13 cost savings for city carriers and almost \$60 million in costs savings for rural
14 carriers.⁶¹

⁶¹ These costs savings imply an overall “piggyback ratio of 16.4 percent for city carriers and 17.5 percent for rural carriers. These are well below the FY2009 ACR model piggybacks of 32.7 percent for city carriers and 25.1 percent for rural carriers.

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Five-Day Savings for Indirect Carrier Costs

Cost Area	City	Rural
Supervision	\$48,218	\$8,421
Administrative	\$0	\$0
Facility-Related Costs	\$0	\$0
Vehicle Maintenance Labor	\$9,688	\$2,507
Vehicle Maintenance Parts & Supplies	\$47,021	\$11,169
Vehicle. Depreciation	\$0	\$0
Other Equipment	\$0	\$0
Miscellaneous	\$0	\$0
Service Wide	\$213,640	\$37,399
Total Indirect	\$318,567	\$59,496

Source: Library Reference USPS-LR-N2010-1/6. All figures are in thousands of dollars

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The total cost savings for city and rural carriers are presented in the following table which combines the direct and indirect costs. Please note that the rural carrier Equipment Maintenance Allows (EMA) is listed separate because, unlike the labor costs, it has no linkage to indirect costs.

Total Five-Day Carrier Cost Savings

	City	Rural
Carrier Direct Labor Cost Savings	\$1,944,352	\$339,577
Rural EMA Cost Savings		\$84,982
Total Indirect Cost Savings	\$318,567	\$59,496
Total Cost Savings	\$2,262,919	\$484,056

Source: Library Reference USPS-LR-N2010-1/6. All figures are in thousands of dollars

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3 B. Combining Direct and Indirect Costs for Transportation

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Both air transportation and purchased highway transportation are contracted and thus have no linkage to Postal Service indirect costs. Vehicle Service Drivers are Postal Service employees so VSD direct labor is potentially eligible for linkage to indirect costs.

The method for calculating indirect costs for VSD is the same as the method used for city and rural carriers. Operations experts reviewed the various indirect cost areas and determined the amount of cost savings in each area. The following table gives the results for VSD indirect costs.

1

Five-Day Savings for Indirect VSD Costs

Cost Area	Savings
Supervision	\$5,612
Administrative	\$7,187
Facility-Related Costs	\$0
Vehicle Maintenance Labor	\$0
Vehicle Maintenance Parts & Supplies	\$0
Vehicle. Depreciation	\$0
Other Equipment	\$0
Miscellaneous	\$0
Service Wide	\$5,449
Total Indirect	\$18,248

Source: Library Reference USPS-LR-N2010-1/9. All figures are in thousands of dollars

2

3 The total cost savings for Vehicle Service Drivers are presented in the following
4 table which combines the direct and indirect costs

Total Five Day VSD Savings

Total Direct Labor Savings	\$38,269
Fuel Savings	\$2,802
Total Indirect Savings	\$18,248
Total Savings	\$59,320

Source: Library Reference USPS-LR-N2010-1/9. All figures are in thousands of dollars.

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