INBOUND TRANSPORTATION OPPORTUNITY

BUSINESS CASE ANALYSIS

REPORT CF903T2

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LMI

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Executive Summary

Supply chain management has evolved over the past 20 years, with most organizations focusing on their own production, inventories, and distribution to customers—or outbound transportation—because these areas have easily gatherable data for analysis. As organizations have optimized these areas, they continued to look for new ways to streamline operations, moving further upstream in the supply chain and coordinating with their suppliers. Inbound transportation—the delivery of material from suppliers to the buyer's delivery point—is a recent area of interest. Until recently, organizations have not worried about how material arrived, but now they are realizing the potential savings and visibility gained from taking control of major commodities and better managing their transportation costs from the suppliers' docks.

The federal government purchases more than $200 billion of supplies and equipment annually,[1] ranging from basic office supplies to highly specialized items in support of varied department and agency missions. Most of this material is delivered to the government with transportation included as part of the overall item cost. In these situations, suppliers arrange their own transportation under free on board (FOB) destination terms, where the government takes possession and responsibility of the items upon delivery. The government has limited or no visibility of the cost to deliver the material, nor the status of deliveries in-transit to government locations.

As the federal government continues to face pressure to reduce its costs, the Office of Governmentwide Policy (OGP), General Services Administration (GSA), is investigating the potential savings of switching from the current FOB destination paradigm to one of FOB origin, where the government takes possession and responsibility of the material at the vendor's shipping docks and arranges and pays for the transportation to the correct government location.

The OGP, as part of its investigation, tasked LMI to examine the federal government's inbound purchases, identify whether opportunities exist for transportation

[1] Based on FY2011 action obligation data reported by 24 agencies (those named in the Chief Financial Officers [CFO] Act of 1990) to the Federal Procurement Data System-Next Generation for both products and supplies.

cost savings if the government assumed a greater role in managing the transportation of those purchases to government locations or receiving points, identify alternatives for capitalizing upon those opportunities, and assess the costs and net benefits of each alternative.

SCENARIOS

We formulated a series of high-level scenarios under which the federal government could assume a greater role in managing inbound transportation. Those scenarios are summarized below:

- *Scenario 1: Status quo.* This scenario is the current situation, where the federal government manages only a small amount of inbound transportation. We evaluated the other three scenarios based on positive or negative changes in relation to this scenario.

- *Scenario 2: Independent agency approach.* Under this scenario, participating agencies would manage their own inbound transportation, arrange for and implement their own cloud-based transportation management system (TMS), and negotiate their own rates with transportation service providers.

- *Scenario 3: GSA-managed approach.* Under this scenario, participating agencies would use GSA to manage inbound transportation. A key feature of this scenario would be GSA using its new, in-house TMS—TransPort Integrator (TPI), which is replacing its legacy Transportation Management Services Solution (TMSS) system—to support the management of inbound transportation.

- *Scenario 4: 3PL approach.* This final scenario explores the outsourcing of the government's inbound transportation to a third-party logistics (3PL) provider, or other contractor, who would manage the transportation service providers and use its TMS for shipment rating, planning, and execution. The 3PL would receive management fees based the volume of shipments handled.

We assessed three separate variants for each of the last three scenarios, based on the participation level in the program. The target participation level was 40 percent, with the low participation level set at 30 percent and the highest probable participation level capped at 50 percent.

RESULTS SUMMARY

Table ES-1 summarizes the start-up and recurring costs for the three scenarios, based on full program maturity.

Table ES-1. Start-up and Recurring Costs by Scenario and Participation Range

Scenario	Cost type	Low (30%)	Target (40%)	High (50%)
Independent agency approach	Startup	$26,211,887	$46,883,768	$66,641,900
	Recurring	$49,153,288	$80,052,817	$112,798,398
GSA-managed approach	Startup	$1,145,120	$1,571,400	$2,069,280
	Recurring	$22,916,066	$36,112,790	$51,862,733
3PL approach	Startup	$5,333,200	$6,697,960	$8,122,720
	Recurring	$31,602,532	$46,609,860	$60,484,954

Table ES-2 summarizes the estimated benefits for each scenario, based on full program maturity.

Table ES-2. Estimated Inbound Transportation Benefits (Savings) by Scenario and Participation Rate

Scenario	Low	Target	High
Independent agency approach	$12,243,802	$44,213,728	$71,422,175
GSA-managed approach	$16,325,069	$56,117,424	$86,726,927
3PL approach	$19,386,019	$66,320,591	$102,031,679

Table ES-3 summarizes the cumulative net benefit for each scenario after 10 years.

Table ES-3. Estimated 10-Year Cumulative Net Benefit by Scenario and Participation Rate

Scenario	Low	Target	High
Independent agency approach	−$284,582,436	−$290,551,981	−$361,205,013
GSA-managed approach	−$36,228,660	$155,413,425	$265,756,734
3PL approach	−$83,779,955	$144,868,487	$302,302,613

The independent agency approach never shows a positive return on investment, but both the GSA-managed and 3PL approaches show promise to save between $145 million and $155 million over a 10-year period at target participation levels.

SUCCESS FACTORS

A wide array of factors will affect the success of an inbound transportation management scenario.

- *Federal policy and execution success factors.* Prior to instituting any inbound transportation management scenario, the federal government will need to consider:

  - *Changing or waiving the "inspection upon receipt" requirement.* Most agencies today have procedures that define responsibility for inspecting and formally accepting material. If no specific guidance exists, the common practice is to assume the government will not accept delivery or title to property unless it has been received and inspected by an authorized government representative.[2] Except for those contracts or purchases where the government has specified at-vendor inspection, no government personnel will be available to physically inspect the material at the vendor location. Unless this requirement, or guidance on meeting this requirement, is lifted or modified to allow receipt and exchange of title at the vendor location, OGP should expect a cultural resistance to change contracts to FOB origin.

  - *Repurposing funds currently set aside for purchase of material, so some of the funds could be used for the transport of that material.* Funds for the purchase of material and transportation are currently budgeted and allocated differently, so the financial details of how the inbound transportation costs would be funded must be investigated and resolved. Ideally, because transportation costs are included in the delivered purchase price, the agency would split the costs within the required elements of expense and remain within the same dollar ceiling. However, budgeting and obligating funds into different object classes could be a major issue that affects their ability to split the costs. This splitting of costs may be most obvious when comparing funded acquisition programs for end items versus daily operations and maintenance purchases out of central accounts.

  - *Gathering better data to identify commodities appropriate for inbound transportation management.* A key first step would be to require suppliers to report transportation charges separately from the cost of goods on their invoices. This action would require modifications to contracts and could result in objections from suppliers who have padded their total costs or would need to modify their information systems to comply with this new requirement.

[2] This is an acquisition requirement driven by the contract with a material vendor, regardless of whether the transportation of the material is procured by tender or contract.

- *Providing extensive supply chain and transportation education, tools, and change management to agency decision makers*. It is critical to emphasize the impact of forecasting and planning lead-times on transportation options and costs, and on the potential for overall government savings based on coordinated and well-considered actions by all involved in the procurement, delivery, and consumption of materials.

- *Acquisition success factors.* Three factors are key to any concept for switching to federally managed transportation of purchased goods:

  - Acquisition offices must embrace this concept and identify which new and existing contracts could transition from FOB destination to FOB origin.

  - Acquisition personnel would need the tools to perform the required due diligence of researching transportation costs in conjunction with material costs so they could accurately award contracts based on the total cost to provide the material to the required government locations.

  - Acquisition personnel would need to negotiate reasonable decreases in the current cost of goods to offset at least the cost of transportation that the government would now be purchasing separately from the goods.

- *Supplier success factors.* Even if the acquisition community embraces this initiative, suppliers would also need to cooperate. Some of their success factors are outlined below:

  - Suppliers (vendors) could resist losing control of transportation management, especially if their fulfillment processes are standardized for efficiency. Some large suppliers could simply refuse to participate, while others may require a special "processing fee" to account for costs incurred through the use of different business processes.

  - Small vendors may not recognize the potential competitive benefit this initiative could provide, in terms of their product cost. They generally have less leverage to negotiate transportation costs, so their product delivery cost may put them at a disadvantage to larger suppliers. If they understand they are now competing on the cost of the material alone, they may be enthusiastic about the change. Alternatively, they could balk at the initiative or at least not actively support it.

  - Transportation service providers and transportation industry groups may believe any federally coordinated initiative would have an undesirable effect on their profit margins and the current vendor market for transportation services, potentially squeezing small transportation providers out of business. Any initiative would need to address these concerns with analysis and extensive small business participation

requirements. However, those requirements could lower the potential for transportation savings and the realized return on investment.

- Further analysis, by commodity type, should occur, especially for efforts under the Federal Strategic Sourcing Initiative (FSSI) or other strategic sourcing solutions, to determine whether transportation savings potential exists from managing inbound transportation and from changing contracts to FOB origin terms.

CONCLUSIONS

Based on the results of our analysis of these scenarios, including the sensitivity of those results to key variables, we offer the following conclusions:

- The opportunity for reducing transportation costs exists, but the amount of savings varies widely based on
  - the scenario pursued—the scenario of each agency approaching inbound transportation independently showed little to no promise; and
  - the target participation level—the centrally managed inbound transportation scenarios (GSA or 3PL)
    - broke even only at a 30 percent participation level and
    - experienced almost twice the return on investment as participation levels increased from 40 to 50 percent.
- The government faces significant risk in pursuing this effort given the lack of data and the number of success factors needed to realize savings.
- The OGP, and any agency considering inbound transportation management, must seriously consider the change management efforts required to affect changes to both policies and processes. Those efforts could challenge the eventual commitment to pursue this initiative.

RECOMMENDATIONS

We recommend OGP take the following actions:

- Do not actively pursue either the GSA-managed or 3PL approaches because of the lack of data and the absence of support or enthusiasm from civilian agencies to participate in a pilot for even one commodity or item. More groundwork is required.
- Work with the GSA's Federal Acquisition Service's Transportation Program Office to promote TPI's ability to handle inbound transportation

management and encourage agencies interested in pursuing inbound transportation management to explore using TPI as a low-cost way to transition products, identify issues, and evaluate results. This action would help to avoid the potential for individual agencies acting independently, without collaboration or direction. Some commodities, such as those targeted in a strategic sourcing initiative, could serve as possible pilots for inbound efforts.

- Modify all new contracts, contracts up for renewal, and FSSI or other strategic sourcing initiatives to require vendors to provide separate line-item costs for the transportation provided. Although the charged amounts may not reflect actual transportation costs (they could include some upcharges), this information would help identify which commodities may be appropriate for inbound transportation management and provide a rough baseline of costs for more detailed analysis and comparison to typical transportation costs.

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Chapter 1
Introduction

Supply chain management has evolved over the past 20 years, with most organizations focusing on their own production, inventories, and distribution to customers—or outbound transportation—because these areas have easily gatherable data for analysis. As organizations have optimized these areas, they continued to look for new ways to streamline operations, moving further upstream in the supply chain and coordinating with their suppliers. Inbound transportation—the delivery of material from suppliers into the buyer's delivery point—is a recent area of interest. Until recently, organizations have not worried about how material arrived, but now they are realizing the potential savings and visibility gained from taking control of major commodities and better managing their transportation costs from the suppliers' docks.

The federal government purchases more than $200 billion of supplies and equipment annually,[1] ranging from basic office supplies to highly specialized items in support of varied government department and agency missions. Most of these materials are delivered to the government with transportation included as part of the overall item cost. In these situations, each supplier arranges its own transportation under free on board (FOB) destination terms, where the government takes possession and responsibility of the material upon delivery. The government has limited or no visibility of the cost to deliver the material, nor the status of deliveries in-transit to government locations.

As the federal government continues to face pressure to reduce its costs, the Office of Governmentwide Policy (OGP), General Services Administration (GSA), is investigating the potential savings of switching from the current FOB destination paradigm to one of FOB origin, where the government takes possession and responsibility of the material at the vendor's shipping docks and arranges and pays for the transportation to the correct government location.

The OGP, as part of its investigation, tasked LMI to examine the federal government's inbound purchases, identify whether opportunities exist for transportation cost savings if the government assumed a greater role in managing the transportation of those purchases to government locations or receiving points, identify alternatives for capitalizing upon those opportunities, and assess the costs and net benefits under each alternative.

[1] Based on FY2011 obligation data reported by the 24 agencies (those named in the Chief Financial Officers [CFO] Act of 1990) to the Federal Procurement Data System-Next Generation for both products and supplies.

The results of our analysis form the remaining chapters of this report:

- Chapter 2 outlines our methodology, lists the major assumptions we used to frame the analysis, and describes the scenarios we selected for analysis.
- Chapter 3 documents our estimates of the inbound transportation program today and the potential benefits of improving the management of those costs.
- Chapter 4 identifies the costs associated with implementing each of the inbound transportation scenarios.
- Chapter 5 presents our analysis of the costs and return on investment (ROI) for each scenario.
- Chapter 6 describes the results of a sensitivity analysis on several key cost variables and the impacts of changes in those variables on ROI.
- Chapter 7 presents our conclusions and recommendations for the future.
- Appendix A contains a detailed breakout of the estimated purchase data we collected and explains how we extracted the estimated transportation costs from those purchases.
- Appendix B provides an assessment by GENCO ATC—a leading third party logistics (3PL) provider—of the potential savings ranges for transportation costs, by mode.
- Appendix C contains the detailed year-by-year start-up and recurring costs associated with each scenario from FY2014 through FY2023.
- Appendix D contains a list of the abbreviations used in this report.

Chapter 2
Method, Assumptions, and Scenarios

As with many business case analyses (BCAs) of new ideas, we had access to little directly relevant and usable data. We also found few government and commercial reference points on inbound transportation costs.

- The OGP estimates that only a small portion—approximately 5 percent—of the federal government's civilian inbound transportation is managed under FOB origin terms,[1] and the associated data are spread across various agencies in disparate transportation systems. For the 95 percent of transportation that is managed as FOB destination, the contracts for the goods purchased do not require vendors to clearly delineate and report the costs of transportation. As a result, the best government data we were able to use in the analysis provided only broad snapshots of items purchased and the total cost including transportation, not actual amounts spent on transportation.

- Although the Defense Logistics Agency (DLA) is beginning the First Destination Transportation and Packaging Initiative (FDTPI), this effort is still in the formulation stages and no results were available.[2]

- No other federal agencies have participated in inbound transportation pilot efforts.

- Commercial organizations are only starting to enact inbound transportation initiatives and those that have pursued targeted commodities for their business, based on bottom-line profitability, are reluctant to share the details of those efforts.

These results forced us to supplement our analysis with commercial benchmarking sources and our subject matter expertise in formulating assumptions and analysis methods. We also turned to subject matter experts from GENCO ATC, a leading 3PL.

[1] In past studies, we have found no clear agreement on the ratio of FOB origin contracts to FOB destination contracts, only broad, anecdotal estimates not supported by actual contractual studies. Gaining an exact percentage would probably require detailed examinations of contract instruments held by each agency.

[2] DLA Land and Marine, DORRA—Theater Distribution Team, *Concept of Operations, First Destination Transportation and Packaging Initiative*, Draft 1.1, 20 April 2012.

METHOD

We applied the following steps in our analysis:

- We identified the current situation as the baseline for all cost and benefit changes. All costs and benefits identified are expressed as increases or decreases from the current values.

- We identified a series of "pure" scenarios for comparison to the current situation. Although we realize the eventual reality of any inbound transportation solution would likely be a hybrid of these scenarios, we estimated the impact of each separately, so the results could guide implementation to the best method.

- We used the available acquisition data, industry benchmarks, and subject matter expertise to estimate the potential annual transportation savings if the federal government took differing inbound transportation management approaches, as defined in our scenarios.

- We identified the various cost areas likely for each scenario (including both start-up and annual recurring costs) and for each year, and then adjusted for the time-value of money.

- We created three variants of each scenario—low, target (desired), and high—based on the level of agency participation (an estimated percentage of costs that agencies would switch from FOB destination to FOB origin). We then compared the likely costs and benefits, and identified the cumulative net benefit for each scenario over a 10-year horizon, phasing in costs and benefits based on a first-year implementation followed by a 5-year phase-in and full maturity starting in the 7th year.

- We varied key cost and benefit variables to assess the sensitivity of our analysis to the values used, and identified risks to the cumulative net benefit performance based on the sensitivities.

- We documented our conclusions and identified key success factors for OGP to consider if it pursues an inbound transportation management initiative.

ASSUMPTIONS

We made several assumptions during our analysis that were based on the data available, the current situation, and the future state of the transportation market. These assumptions are outlined in the following subsections.

Scope

Our assumptions about the scope of the analysis are listed below:

- The analysis focused on the 23 civilian CFO Act agencies, even though DoD purchases a large amount of goods and we quantified the size of the opportunity for DoD.
- We excluded several commodities from analysis because of their nature (e.g., munitions, large end items, and petroleum), or their typical method of transportation (e.g., specialized equipment, rail, pipeline, and protective services).
- The modes of transport used to deliver goods included air, small parcel, less than truckload shipments, and truckload shipments, with the predominant modes being small parcel and less than truckload shipments.
- The scenarios covered mostly domestic shipments, but shipments to or from Alaska and Hawaii were included.
- The amount and type of material purchased in future years will remain similar to the amount and type purchased during the most recent year with data available, FY2011.

Data

Because of the scarcity of data, we made the following assumptions:

- The action obligation data from Federal Procurement Data System-Next Generation (FPDS-NG) and the purchase card data we used represent actual item purchases that resulted in shipments of those items from suppliers to government customers.
- Industry benchmarks and estimates from Establish, Inc., and GENCO ATC are accurate.

Transportation

Our assumptions related to transportation costs and activities are summarized below:

- The estimated cost of transportation is 3.79 percent of the total sales cost of goods, as reported in the 2011 Establish, Inc. Annual Logistics Survey.[3] That survey captures current transportation costs paid across all commodity groups and agencies examined in this analysis. We applied this percentage

[3] Establish, Inc., *Logistics Cost and Service 2011*, presented at the Council of Supply Chain Management Professionals Annual Global Conference, Philadelphia, PA, October 2011.

to the eligible FY2011 purchase data to estimate the inbound transportation costs built into the costs of the items purchased.

- Additional transportation personnel will be required to process the increased workload of arranging for shipments that previously were handled by the suppliers.
- The average costs for transportation will decrease if actively managed, and further improvements will be realized with more centralized management of inbound transportation because of increased visibility of requirements and increased volume for transportation providers.
- Benchmarks and trends based on managing outbound transportation are transferrable to inbound transportation behavior.

Acquisition

We made the following acquisition-related assumptions:

- Government acquisition personnel will be able to negotiate lower purchase prices of the items targeted in this initiative by an amount at least equal to the transportation costs that are now included in the purchase prices. (Examining the likelihood of negotiating lower item prices was beyond the scope of this analysis, but no transportation scenario will produce savings if the government cannot negotiate lower prices from its suppliers.)
- Not all items considered appropriate for inbound transportation management will be converted to FOB origin because of supplier processes and resistance, supplier leverage and existing low transportation rates, and the cost of typical shipment and liability concerns.
- The conversion of contracts from FOB destination to FOB origin will occur in phases over a 5-year period as contracts are re-negotiated or as new contracts are awarded.
- Additional acquisition professionals will be required to investigate and evaluate transportation costs during award of contracts for material goods.
- The amount of contract type in use at each agency is estimated at 5 percent FOB origin and 95 percent FOB destination.

Financial

Our financial assumptions were as follows:

- This BCA follows a 10-year horizon, with FY2014 being the first year of implementation.
- Benefits will begin to accrue in FY2015 and increase in 20 percent increments until 100 percent realization by FY2019.
- The discount rate is 2.8 percent, which is consistent with the discount rate for the Treasury notes with a 10-year maturity, as published in Office of Management and Budget (OMB) Circular A-94, Appendix C.[4]
- The guidance in OMB Memorandum M-08-13 applies.[5]
  - Inflation will increase at 2 percent per year.
  - Government full-time equivalent (FTE) costs will increase at 0.5 percent for the next 3 years, then 2.0 percent per year thereafter (these assumptions account for the federal pay freeze currently in effect).
  - Government FTE costs include a 36.25 percent fringe, with a base salary using Office of Personnel Management salary table 2012-DCB.
- In accordance with OGP guidance, the number of additional FTE positions needed to manage the inbound transportation (transportation officers and contracting personnel) is based on the fully burdened salary of a General Schedule (GS)-13, step 4, employee.
- A mix of grades from GS-12 to GS-15 is used for program management office and information technology support staff. (The exact makeup, by grade, appears in Appendix C.)

SCENARIOS

We employed a series of high-level scenarios under which the federal government would assume a greater role in managing inbound transportation. The scenarios are necessarily high-level and represent "pure" implementations because they describe a specific approach for managing inbound transportation. Although any eventual

[4] Office of Management and Budget, Appendix C, "Discount Rates for Cost-Effectiveness, Lease Purchase, and Related Analyses," Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, revised December 2011, http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c.

[5] Office of Management and Budget, Memorandum M-08-13, "Update to Civilian Position Full Fringe Benefit Cost Factor, Federal Pay Raise Assumptions, and Inflation Factors used in OMB Circular No. A-76, *Performance of Commercial Activities*, 11 March 2008.

solution could blend one or more of these alternatives into a hybrid approach, we focused on comparisons among the different approaches.

Our four scenarios are described below:

- *Scenario 1: Status quo.* This scenario is the current situation, where the federal government manages only a small amount of inbound transportation. We did not analyze this scenario, but evaluated the other three scenarios based on positive or negative changes in relation to this scenario.

- *Scenario 2: Independent agency approach.* Under this scenario, participating agencies would manage their own inbound transportation, arrange for and implement their own cloud-based transportation management system (TMS),[6] and negotiate their own rates with transportation service providers.

- *Scenario 3: GSA-managed approach.* Under this scenario, participating agencies would use GSA to manage inbound transportation. A key feature of this scenario would be GSA using its new, in-house TMS—TransPort Integrator (TPI), which is replacing its legacy Transportation Management Services Solution (TMSS) system—to support the management of inbound transportation. (Because TPI will have been fully implemented by the first year of our analysis, we excluded its acquisition and implementation costs and treated them as sunk costs. In addition, we treated the ongoing program management office [PMO] and TPI costs as a reduction in savings based on an approximated pass-through rate recovered by GSA for its services.)

- *Scenario 4: 3PL approach.* This final scenario explores the outsourcing of the government's inbound transportation to a 3PL, or other contractor, that would manage the transportation service providers and use its own TMS for shipment rating, planning, and execution. The 3PL would receive management fees based the volume of shipments handled.

The next chapter examines the opportunities for reducing inbound transportation costs.

[6] In accordance with OGP guidance, we examined only a "cloud-based" TMS option, also known as a software-as-a-service implementation, where the TMS would be hosted by a third party and accessed by government shippers via the Internet. This practice differs from a licensed or hosted option, in which the government, individually by agency or in a centralized approach, would purchase TMS software and have it hosted on an in-house network.

Chapter 3
Transportation Opportunities and Benefits

This chapter describes how we estimated inbound transportation costs and the potential benefits realized for each of our scenarios.

DATA SOURCES

Because inbound materials typically move under FOB destination terms and their transportation costs are normally included in their purchase price, we could not find a source for a true picture of the federal government's inbound cost and shipping patterns. Since we were unable to identify any sources for inbound shipment-level data that would enable us to estimate transportation costs, shipment volumes, modes, or lanes, we estimated the inbound transportation costs using procurement data from the following sources:

- *Federal Procurement Data System-Next Generation*. This system, which is maintained by GSA's Federal Procurement Data Center, is the government's repository for federal contract actions with a value of $3,000 or more. We pulled 1 year of procurement data (FY2011) based on the following criteria:
  - We considered only the 24 agencies named in the CFO Act of 1990.
  - We included only procurements for material goods, no services; each obligation had a Federal Supply Class (FSC) code between 0000 and 9999.
  - We pulled action obligations only, with each obligation being greater than $0.
- *GSA SmartPay purchase card program*. Through OGP, we accessed this program for FY2011 data, by CFO Act agency, for purchases made using government purchase cards administered under this program.

For both the FPDS-NG and purchase card data, we assumed the action obligations represented actual inbound shipment activity from a vendor to a government facility or point of acceptance. Although there may have been some overlap in these data, we had no easy way to identify the overlap, so we kept both values at their full amounts.

ESTIMATING TRANSPORTATION COSTS

We estimated the transportation costs by taking several steps, as we describe in the following subsections.

Estimating Initial Annual Total Purchase Costs

We began by summarizing FPDS-NG and purchase card data to estimate the total number of purchase obligations executed by the 24 agencies in FY2011. Table 3-1 contains those results. (See Appendix A for detailed data results from FPDS for each agency.)

Table 3-1. Total Estimated Purchases by Agency, FY2011 ($ billions)

Agency	FPDS-NG	Purchase card
Department of Agriculture	$3.14	$0.48
Department of Commerce	$0.54	$0.12
Department of Homeland Security	$4.17	$0.49
Department of Defense	$171.68	$6.81
Department of Transportation	$0.81	$0.18
Department of Education	$0.04	$0.00
Department of Energy	$0.85	$0.08
Environmental Protection Agency	$0.22	$0.04
General Services Administration	$1.33	$0.07
Department of Health and Human Services	$6.16	$0.55
Department of Housing and Urban Development	$0.01	$0.01
Department of Interior	$0.69	—
Department of Justice	$1.42	$0.73
Department of Labor	$0.06	$0.02
National Aeronautics and Space Administration	$1.18	$0.08
Nuclear Regulatory Commission	$0.01	$0.00
National Science Foundation	$0.01	$0.01
Office of Personnel Management	$0.06	$0.03
Small Business Administration	$0.01	$0.01
Social Security Administration	$0.47	$0.07
Department of State	$1.54	$0.10
Department of Treasury	$4.91	$0.09
Agency for International Development	$0.10	$0.01
Department of Veteran Affairs	$8.14	$7.94
Sub-totals	$207.55	$17.91
Grand total	$225.46	

The amount of obligations reported to FPDS-NG in FY2011 was more than $207 billion, while the value of FY2011 purchase card buys was nearly $18 billion, for a total estimated purchase amount of $225.46 billion, with DoD comprising almost 80 percent of the total.

Exclusions from Total Purchase Costs for Analysis

We next examined the suitability of the types of products purchased for an initiative of this type and whether a given agency was appropriate for this initiative.

COMMODITY EXCLUSIONS

After identifying the estimated total amount of purchases made in FY2011, we grouped those purchases into 12 broad commodity areas based on FSC grouping,[1] as shown in Table 3-2.

Table 3-2. Estimated Purchases by Commodity Group

Commodity group	Estimated FY2011 purchases ($ billion)	Examples	Unique attributes and needs
Subsistence	$11.75	◆ Food ◆ Water	◆ Expiration dates ◆ Temperature sensitive
Clothing/textiles	$4.75	◆ Tents ◆ Uniforms	◆ Usually not time-sensitive ◆ Not valuable
Tools and administrative supplies	$7.02	◆ Office supplies ◆ Tools	◆ Usually not time-sensitive ◆ Not valuable
Petroleum, oil, lubricants	$14.60	◆ Fuel ◆ WD-40	◆ Hazardous
Construction material	$1.43	◆ Concrete ◆ Sand ◆ Steel ◆ Wire	◆ Extremely heavy ◆ Large volumes ◆ Time-sensitive based on just-in-time delivery to construction site
Munitions	$22.60	◆ Ammunition ◆ Explosives ◆ Fuses	◆ Hazardous ◆ Sensitive material requiring increased security ◆ Valuable ◆ Time-sensitive delivery and transit, requiring limited stops and designated holding facilities
Personal consumption items	$0.79	◆ Soap ◆ Hand towels	◆ Usually not time-sensitive ◆ Not valuable
Major end-items	$73.90	◆ Planes ◆ Tractors ◆ Trucks	◆ Require specialized equipment ◆ Valuable

[1] The groupings are loosely based on DoD's 10 classes of supply, although we attempted to break out tools, administrative supplies, and electronics from DoD class II items (clothing, individual equipment, tents, toolsets, and administrative and housekeeping supplies and equipment).

Table 3-2. Estimated Purchases by Commodity Group

Commodity group	Estimated FY2011 purchases ($ billion)	Examples	Unique attributes and needs
Medical supplies	$18.82	◆ Medicine ◆ Vaccines ◆ Medical equipment ◆ Blood	◆ Expiration dates ◆ Can be hazardous material ◆ Valuable ◆ Sensitive material requiring increased security ◆ Time-sensitive delivery
Repair parts	$39.39	◆ Bolts ◆ Batteries ◆ Tires ◆ Engines	◆ Valuable ◆ Time-sensitive delivery based on repair schedule ◆ Can be hazardous
Electronics	$8.09	◆ Computers ◆ Phones ◆ Sensors	◆ Valuable
Other	$4.20	◆ Bulk commodities ◆ Live animals	◆ Bulk commodities shipped via rail or highly specialized equipment ◆ Special handling requirements

We concluded that several commodity groupings were inappropriate for an inbound transportation initiative for several reasons, such as unique security requirements, special delivery requirements, or irregular demand. We eventually excluded four of the commodity groups. Table 3-3 lists those groups, along with the reasons for their exclusion.

Table 3-3. Excluded Commodity Groups

Commodity group	Reason for exclusion
Petroleum, oils, and lubricants	◆ DoD is single largest buyer, dwarfing all others ◆ Includes pipeline shipments not suitable for this initiative
Munitions	◆ Freight is highly sensitive and tightly controlled by government requirements, including carrier certifications and security regulations ◆ Limited potential for expanding the number of qualified carriers because of certification requirements
Major end items	◆ Usually requires specialized hauling equipment, which can be difficult to procure given unusual demand patterns for freight ◆ Often procured via spot bids vs. contracts or capacity agreements
Other items	◆ Largest single component is minerals/ores, which are among the largest bulk commodities shipped via rail ◆ Only seven class I domestic rail carriers with little overlap in networks and little leeway in negotiating better rates

AGENCY EXCLUSIONS

We removed DoD, with OGP approval, from the analysis for two primary reasons.

1. DoD is exempt from OGP policy regulations.
2. DoD's largest shipper, DLA, is already exploring inbound transportation management of DoD material.

Remaining Total Purchase Costs

Table 3-4 summarizes the remaining estimated total purchases for FY2011 after removing DoD purchases and the excluded commodities.

Table 3-4. Total Remaining Purchases, FY2011 ($ billions)

	FPDS-NG	Purchase card
Total estimated procurements	$207.55	$17.91
Less: excluded commodities	($115.51)	—
Less: DoD procurement	($65.36)	($6.81)
Total procurements less exclusions	$26.68	$11.10

Note: We assumed none of the excluded commodity groups was procured using purchase cards. The DoD procurement amount includes only the eight commodity groups; the four excluded commodity groups were already excluded in the line above.

Excluding the four commodity groups reduced the total estimated purchase cost by $115.51 billion, while removing the remaining DoD purchases removed a total of $72.17 billion ($65.36 billion from FPDS-NG and $6.81 in DoD purchase card buys), for a remaining estimated purchase cost of $37.78 billion.

Based on input from OGP and its inbound transportation working group, we assumed that 95 percent of those purchases were made under FOB destination terms. The result was an estimated annual purchase amount of $35.90 billion in goods requiring transportation that we believe would be eligible for switching from FOB destination to FOB origin.

Estimating Transportation Costs

We used the Establish, Inc., Annual Logistics Survey (formerly the Herbert W. Davis Annual Logistics Survey) to estimate the portion of the $35.90 billion in purchases that represent the transportation costs (these surveys have been conducted across numerous industries for more than 30 years to estimate transportation costs as a percentage of sales). In 2011, the most recent year for which data were available, that percentage averaged 3.79 across all the industries in the survey.[2] When we

[2] Establish, Inc., *Logistics Cost and Service 2011*, presented at the Council of Supply Chain Management Professionals Annual Global Conference, Philadelphia, PA, October 2011.

applied that percentage to the estimated purchase cost, we obtained $1.36 billion in transportation costs. This amount represents the annual transportation cost opportunity that we will use in our analysis of the scenarios.

BENEFITS

We next focused on determining how much improvement in transportation costs we believe each scenario could achieve. We began by developing a likely range of savings in general, and then applying an "effectiveness" factor to each scenario, based on how likely we thought the scenario would capture the potential savings.

Estimated Savings

A typical rate analysis would use historic data, including volumes, modes, and lanes, to calculate potential savings. Because those data were not available, we requested advice from GENCO ATC, a leading 3PL, on the effects of well-managed transportation efforts on transportation line-haul rates by mode. GENCO ATC used shipment-level data from its customers by mode, procurement history, and industry expertise and knowledge in developing estimates of potential savings.

GENCO ATC analyzed 1 month of customer shipment data (May 2012) across various shipment modes. Based on the annual cost per shipper by mode, it then categorized each shipper as small or large.[3] In general, the larger the transportation costs, the greater the improvement in line-haul rate a shipper was likely to realize.[4] Because the federal government does not aggregate its transportation costs, but relies on suppliers to secure rates, GENCO ATC believes the current rates built into the FOB destination services would likely parallel those for smaller suppliers. If the government pursued a coordinated inbound transportation management initiative, GENCO ATC thought the resulting rates would be similar to those that large shippers realize. Table 3-5 presents the estimated savings range by mode of transport. (See Appendix B for GENCO ATC's complete narrative.)

Table 3-5. GENCO ATC Percentage Savings for Large Shippers over Small

Mode	Range (%)
Less than truckload	2–22
Parcel	13–32
Air (or expedited services)	10–30
Truckload	2–5

[3] For each mode, a small shipper was defined as having $1 million or less in annual transportation expenditures, while a large shipper was defined as having greater than $1 million in annual transportation expenditures.

[4] GENCO ATC did not include fuel and accessorial service charges in its rate improvement study, but fuel is an external market driver and accessorial charges will generally experience the same cost improvements as line-haul rates.

We then sought other estimated savings ranges for comparing with GENCO ATC's commercial estimates. As noted previously, DLA is already pursuing a separate initiative for inbound transportation. The BCA for that initiative included the estimates shown in Table 3-6,[5] which were obtained from other studies.

Table 3-6. Estimated Inbound Transportation Savings Ranges: DLA (%)

Estimate	Low range	Target	High range
CSSI Study	15.0	N/A	25.0
John Deere[a]	5.0	N/A	20.0
DLA Target	N/A	12.5	N/A

Note: The John Deere data are based on a case study: "TMC Helps John Deere Reduce Transportation Costs," C.H. Robinson Worldwide, Inc, June 2009.

The OGP then requested that our analysis use the more conservative of these savings ranges; therefore, we used 5.0 percent as our low range, 15.0 percent as our high range, and 12.5 percent as our target rate.

Using our low, high, and target savings rate, we estimated the annual transportation savings potential as shown in Table 3-7.

Table 3-7. Estimated Annual Transportation Savings Potential

	Low range	Target	High range
Annual transportation costs	$1.36B	$1.36B	$1.36B
Savings percentage	5%	12.5%	15%
Estimated annual transportation cost savings	$68M	$170M	$204M

Note: B = billion; M = million.

Effectiveness Probability

Although Table 3-7 shows the low, target, and high transportation cost savings potential, not all of our scenarios will be as successful, or effective, in achieving this full potential, as described below:

- *Independent agency approach.* If each agency takes its own approach to inbound transportation, the total cost that each agency would be able to leverage would be small and the likelihood of attaining the best rates would also be low, making this scenario less effective.

- *GSA-managed approach.* If GSA acts as the manager for all federal agency inbound transportation, it would attain most of the potential, but it would

[5] DLA Office of Operations Research and Resource Analysis (DORRA), *Rough Order of Magnitude, Business Case Analysis: First Destination Transportation and Packaging Initiative*, Version 2.1, 1 June 2011. (Note: DLA uses the term "first destination transportation" when referring to inbound transportation.)

not have the buying power of a 3PL. Additionally, GSA recovers the cost for its service by levying a percentage fee onto the rates, which is passed along to the agency customer, reducing the effective savings to the customer.

- *3PL approach.* If a 3PL acts as the manager for all federal agency inbound transportation, it would be able to leverage both the total federal transportation and its commercial customer costs, which would yield the maximum potential to be effective. While a 3PL also recovers the cost for its service, this cost is billed separately from the actual transportation costs and are included as separate cost line items in the next chapter.

Table 3-8 shows our estimates of this effectiveness probability for our scenarios, and the resulting savings ranges.

Table 3-8. Effectiveness Probabilities for Estimated Transportation Savings

	Scenario		
	Independent agency approach	GSA-managed approach	3PL approach
Estimated annual transportation cost savings	$68.0M–$204.0M	$68.0M–$204.0 M	$68.0M–$204.0M
Effectiveness factor applied to transportation cost savings	60%–70%	80%–85%	95%–100%
Resulting scenario-based annual savings estimate	$40.8M–$142.8M	$54.4M–$173.5M	$64.6M–$204.0M

Participation Rates

For a variety of reasons, not all of the eligible freight we identified would eventually move under an FOB origin arrangement. Some contracts may be prime vendor arrangements and the owners may not want to change something they consider successful. In other situations, the supplier may not agree to relinquish control over delivery of the goods, or may have such good rates that making the change would not be a good business decision. Therefore, we needed to pare down the likely savings by participation level.

DLA, in its inbound transportation management initiative, concluded that a 40 percent participation rate was the most likely outcome.[6] Therefore, we selected 40 percent as our target participation rate, expressed as a percentage of the estimated commodity purchases we identified in the FPDS-NG and purchase card acquisition data. We further selected 30 percent and 50 percent as the low and high participation levels, respectively. Table 3-9 shows the resulting range of savings for each scenario.

[6] Ibid.

Table 3-9. Estimated Participation Levels ($ millions)

Scenario	Participation level		
	30%	40%	50%
Independent agency approach	$12.20–$42.80	$16.30–$57.10	$20.40–$71.40
GSA-managed approach	$16.30–$52.00	$21.80–$69.40	$27.20–$86.70
3PL approach	$19.38–$61.20	$25.80–$81.60	$32.30–$102.00

Chapter 4 presents the start-up and recurring costs for each of the three scenarios.

Chapter 4
Costs

In this chapter, we examine the start-up and recurring costs, and their applicability to each of the three inbound transportation scenarios.

Cost Sources

Table 4-1 lists the costs areas we considered in our analysis, along with our sources for estimates of those costs.

Table 4-1. Cost Areas and Sources

Cost area	Source
TMS configuration	GENCO ATC research
TMS information assurance (IA) certification and renewal	GSA TransPort Integrator IA cost; LMI experience with IA certification and accreditation costs
TMS usage fees (cloud)	GENCO ATC
Training	DoD Defense Transportation Coordination (DTC) program; LMI
Change management	DTC; LMI
3PL management fees	DTC; GENCO ATC
3PL award fees	DTC; GENCO ATC
PMO standup and operations	DTC
Acquisition FTE	LMI
Transportation FTE	LMI

Start-up and Recurring Costs

The costs for each scenario fall into two categories—start-up, which are first-year costs associated with planning, acquisition, and implementation of the scenario; and recurring, which continue following implementation and include labor and services in support of operations and maintenance.

Table 4-2 lists the major cost areas for the scenarios, with most applying to multiple scenarios.

Table 4-2. Inbound Transportation Cost Categories

Cost area	Scenario		
	Independent agency approach	GSA-managed approach	3PL approach
TMS cloud configuration and usage fees	X	[a]	
TMS IA certification and renewal	X	X	X
Training	X	X	X
Change management	X	X	X
3PL management fees			X
3PL award fees			X
PMO standup and operations	X	[a]	X
Acquisition FTE	X	X	X
Transportation FTE	X	X	X

[a] Assumes all costs of TPI PMO and TMS are handled in terms of lower transportation rate savings.

The next two sections discuss start-up and recurring costs in further detail, with Appendix C providing complete cost data.

Start-up Costs

The start-up costs include the following:

- *TMS cloud configuration (independent agency approach only)*. The estimated cost of setting up a cloud-based TMS is based on a mid-sized implementation, or approximately 80,000 transactions per year.[1]

- *IA (all scenarios)*. Any TMS solution will likely require an IA certification and accreditation in accordance with the Federal Information Security Management Act (FISMA) of 2002. Since the shipment data exchanged would be for non-sensitive material, we assumed the certification effort and associated cost would be for a low-level accreditation.

- *Change management (all scenarios)*. The costs associated with FTEs for change management, based on the average labor rates for a team of management consultants.

- *PMO standup and operations (independent agency approach and 3PL approach)*. Implementing a program within each agency would require extensive oversight. That oversight would consist of government and contractor labor to support the inbound transportation planning, acquisition, and implementation. The contractor labor would include one senior project leader, a senior specialist, and an analyst (as defined in the GSA Schedule labor

[1] Source: GENCO ATC.

categories). The government labor would include a program manager, a functional subject matter expert, an information technology (IT) specialist, an IT security specialist, and a contracting specialist. For the government labor costs, we used a mix of GS labor rates for this category. Implementing the 3PL approach for inbound transportation would require standing up a PMO to plan and support the acquisition of a 3PL's services, and coordinate the change management, training, and implementation activities. The GSA-managed approach would also incur ongoing PMO costs, but they would be included within the rate structure passed along to GSA's customers, so we did not explicitly estimate them.

- *Training scenarios (all scenarios).* The costs to develop materials for and train agency personnel on the new transportation system—the cloud-based TMS, GSA's TPI, or a 3PL's TMS—depending on the scenario.

Recurring Costs

The recurring costs include the following:

- *TMS cloud usage fees (independent agency approach only).* Each agency would continue to incur annual usage fees based on the number of shipments the TMS processed on its behalf.

- *Information assurance (all scenarios).* Under FISMA, information systems must undergo a full re-certification and accreditation every 3 years, and they require IA monitoring and reporting in between the full re-certification years.

- *Change management (all scenarios).* Change management labor would continue as more contracts are converted from FOB destination to FOB origin and more transportation and acquisition FTEs are hired to handle the increasing workload.

- *Training (all scenarios).* As additional transportation and acquisition FTEs are hired over the 5-year program phase-in, training would remain as a recurring cost.

- *PMO operations (independent agency approach and 3PL approach).* As with start-up, both approaches would require a PMO to either manage the agency initiative (independent agency approach) or the 3PL contract (3PL approach). Although the GSA approach would also require an ongoing PMO, those costs would be handled within the rate structure passed along to GSA's customers, so we did not explicitly estimate them.

- *3PL management services fee (3PL approach only).* This approach would incur a fee that the 3PL would charge the government to manage the inbound freight, expressed as a percentage of the freight costs under its management.

- *3PL award fee (3PL approach only).* This approach would incur a fee for the 3PL meeting or exceeding the key performance indicators in its contract (such as on-time pickup or delivery performance, and percentage of damage-free shipments).

- *Additional acquisition FTEs (all scenarios).* Additional contacting personnel would be required to manage the increased number of contracts as transportation costs are separated from vendor contracts and managed as contracts directly with transportation service providers.

- *Additional transportation FTEs (all scenarios).* As the number of contracts shift from FOB destination to FOB origin, additional transportation personnel would be required to handle the increased workload of managing and arranging the transportation of inbound shipments.

SCENARIO COSTS

The following subsections describe the annual start-up and recurring costs for the scenarios. For each scenario, we estimated the costs for the low, target, and high participation variants, because the participation level dictates several of the costs, including the additional transportation and acquisition FTEs, 3PL management and award fees, and training.

Scenario 1: Status Quo

This scenario contains no cost estimates other than the total estimated transportation cost opportunity of $1.36 billion that we documented in Chapter 3. That figure represents the baseline against which we compared the remaining scenarios to determine their ROI.

Scenario 2: Independent Agency Approach

Table 4-3 shows the annual start-up and recurring costs we identified for this scenario, where each agency would procure its own cloud-based TMS services and manage its own contracts with transportation service providers. The costs are broken out by low, target, and high participation ranges.

Table 4-3. Independent Agency Approach Start-up and Recurring Costs

Cost type	Cost description	Low	Target	High
Start-up	TMS cloud configuration	$2,625,000	$4,462,500	$6,037,500
	IA	$1,000,000	$2,125,000	$3,450,000
	Change management	$4,305,600	$9,149,400	$14,854,320
	Training	$229,600	$459,000	$781,200
	Contractor support (planning, acquisition)	$7,038,000	$11,964,600	$16,187,400
	Government FTE (planning, acquisition)	$11,013,687	$18,723,268	$25,331,480
	Total	$26,211,887	$46,883,768	$66,641,900
Recurring	TMS cloud usage	$1,700,000	$2,890,000	$3,910,000
	IA	$780,000	$1,657,500	$2,691,000
	Change management	$1,076,400	$1,829,880	$2,475,720
	Training	$57,600	$115,000	$195,600
	Contractor support (operations, maintenance)	$4,235,220	$7,199,874	$9,741,006
	Government FTE (operations, maintenance)	$11,013,687	$18,723,268	$25,331,480
	Government FTE (additional transportation staff)	$19,615,357	$26,153,809	$32,692,261
	Government FTEs (additional acquisition staff)	$10,675,024	$21,483,486	$35,761,330
	Total	$49,153,288	$80,052,817	$112,798,398

The TMS cloud, IA, change management, and contractor support costs are very high because they are incurred in every agency.

Scenario 3: GSA-Managed Approach

Table 4-4 shows the estimated annual start-up and recurring costs for this scenario, where each agency would use GSA's TPI system to manage its inbound transportation and GSA's transportation service provider rates. Again, the costs are broken out by low, target, and high participation ranges.

Table 4-4. GSA-Managed Approach Start-up and Recurring Costs

Cost type	Cost description	Low	Target	High
Start-up	IA	$100,000	$125,000	$150,000
	Change management	$861,120	$1,076,400	$1,291,680
	Training	$184,000	$370,000	$627,600
	Total	$1,145,120	$1,571,400	$2,069,280
Recurring	IA	$78,000	$97,500	$117,000
	Change management	$107,640	$161,460	$215,280
	Training	$46,000	$92,500	$156,900
	Government FTE (additional transportation staff)	$14,678,158	$19,615,357	$24,552,555
	Government FTE (additional acquisition staff)	$8,006,268	$16,145,974	$26,820,998
	Total	$22,916,066	$36,112,790	$51,862,733

We estimated the number and cost of the additional acquisition and transportation FTEs at 75 percent of the amount reported for the independent agency approach, based on the assumption that a centralized approach would facilitate greater efficiencies in terms of additional labor required. The change management costs are much lower than those for the independent agency approach because one solution would require less change management planning and roll-out than individual agency solutions. The PMO costs, TMS fees, and other costs for TPI operations are recovered in the fees passed along with the rates to the agency customers, so they are not shown in this table.

Scenario 4: 3PL Approach

Table 4-5 shows the estimated annual start-up and recurring costs for this scenario, where the government would acquire the services of a 3PL to manage transportation service providers and use its own TMS for shipment planning and execution. The costs are broken out by low, target, and high participation ranges.

Table 4-5. 3PL Approach Start-up and Recurring Costs

Cost type	Cost description	Low	Target	High
Start-up	IA	$100,000	$125,000	$150,000
	Change management	$1,076,400	$1,506,960	$1,937,520
	Training	$156,800	$316,000	$535,200
	PMO standup (staff)	$1,000,000	$1,150,000	$1,300,000
	PMO standup (contractor support)	$3,000,000	$3,600,000	$4,200,000
	Total	$5,333,200	$6,697,960	$8,122,720
Recurring	IA	$78,000	$97,500	$117,000
	Change management	$430,560	$645,840	$430,560
	Training	$39,200	$79,000	$133,800
	PMO operations (staff)	$1,000,000	$1,150,000	$1,300,000
	PMO operations (contractor support)	$1,500,000	$1,800,000	$2,100,000
	Government FTE (additional transportation staff)	$11,742,526	$15,745,660	$19,615,357
	Government FTE (additional acquisition staff)	$6,405,014	$12,943,467	$21,483,486
	3PL management fee	$9,795,041	$11,971,717	$10,203,168
	3PL award fee	$612,190	$2,176,676	$5,101,584
	Total	$31,602,532	$46,609,860	$60,484,954

Like the GSA-managed approach, the 3PL approach assumes greater efficiencies in terms of additional labor required, 60 percent of the amounts reported in the independent agency approach. It also incurs PMO costs as well as 3PL management and award fees, which add significantly to the total cost of this scenario.

COMPARISON OF COSTS BY SCENARIO

Table 4-6 summarizes the costs estimated for each scenario.

Table 4-6. Start-up and Recurring Costs by Scenario and Participation

Scenario	Cost type	Low	Target	High
Independent agency approach	Start-up	$26,211,887	$46,883,768	$66,641,900
	Recurring	$49,153,288	$80,052,817	$112,798,398
GSA-managed approach	Start-up	$1,145,120	$1,571,400	$2,069,280
	Recurring	$22,916,066	$36,112,790	$51,862,733
3PL approach	Start-up	$5,333,200	$6,697,960	$8,122,720
	Recurring	$31,602,532	$46,609,860	$60,484,954

Chapter 5 presents the estimated ROI for each of the scenarios.

Chapter 5
Return on Investment Results

This chapter compares scenario costs and benefits over the 10-year horizon, resulting in a cumulative net benefit for each scenario.

COSTS AND BENEFITS SUMMARY

Table 5-1 summarizes the start-up and recurring costs for each scenario, based on full program maturity.

Table 5-1. Start-up and Recurring Costs by Scenario and Participation

Scenario	Cost type	Low	Target	High
Independent agency approach	Start-up	$26,211,887	$46,883,768	$66,641,900
	Recurring	$49,153,288	$80,052,817	$112,798,398
GSA-managed approach	Start-up	$1,145,120	$1,571,400	$2,069,280
	Recurring	$22,916,066	$36,112,790	$51,862,733
3PL approach	Start-up	$5,333,200	$6,697,960	$8,122,720
	Recurring	$31,602,532	$46,609,860	$60,484,954

Table 5-2 summarizes each scenario's estimated benefits, based on full program maturity, in the form of annual savings or cost avoidance through better managed inbound transportation.

Table 5-2. Estimated Inbound Transportation Benefits (Savings) by Scenario and Participation

Scenario	Low	Target	High
Independent agency approach	$12,243,802	$44,213,728	$71,422,175
GSA-managed approach	$16,325,069	$56,117,424	$86,726,927
3PL approach	$19,386,019	$66,320,591	$102,031,679

IMPLEMENTATION TIMELINE

As we noted in Chapter 2, we assumed the following:

- Each scenario would be implemented in FY2014.
- Benefits would begin to accrue in FY2015.
- The conversion of supplier contracts from FOB destination to FOB origin would occur over a 5-year period, beginning in FY2015.

These assumptions result in the timeline shown in Table 5-3 for a phased roll-out of each scenario.

Table 5-3. Phase-in Schedule for Costs and Benefits

Fiscal year	Costs phase-in schedule	Benefits phase-in schedule
2014	All start-up costs	No benefits
2015	20% of selected recurring costs[a]	20% of recurring benefits
2016	40% of selected recurring costs	40% of recurring benefits
2017	60% of selected recurring costs	60% of recurring benefits
2018	80% of selected recurring costs	80% of recurring benefits
2019–2003	100% of selected recurring costs	100% of recurring benefits

[a] Selected costs for phase-in at 20 percent per year include additional transportation and acquisition FTEs and the 3PL management and award fees.

INFLATION AND DISCOUNT FACTORS

In order to consider the time value of money, we adjusted the costs and benefits in each out-year using the guidance provided in OMB circulars A-94 and A-76. Our adjustments are summarized below:

- A discount rate of 2.80 percent per year
- An annual inflation factor of 2.00 percent per year
- A fringe benefit of 36.25 percent for each federal FTE
- A federal FTE cost increase at 0.50 percent for FY2015 through FY2017, and 2.00 percent per year thereafter.

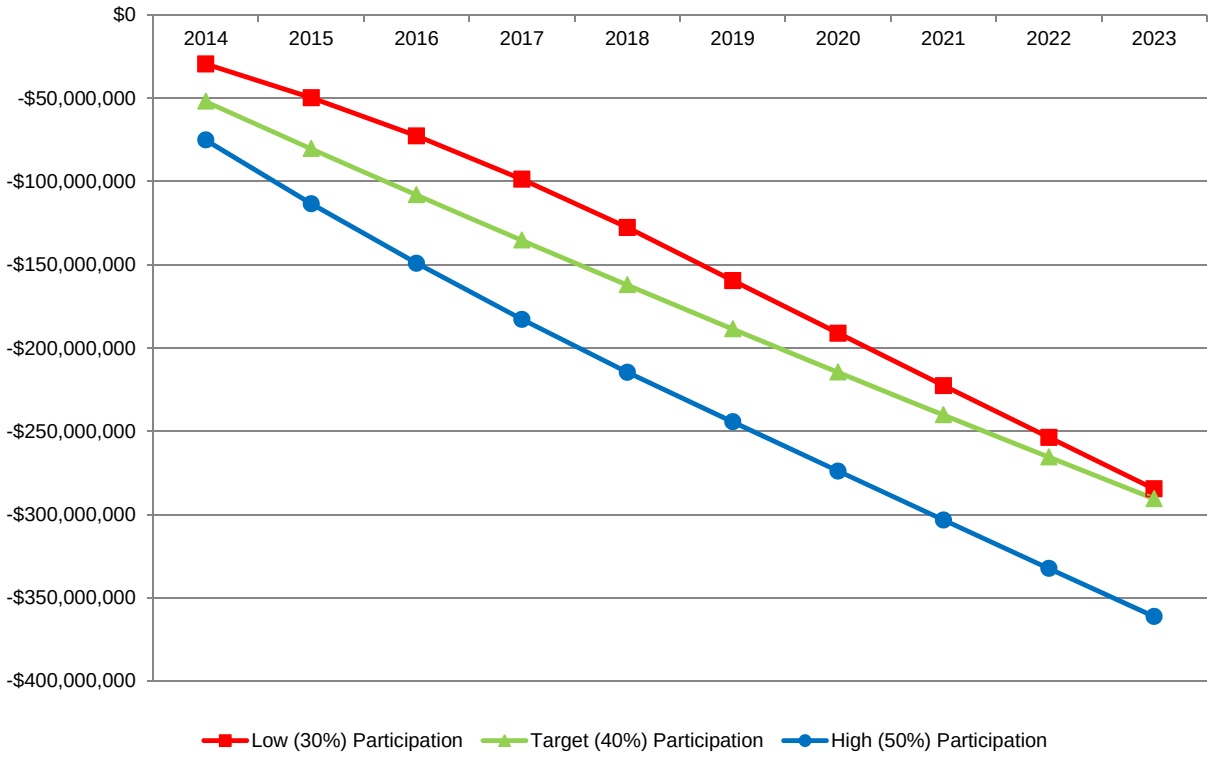
ROI RESULTS

In comparing the adjusted costs and benefits from FY2014 through FY2023, we calculated the net benefit (loss) for each year, and the cumulative net benefit (loss) at the end of each year for the low, target, and high participation variants for each scenario.

Scenario 2: Independent Agency Approach

Figure 5-1 illustrates the ROI results for this scenario.

Figure 5-1. Results: Independent Agency Approach

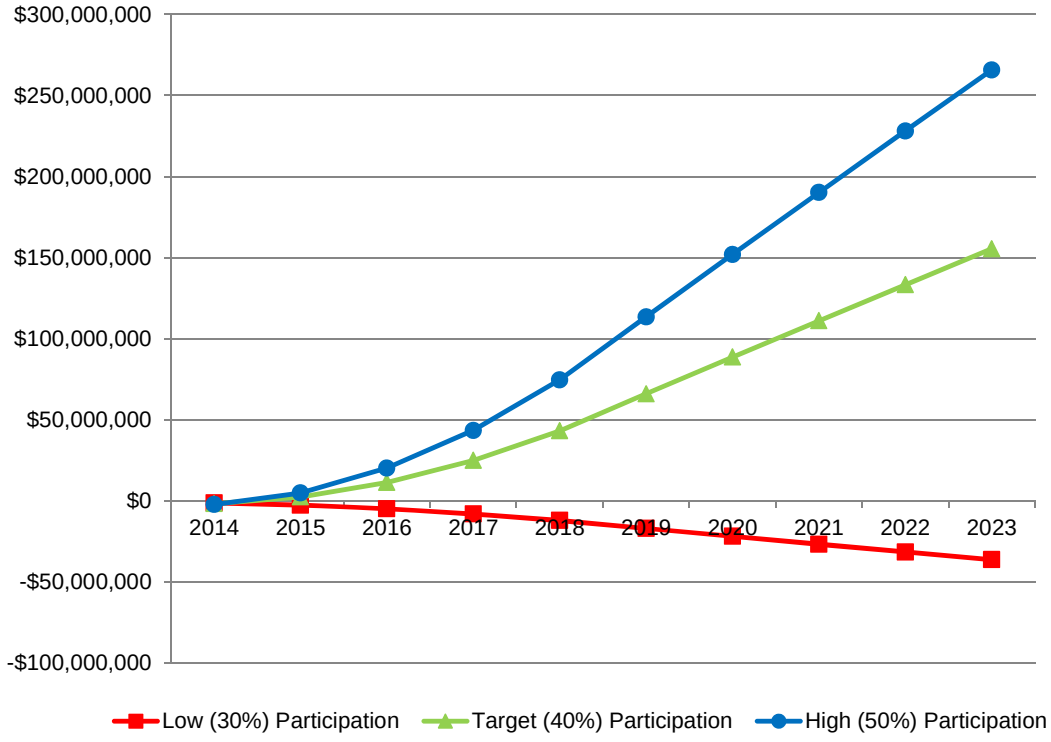


The independent agency approach does not result in a positive ROI under any of the three participation levels, primarily because of the high costs of implementing multiple agency efforts and each agency has low transportation costs to use as leverage in securing better rates from transportation service providers.

Scenario 3: GSA-Managed Approach

Figure 5-2 contains the ROI results for this scenario.

Figure 5-2. Results: GSA-Managed Approach

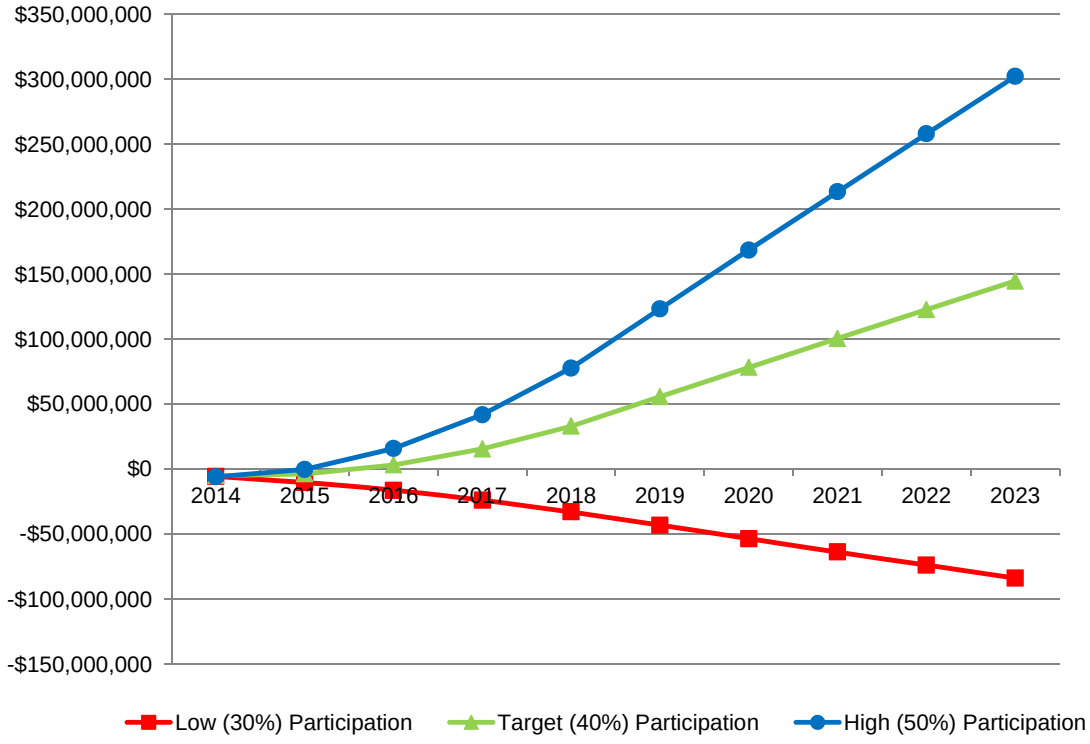


The GSA-managed approach avoids the redundancy of multiple agencies incurring costs to implement similar inbound transportation programs, which results in a positive ROI for both the target and high participation rates. However, the low participation rate resulted in a negative ROI, which indicates that level of participation has a significant impact on the overall results.

Scenario 4: 3PL Approach

Figure 5-3 shows the ROI results for this scenario.

Figure 5-3. Results: 3PL Approach



The 3PL approach also resulted in a positive ROI for all but the low participation rate. Like the GSA-managed approach, the level of participation significantly impacted the ROI for this scenario. That impact is greater for this scenario because 3PLs typically achieve better savings with higher volumes, and charge lower per shipment management fees with higher transaction volumes. A 3PL's award fees, on the other hand, typically are based on performance without rate breaks for volume, so the award fees will grow as the volume of shipments grows.

The following chapter presents the results of our sensitivity analysis of these ROIs.

Chapter 6
Sensitivity Analysis and Risks

In Chapter 5, we identified the potential ROIs for improving the management of inbound transportation, based on the three defined scenarios. For each scenario, we evaluated three variants: low participation, target participation, and high participation levels. The independent agency approach showed poor performance in all three variants, while the GSA-managed approach and 3PL approach showed positive ROI for both the target and high participation levels. However, because we had little concrete data to use in this preliminary BCA, the range of likely data values is quite large for many of the cost and benefit variables. In this chapter, we look at these key data elements to identify where changes in value would significantly influence the cost-benefit profile of our inbound scenarios.

SENSITIVITY OVERVIEW

For each scenario, we performed a sensitivity analysis on the values that could significantly influence scenario performance:

- We identified the potential key values to vary.
- We tested one variable at a time, holding all other values at their target participation levels.
- We varied each variable between 0 percent and 200 percent of the target participation value.
- We calculated the 10-year cumulative net benefit (or loss) using the range of values.
- We plotted the results of each variable on the same graph.

We used the resulting graph, called a spider graph, to identify any correlation (either positive or negative) between an input value and the calculation results, in accordance with the following rules:

- A positive slope indicates a direct correlation—as the input value increases, the calculated value increases.
- A negative slope indicates a negative correlation—as the input value increases, the resulting calculated value decreases.

The slope of each line indicates the sensitivity of the calculated value to the input value. A shallow slope indicates the input value has only a slight impact on the

resulting calculation, while a steep slope indicates the resulting calculation is highly sensitive to the input value.

SENSITIVITY ANALYSIS RESULTS AND RISKS

The sensitivity results for each of the scenarios are presented in the following subsections.

Scenario 2: Independent Agency Approach

We analyzed five key variables for this scenario.[1] They appear in Table 6-1, along their respective target participation values and the amounts by which we varied them.

Table 6-1. Independent Agency Approach: Sensitivity Analysis Variables

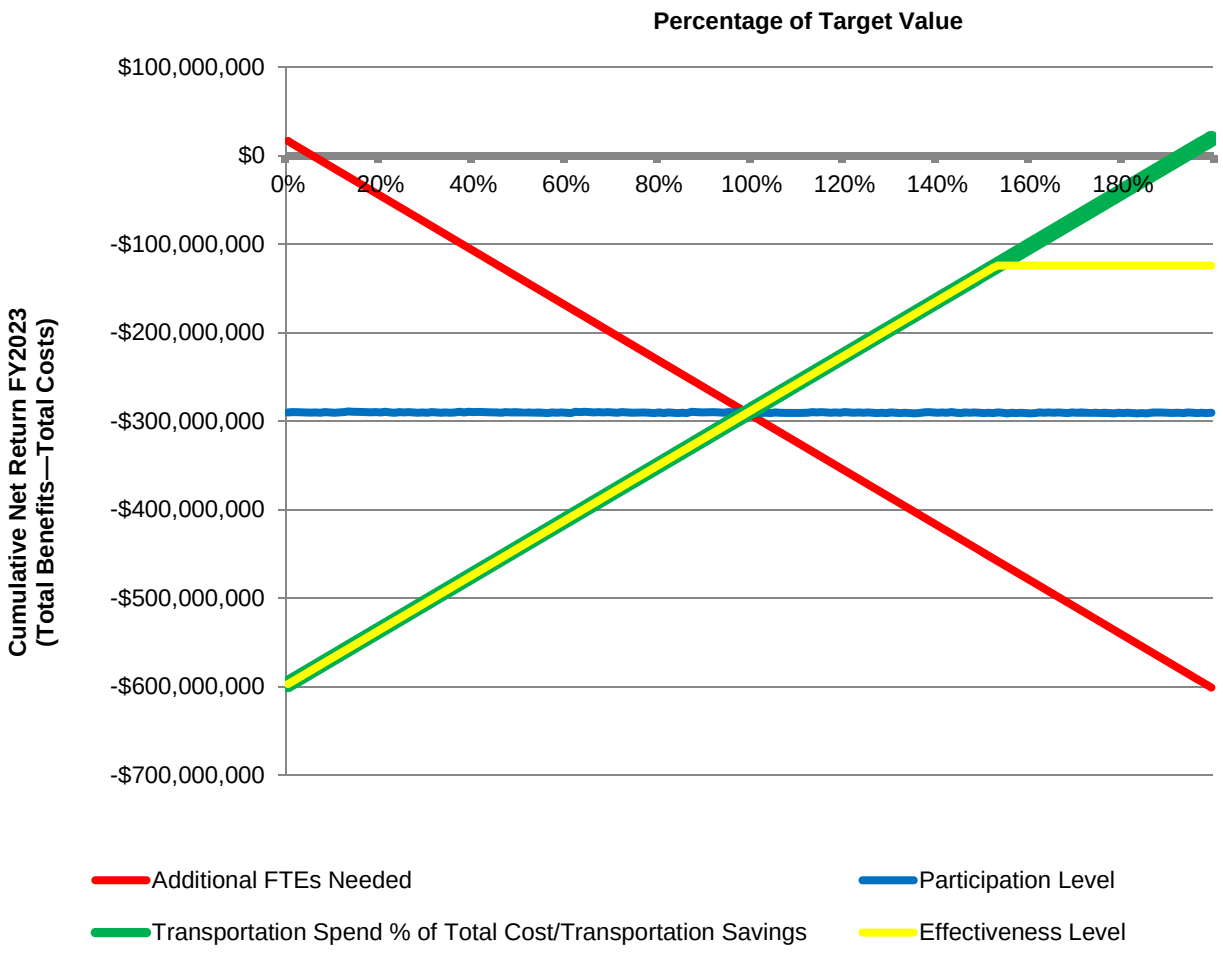
Variable	Target participation level value	Sensitivity range
Participation level	40%	0–80%
Transportation savings	12.5%	0–25%
Effectiveness level	65%	0–100%[a]
Transportation percentage of total cost	3.79%	0–7.58%
Additional FTEs needed	393	0–796

[a] We were unable to increase this variable above 100 percent, so we could not double the target participation level value.

Figure 6-1 presents the results of our analysis. Each line represents the 10-year cumulative net benefit of the scenario if the variable in question is *X* percent of the target value. The x-axis runs between 0 percent and 200 percent and all lines intersect at 100 percent—when every variable is at its target participation value.

[1] We also examined (if applicable) for each scenario the costs for the TMS cloud configuration, training, change management, PMO, and government and contractor personnel support. Each had a negligible impact on the ROI.

Figure 6-1. Independent Agency Approach: Sensitivity Analysis Results



This figure shows the following results:

- Increasing the effectiveness level and transportation cost beyond the target participation levels had positive impacts on ROI, but increasing the effectiveness level never resulted in a positive ROI, and the transportation savings would need to nearly double before it would yield a positive ROI.

- Increasing the number of additional FTEs had a negative impact on ROI, nearly doubling the overall loss when we doubled the target number of FTEs. The FTE count would need to decrease to almost zero to result in a barely positive ROI.

- The participation level had no impact on overall ROI because the scenario added agencies at different participation levels, which drove the additional costs and benefits over the participation level. This variable was not a significant factor in the results.

Scenario 3: GSA-Managed Approach

Table 6-2 lists the key variables we examined for sensitivity in this scenario, along with their target participation levels and sensitivity ranges.

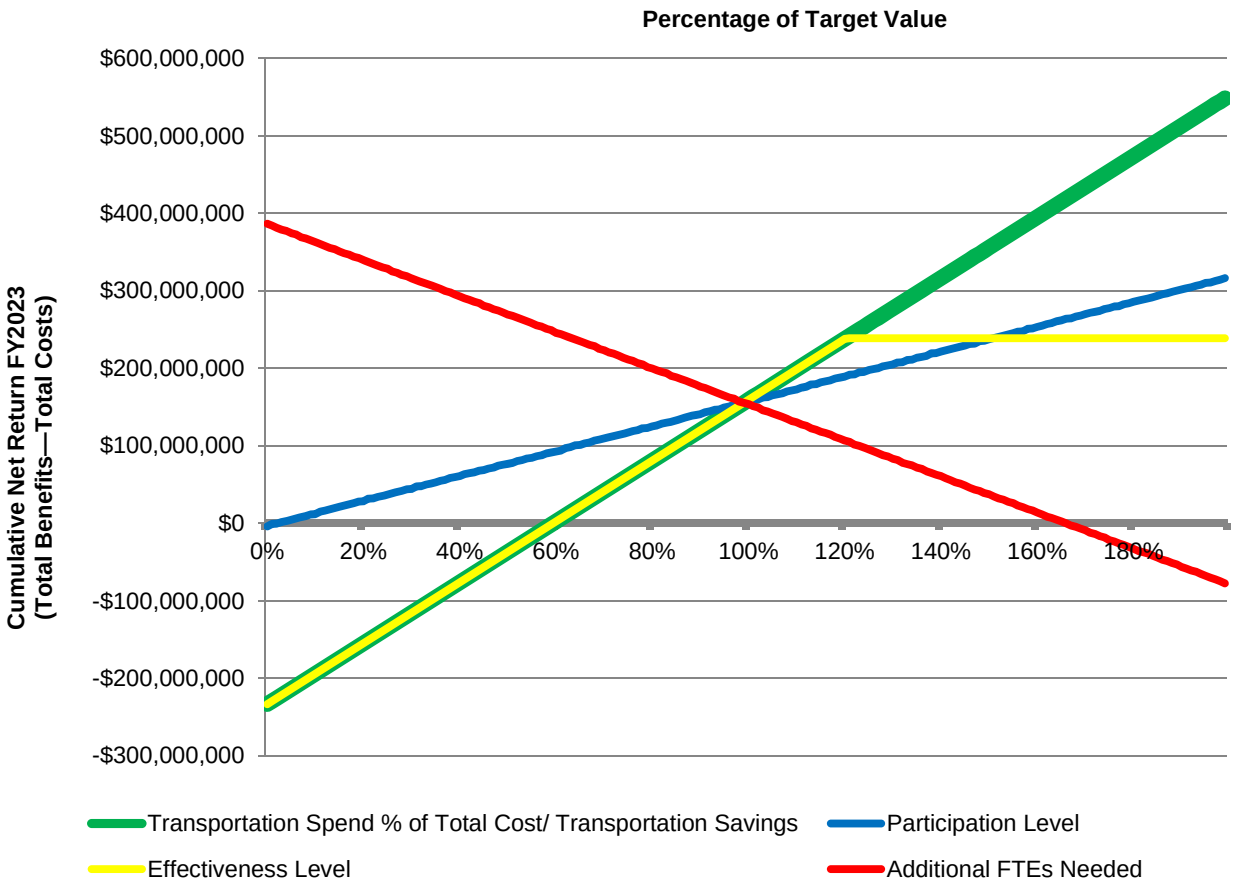
Table 6-2. GSA-Managed Approach: Sensitivity Analysis Variables

Variable	Target participation level value	Sensitivity range
Participation level	40%	0–80%
Transportation savings	12.5%	0–25%
Effectiveness level	82.5%	0–100%[a]
Transportation percentage of total cost	3.79%	0–7.58%
Additional FTEs needed	295	0–590

[a] We were unable to vary this variable above 100 percent, so could not double the target participation level value.

Figure 6-2 presents the sensitivity analysis results for this scenario.

Figure 6-2. GSA-Managed Approach: Sensitivity Analysis Results



This figure shows the following results:

- Participation level, effectiveness level, and transportation savings each had a positive correlation, but the number of additional FTEs had a negative correlation.
- The additional FTEs had a negative impact on ROI.

Scenario 4: 3PL Approach

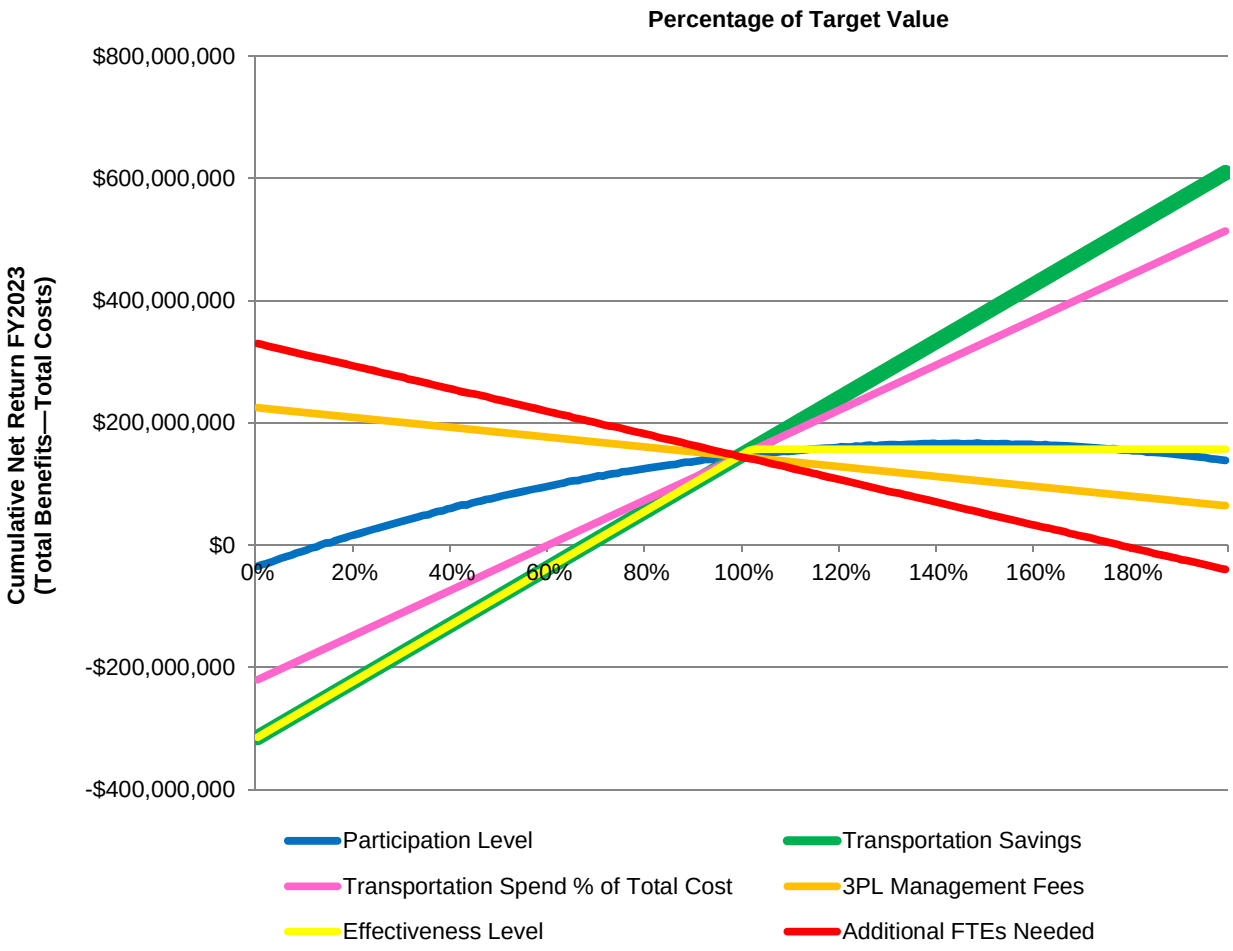
Table 6-3 lists the key variables, target participation levels, and sensitivity ranges for this scenario.

Table 6-3. 3PL Approach: Sensitivity Analysis Variables

Variable	Target participation level value	Sensitivity range
Participation level	40%	0–80%
Transportation savings	12.5%	0–25%
Effectiveness level	97.5%	0–100%
Transportation percentage of total cost	3.79%	0–7.58%
3PL management fees	5.5%	0–11%
Additional FTEs needed	248	0–496

Figure 6-3 graphically displays the results of this sensitivity analysis.

Figure 6-3. 3PL Approach: Sensitivity Analysis Results



This figure shows the following results:

- The amount of transportation costs managed by a 3PL (transportation as a percentage of total cost) and the amount of potential savings had the greatest positive impacts on ROI.
- The participation level line curved because the cost per transaction decreased as shipment volumes increased.
- If annual transportation savings reached an aggressive 25 percent, or double the target, savings could exceed $600 million over 10 years.
- The additional FTEs had a negative impact on ROI.
- Effectiveness level and 3PL management fees had negative impacts on ROI, although less severely than additional FTEs.

RISKS AND MITIGATIONS

The results of this sensitivity analysis suggest the following observations about risks to program success and potential mitigating actions:

- The independent agency approach has no chance of profitability. The effect of each agency attempting to manage inbound transportation on its own would result in redundant
  - TMS costs,
  - contractor costs,
  - government support costs (IT and management), and
  - government transportation and acquisition FTEs.

  The OGP should encourage agencies interested in inbound transportation to work with GSA's TPI effort and use a system already in place.

- The GSA-managed approach shows promise of profitability, but it could become unprofitable if
  - the effectiveness level drops from the target 83 percent to 50 percent,
  - the percentage transportation savings achieved falls below the target 12.5 percent to 7.5 percent, or
  - the number of additional transportation and acquisition personnel exceeds the target estimate by about 70 percent, or more than 500 FTEs total.

  These risks illustrate the extent of the unknowns involved. To mitigate these risks, OGP, and agencies considering inbound transportation management, should encourage and pursue extensive data collection efforts for current inbound transportation costs on specific commodity areas. In addition, the government should conduct a detailed workload forecast to determine the number of extra transportation and acquisition personnel required for this effort.

- The 3PL approach shows promise of profitability, but it could become unprofitable if
  - the effectiveness of this scenario drops from the target 97.5 percent to 68.0 percent;
  - the percentage transportation savings achieved falls from the target 12.50 percent to 8.75 percent;

- the number of additional transportation and acquisition personnel exceeds 180 percent of the target FTEs, or 446 total FTEs; or

- the cost of transportation, based on the total cost of goods, is only 2.30 percent or less, rather than the 3.79 percent estimate.

The mitigating actions for this scenario are the same as for the GSA-managed approach—collect inbound transportation costs for target commodities (determined by each agency) to allow for more detailed analysis of potential transportation savings, along with a detailed workload forecast for determining the number of extra personnel actually required.

Chapter 7 presents our conclusions and recommendations for the future.

Chapter 7
Conclusions and Recommendations

This chapter identifies the success factors needed for a positive inbound transportation management initiative, our conclusions based on those success factors and the results of our analysis, and our recommendations for OGP.

SUCCESS FACTORS

A wide array of factors will affect the success of an inbound transportation management scenario.

- *Federal policy and execution success factors*. Before instituting any inbound transportation management scenario, the federal government will need to consider:

  - *Changing how it views requirements for three key transaction elements*: 1) acceptance of goods for contract conformity, 2) transfer of title to the goods, and 3) acceptance of risk for loss and damage associated with shipping the goods:

    - Under FAR Subpart 46.5—Acceptance, the contracting officer (or cognizant delegated authority) may formally accept the goods before or after delivery, at origin or destination. Although the acceptance point does not drive the decision on transportation terms,[1] the FAR does state that if acceptance is at destination, the terms must be FOB destination. Therefore, for the government to move to FOB origin to manage inbound transportation, the acceptance point would need to be other than at destination. The FAR notes that, for vendors with good performance, the contracting officer may accept a certificate of conformance without inspection at source.

    - The FAR further states, "Title to supplies shall pass to the Government upon formal acceptance, regardless of when or where the Government takes physical possession, unless the contract specifically provides for earlier passage of title." If the government accepts the goods at origin, it assumes title at that point.

    - For FOB origin shipments, the risk for loss and damage to the goods is retained by the contractor until the goods are accepted by the shipping carrier, whereupon the risk is transferred to the government. The

[1] This is an acquisition requirement driven by the contract with a material vendor, regardless of whether the transportation of the material is procured by tender or contract.

government would then pursue any damage or loss claims per its arrangements with the carrier.

- Even under FOB origin terms, where formal acceptance occurs at the contractor's site or other specified location, the requirement for inspection of the goods at the delivery location still holds. The goods should be "examined at destination for quantity, damage in transit, and possible substitution or fraud."

- *Repurposing the funds currently set aside for purchase of material, so some of the funds can be used for the transport of that material*. Funds for the purchase of material and for transportation are currently budgeted and allocated differently, so the financial details of how the inbound transportation costs would be funded must be investigated and resolved. Ideally, because transportation costs are included in the delivered purchase price, the agency could split the costs within the required elements of expense and remain within the same dollar ceiling. However, budgeting and obligating funds into different object classes could affect their ability to split the costs. This action may be most obvious when comparing funded acquisition programs for end items versus daily operations and maintenance purchases out of central accounts.

- *Gathering better data to identify commodities appropriate for inbound transportation management*. A key first step would be to require suppliers to report transportation charges separately from the cost of goods on their invoices. This action would require modifications to contracts and could result in objections from suppliers who have padded their total costs.

- *Providing extensive supply chain and transportation education, tools, and change management to agency decision makers*. It is critical to emphasize the impact of forecasting and planning lead-times on transportation options and costs, and on the potential for overall government savings based on coordinated and well-considered actions by all involved in the procurement, delivery, and consumption of materials.

- *Acquisition success factors.* Three factors are key to any concept for switching to federally managed transportation of purchased goods:

  - Acquisition offices would need to embrace the concept and consider which new and existing contracts could transition from FOB destination to FOB origin.

  - Acquisition personnel would need the tools to perform the required due diligence of researching transportation costs in conjunction with material

costs so they could accurately award contracts based on the total cost of providing the material to the required government locations.

- Acquisition personnel would need to negotiate reasonable decreases in the current cost of goods to offset at least the cost of transportation that the government would now be purchasing separately from the goods.

- *Supplier success factors.* Even if the acquisition community embraces this initiative, suppliers would also need to cooperate. Some of their success factors are outlined below:

  - Suppliers (vendors) could resist losing control of transportation management, especially if their fulfillment processes are standardized for efficiency. Some large suppliers could simply refuse to participate, while others may require special "processing fees" to account for costs incurred by using different business processes.

  - Small vendors may not recognize the potential competitive benefit this initiative could provide, particularly in terms of their product cost. They generally have less leverage to negotiate transportation costs, so their product-delivered cost may put them at a disadvantage to larger suppliers. If they understand they now are competing on the cost of the material alone, they may be enthusiastic about the change; however, they could balk at the initiative or at least not actively support it.

  - Transportation service providers and transportation industry groups may believe any federally coordinated initiative would have an undesirable effect on their profit margins and the current vendor market for transportation services, potentially squeezing small transportation providers out of business. Any initiative would need to address these concerns with analysis and extensive small business participation. Those requirements could lower the potential for transportation savings and the actual ROI.

CONCLUSIONS

Based on the results of our analysis of these scenarios, including the sensitivity of those results to key variables, we offer the following conclusions:

- The opportunity for reducing transportation costs exists, but the amount of savings varies widely based on

  - the scenario pursued—the scenario of each agency approaching inbound transportation independently showed little to no promise; and

  - the target participation level—the centrally managed inbound transportation scenarios (GSA or 3PL)

- broke even only at a 30 percent participation level and
- experienced almost twice the ROI when the participation level increased from 40 to 50 percent.

- The government faces significant risk in pursuing this effort given the lack of data and the number of success factors needed to realize savings.
- The OGP, and any agency considering inbound transportation management, must seriously consider the change management efforts required to affect changes to both policies and processes. Those efforts could challenge the eventual commitment to pursue this initiative.

RECOMMENDATIONS

We recommend OGP take the following actions:

- Do not actively pursue either the GSA-managed or 3PL approaches because of the lack of data and the absence of support or enthusiasm from any of the 23 civilian CFO Act agencies to participate in a pilot for even one commodity or item. More groundwork is required.
- Work with GSA's Federal Acquisition Service Transportation Program Office to promote TPI's ability to handle inbound transportation management and encourage agencies interested in pursuing inbound transportation management to explore using TPI as a low-cost way to transition products, identify issues, and evaluate results. This action would help to avoid the potential for individual agencies acting independently, without collaboration or direction. Some commodities, such as those targeted in a strategic sourcing initiative, could serve as possible pilots for inbound efforts.
- Modify all new contracts and contracts up for renewal to require vendors to provide separate line-item costs for the transportation provided. Although the charged amount may not reflect actual transportation costs (they could include some upcharges), this information would help identify which commodities may be appropriate for inbound transportation management and provide a rough baseline of costs for more detailed analysis and comparison to typical transportation costs.

Appendix A
Data Sources

This appendix contains a detailed breakdown of the total estimated purchases, by agency and commodity, extracted from FPDS-NG and pulled from the summary purchase card data provided by OGP.

FPDS-NG SUMMARY

Table A-1 lists the FY2011estimated purchases (action obligations), by agency and commodity, FPDS-NG.

Table A-1. FY2011 FPDS-NG Estimated Purchases by Agency and Commodity Group

Agency	Clothing and textiles	Construction material	Electronics	Major end items	Medical supplies	Munitions	Other	Personal con-sumption items	Petroleum, oil, lubricants	Repair parts	Subsistence	Tools and admin
Department of Agriculture	$11,181,808.97	$10,209,552.28	$150,297,801.46	$42,771,926.07	$46,713,667.41	$3,278,462.52	$325,473,781.07	$56,165.22	$15,699,019.75	$159,910,076.88	$2,312,574,253.94	$59,604,007.86
Department of Commerce	$489,576.29	$902,648.96	$171,878,830.19	$24,285,867.85	$34,902,524.94	$175,270.12	$118,036.58	$155,800.32	$4,945,201.53	$118,289,080.28	$81,178.27	$184,565,959.46
Department of Defense	$4,368,816,194.15	$1,116,084,512.38	$4,570,045,609.10	$69,363,578,496.88	$6,244,289,361.93	$22,423,575,794.97	$53,938,006.91	$744,550,898.80	$14,487,927,315.35	$35,071,598,737.23	$9,092,838,642.15	$4,146,822,298.42
Department of Education	$35,487.59		$32,999,040.72	$1,523,527.13	$114,251.50	$51,640.78				$924,041.54	$13,141.40	$2,637,241.06
Department of Energy	$579,285.21	$2,647,081.37	$25,220,102.39	$756,849,086.42	$411,369.87	$2,964,045.74	$9,168.60		$832,237.61	$53,422,555.09	$50,992.88	$6,953,552.25
Department of Health and Human Services	$2,050,148.13	$1,910,288.64	$248,954,171.12	$29,204,711.55	$5,453,356,135.79	$32,335,922.53	$5,445,181.34	$1,205,804.13	$20,388,875.40	$145,695,710.29	$942,929.84	$223,228,434.19
Department of Homeland Security	$96,820,832.84	$9,139,964.12	$852,260,626.19	$1,899,850,916.29	$21,011,127.98	$47,302,138.62	$7,383,510.22	$2,327,854.96	$9,481,426.20	$1,054,943,193.51	$16,972,670.06	$151,163,225.64
Department of Housing and Urban Development			$199,191.24							$1,047,093.12		$4,617,033.48
Department of Justice	$101,041,014.48	$30,938,037.84	$287,041,798.24	$69,932,021.50	$126,321,030.49	$18,158,632.00	$3,814,423.88	$9,350,709.75	$14,023,053.32	$415,862,197.96	$159,724,347.72	$183,319,615.75
Department of Labor	$219,968.88	$1,400.00	$20,836,981.60	$684,054.10	$1,809,065.71	$44,119.66		$4,440.00	$370,317.96	$26,154,490.54	$35,884.95	$7,959,356.51
Department of State	$50,841,465.14	$9,634,133.56	$224,322,430.82	$475,135,604.62	$24,994,798.44	$31,695,259.85	$1,533,298.27	$605,938.17	$48,337,864.20	$390,327,649.55	$13,620,740.97	$269,287,294.79
Department of the Interior	$20,630,139.03	$30,771,716.15	$102,009,060.04	$133,951,122.36	$19,805,407.65	$6,514,676.65	$22,837,025.07	$326,802.11	$43,185,263.59	$237,403,555.62	$7,257,690.76	$62,948,745.78
Department of the Treasury	$1,768,397.84	$134,412,535.30	$364,057,857.59	$170,109,498.32	$1,724,099.15	$2,899,351.24	$3,814,983,033.18	$286,514.01	$32,298,751.40	$194,839,097.97	$24,941.43	$196,978,166.01
Department of Transportation	$516,249.18	$2,958,238.79	$55,447,394.36	$14,581,868.27	$3,435,029.79	$2,116,004.79			$1,143,973.37	$249,735,691.69	$46,076.49	$482,254,919.65
Department of Veterans Affairs	$50,962,105.58	$5,126,367.45	$345,630,234.72	$49,220,831.81	$6,742,334,607.68	$2,243,644.65	$3,167,928.57	$6,531,602.92	$30,478,992.59	$463,500,943.57	$122,280,022.84	$314,034,163.98
Environmental Protection Agency	$313,314.27	$10,113.00	$120,687,913.48	$1,586,357.10	$26,431,970.20	$561,025.35	$4,956.01		$2,375,475.57	$25,253,867.53	$75,983.62	$42,465,365.22
General Services Administration	$46,265,074.29	$61,210,833.86	$173,296,443.32	$63,799,115.36	$31,624,103.91	$1,423,611.93	$561,961.37	$23,588,825.62	$4,091,497.83	$308,274,606.20	$20,077,781.82	$590,858,334.39
National Aeronautics and Space Administration	$590,482.92	$3,323,283.85	$33,864,438.67	$828,116,252.12	$23,323,489.74	$3,014,792.44	$160,735.35	$197,240.68	$40,308,413.17	$236,648,153.91	$167,622.47	$12,705,437.94
National Science Foundation			$5,461,077.29							$3,971,692.81		$643,028.50
Nuclear Regulatory Commission	$20,454.50		$6,487,283.19	$1,432,383.98	$993,124.02	$94,071.60			$24,052.50	$1,034,363.25	$9,372.91	$4,361,297.06
Office of Personnel Management	$4,379.29		$38,321,651.17	$117,879.61	$308,117.34			$16,591.06	$19,112.60	$14,885,234.84	$519.90	$7,556,106.35
Small Business Administration			$11,302,156.55	$12,500.00	$15,318.20	$11,176.08				$1,859,345.58		$1,547,017.15
Social Security Administration	$426,846.54	$108,140.20	$244,800,991.26	$2,286,748.85	$133,821.10	$137,973.76			$1,925,828.19	$189,929,983.32	$163,949.52	$25,868,959.12
U.S. Agency for International Development	$349,695.29	$6,421,648.49	$6,939,243.94	$4,371,652.58	$19,612,421.09	$201,122.43		$12,513.38	$495,573.15	$22,829,252.78	$1,029,130.59	$37,467,642.35
Total	$4,753,922,920.41	$1,425,810,496.24	$8,092,362,328.65	$73,933,402,422.77	$18,823,664,843.93	$22,578,798,737.71	$4,239,431,046.42	$789,217,701.13	$14,758,352,245.28	$39,388,340,615.06	$11,747,987,874.53	$7,019,847,202.91

Note: Rows and columns in gray type indicate excluded agencies and commodity groups.

PURCHASE CARD ACQUISITIONS

Table A-2 lists the total estimated purchase card acquisitions for FY2011. Because no information on commodity or Federal Supply Class was available in the data, the purchases are summarized by agency only.

Table A-2. FY2011 Estimated Purchase Card Acquisitions

Agency	Cost
Department of Agriculture	$483,424,814.53
Department of Commerce	$118,628,549.01
Department of Defense	$6,812,038,385.68
Department of Education	$2,988,504.42
Department of Energy	$83,896,864.07
Department of Health and Human Services	$545,951,662.34
Department of Homeland Security	$489,954,417.15
Department of Housing and Urban Development	$10,247,889.12
Department of Interior	$0.00
Department of Justice	$729,185,465.92
Department of Labor	$21,935,458.43
Department of State	$97,535,154.06
Department of Transportation	$176,070,071.02
Department of Treasury	$91,774,960.99
Department of Veteran Affairs	$7,939,549,868.70
Environmental Protection Agency	$37,091,871.46
General Services Administration	$65,864,670.85
National Aeronautics and Space Administration (NASA)	$78,320,194.25
National Science Foundation	$6,188,083.17
Nuclear Regulatory Commission	$4,958,419.26
Office of Personnel Management	$28,360,929.41
Small Business Administration	$5,257,493.11
Social Security Administration	$70,461,985.44
U.S. Agency for International Development	$10,507,934.54
Total	$17,910,193,646.93

Note: Rows in grey type indicate excluded agencies.

Appendix B
Effect of Size of Transportation Spend on Transportation Rates Study

This appendix presents in its entirety a GENCO ATC study, produced for OGP in August 2012. The objective of that study was to assess the impact that an organization's transportation expenditures (spend) has on its ability to secure lower transportation rates. We used the results from this study to form our initial estimates of possible inbound transportation savings for our analysis. Although we ultimately used more conservative savings estimates, we are including this paper because it presents a commercial industry perspective on what rate improvements are possible given the size of an organization's transportation program.

Analysis Results

As part of the General Services Administration (GSA) Office of Governmentwide Policy (OGP) investigation into United States Government (USG) transportation spend, GENCO ATC has analyzed the effects of sophisticated transportation management efforts on transportation linehaul rates by mode. This report summarizes our analysis of that information.

Information and Data Provided

GENCO ATC utilized shipment-level detail by mode, procurement event history, and industry expertise and knowledge to complete this study.

Assumptions

Three major assumptions are used in this analysis:

- In general, smaller shippers have less spend leverage and less transportation management savvy. Small shippers will be used as the baseline for less sophisticated transportation management and rate performance.
- While the data analyzed focuses on outbound transportation, the percent improvement realized by more sophisticated transportation management will be similar between inbound and outbound transportation.
- Larger organizations that have not focused on transportation management and have not invested in centralized decision support tools or a third party logistics (3PL) arrangement are not capitalizing on their potential spend

leverage or other opportunities that their size presents. Therefore, these large organizations are behaving like small companies and likely realizing similar transportation spend performance to a small company.

ANALYSIS METHOD

We used the following method for our analysis:

- Based on the annual spend per shipper by mode, we broke shippers into two categories: small shippers and large shippers.
- We analyzed one month of historical data: 21,839 less than truckload (LTL) and 19,202 truckload shipments, by shipment lane and size of shipper, to determine linehaul transportation cost by mode and size. Four shipment modes were analyzed: truckload, LTL, parcel, and air (expedite). Results are reported by mode.
- Fuel and other accessorial surcharges are not taken into account in this analysis.

RESULTS

Truckload

In this analysis, truckload shippers were divided into two categories: small truckload shippers and large truckload shippers. The categories were defined as the following:

- Small truckload shippers: $1 million or less in annual truckload shipping
- Large truckload shippers: Greater than $1 million in annual truckload shipping.

Estimated percent savings range for large truckload shipper over small truckload shipper	2%–5%

The larger the truckload spend, the more likely the shipper will obtain the high end of the range of savings. Truckload transportation is principally a lane and volume based pricing market. Typically, truckload carriers price shipments by lane in a $/mile format with a minimum charge. If the lanes and volumes of a shipper fit well within their network, the carriers will offer more aggressive pricing to shippers. In order to maximize efficiency and profitability, truckload carriers aim to reduce empty miles, or miles driven without revenue generating freight. Truckload transportation providers are looking for predictable, consistent freight so that they can ensure utilization of drivers and equipment. Predictable lanes of freight allow truckload carriers to secure backhaul freight or match one way moves with another load close to the drop off point. Both national and regional carriers have preferred lanes and lanes that they try to avoid.

There are many factors that will affect the price of truckload transportation spend that are not accounted for in these savings ranges. Motor carrier pricing is influenced by factors which include motor carrier operating costs (wages, fuel, risk, equipment-related costs, and sales, general, and administration), profit margin, geography, service requirements, lane or network balance, and competition for capacity. The relative impact of each component on the actual rate offered to a customer may be variable. For example, the rate on shipments offered in a lane to alleviate a network imbalance may be lower based on elimination of cost or improved consistency of revenue. Shippers offering consistent freight on traditionally lighter volume shipping days may be offered price consideration based on utilization of excess fixed capacity on these days. In contrast, shippers requiring service in remote pick up or delivery areas where other freight is not readily available will likely be offered a rate which includes an offset to securing the next "paying" freight opportunity.

The ability of a large shipper to leverage operational efficiency within its own network to improve balance and reliability and to reduce carrier time and/or labor often correlates to a reduction in the rate offered for moving freight.

LTL

In this analysis, LTL shippers were divided into two categories: small LTL shippers and large LTL shippers. The categories were defined as the following:

- Small LTL shippers: $1 million or less in annual LTL shipping
- Large LTL shippers: Greater than $1 million in annual LTL shipping.

Percent savings (loss) range for large LTL shipper over small	2%–22%

As LTL shipping expands beyond $1 million, the more likely it is the shipper will receive the upper end of the range of savings. The typical LTL carrier has a hub and spoke network to deliver product. Regional product is brought into a local terminal where it is sorted by destination location, loaded on a truck, and delivered to its final destination. The more freight brought into a hub, the more fully utilized the LTL equipment will be.

There are many factors that will affect LTL transportation spend that were not accounted for in this analysis.

Unique to LTL freight pricing is the added factor of freight class. Freight class is a definition which is similar in concept to the groupings or grading systems that serve many other industries. Commodities are grouped into one of 18 classes—from a low of class 50 to a high of class 500—based on an evaluation of four transportation characteristics: density, stowability, handling, and liability. Together, these characteristics establish a commodity's "transportability." There are different formats commonly used for LTL linehaul pricing to include cost per pound,

cost per hundred-weight, and discount off base tariff with minimum charge. Each of these can be expressed consistently on a cost per pound basis to facilitate analysis. Shipments with low weight can hit a minimum charge that affects both large and small shippers. It is important to note that shippers with a high percentage of minimum charge freight will have an inflated overall cost per pound.

Accessorial costs are often managed separately from the transport costs from shipment origin to destination. These are costs for other services, such as fuel surcharges, stop-off, lift gate, etc. While it is common to manage these charges as separate items, they are included in the overall cost of the shipment.

Parcel

In this analysis, parcel shippers were divided into two categories: small parcel shippers and large parcel shippers. The categories were defined as the following:

- Small parcel shippers: $1 million or less in annual parcel shipping
- Large parcel shippers: Greater than $1 million in annual parcel shipping.

Percent savings (loss) range for large parcel shipper over small	13%–32%

This range assumes that small parcel shippers are able to negotiate a small discount beyond the tariff base rates. As parcel shipping spend increases beyond the $1 million range, the opportunity to achieve the higher end of the savings range is more probable.

In the United States, there are two main parcel shipping players, UPS and FedEx, with several smaller regional players. UPS and FedEx charge shippers using a base tariff with discounts provided to shippers based on shipment characteristics, volume shipped, services utilized, and negotiation expertise. The objective of carriers is to create a network of significant density to maximize the efficiency of their network of planes and trucks. As such, the more volume a shipper provides, the greater the discount that may be afforded the shipper. In addition to greater discounts off the base tariff, large shippers often gain benefit from other services and cost savings. The cost savings include discounts on fuel surcharges and accessorial charges with a waiver of certain accessorial charges possible for some shippers. The parcel carriers will provide parcel shipping technology, hardware, convenient pick up/delivery times, and a higher level of service representative as the parcel spend of the company increases.

Air—Expedite

In this analysis, expedite shippers were divided into two categories: small expedite shippers and large expedite shippers. The categories were defined as the following:

- Small expedite shippers: $1 million or less in annual expedite shipping
- Large expedite shippers: Greater than $1 million in annual expedite shipping.

Percent savings (loss) range for large expedite shipper over small	10%–30%

As expedite shipping spend increases beyond the $1 million range, the opportunity to achieve the higher end of the savings range is more probable.

Expedite shipping is defined as shipments that are charged a premium due to non-standard service time requirements, often same day or next day service. Expedite shipments can be transported via air or ground. Typically, expedite shipments are not planned and occur due to a change in delivery requirements, product availability, or manufacturing availability. When expedite shipping can be planned, there are significant opportunities for savings.

For a small expedite shipper, expedite shipping is the exception and not the rule. As such, small expedite shippers often lack the knowledge of expedite shipping options, lack contracted rates with expedite shippers, and are forced to find a carrier to haul their freight on the spot market.

Large expedite shippers able to contract rates with expedite carriers and, with knowledge of expedite delivery options, stand to gain significant savings on expedite shipping. For example, a small expedite shipper may immediately assume a same or next day shipment must travel by air to reach the destination on time, while a large expedite shipper has a contract with a ground carrier that commits to reaching the destination next day at a significant savings in cost.

3PL Effect on Transportation Expenses

The use of a 3PL by small shippers can aid in alleviating the large shipper advantage through pricing power, market expertise, and technology. Small shippers can leverage the larger shipping spend and pricing power of a 3PL. Market knowledge from a 3PL can aid a small shipper in negotiations with carriers, optimizing shipments to the correct mode and service and contracting rates. Additionally, small shippers may be able to utilize a 3PL's transportation management technology. Transportation management technologies are often not cost effective standalone solutions for small shippers due to the implementation fees, licensing or point of use fees, and training required. It has been our experience that working with a 3PL can save shippers between 5 and 10 percent on their overall transportation spend.

Similarly, the use of a 3PL by a large shipper can ensure maximum use of spend leverage. A 3PL can help a large, complicated organization understand its transportation spend profile and aid in negotiations with carriers to optimize the combined spending power of a diverse shipping profile. Large shippers may choose to rely on the 3PL's transportation management technology, or may transition to a standalone solution, depending on the organization's desire to keep systems in-house and the details of site license fees, etc.

FINAL OBSERVATIONS

In the course of our analysis of the role of transportation spend on rates, we provide the following thoughts and observations.

- In general, characteristics that drive down transportation costs are the ability to balance transportation networks, aligning shipments with geographic preferences, predictability, advance notification, ability to optimize, and desirability of freight.
- Larger shippers who actively manage transportation have an advantage of volume, predictability, market knowledge, and, often, technology over smaller shippers.
- Market economics allow for better pricing with greater volume in all modes of shipping.
- Small shippers will often find benefit from working with a 3PL to gain market size advantage and expertise.
- Both large and small shippers can find benefit from working with a 3PL to leverage technology, optimization opportunities, and market knowledge, expertise, and economics.

Appendix C
Cost Details

This appendix documents the cost data we used for the inbound scenarios, along with descriptions of how we calculated or derived the data.

Participation Levels

Each scenario assumes only a portion of the total eligible freight would move under an inbound transportation management program. Table C-1 describes the three levels of participation we assumed in our analysis. Each of the remaining tables in this appendix contains cost information that, if applicable, would vary based on these levels of participation.

Table C-1. Participation Levels

Description	Low participation	Target participation	High participation	Source or comment
The percentage at which agencies would change their eligible freight from FOB destination to FOB origin. This percentage represents the maximum participation level achieved over the life cycle of the analysis; participation would be phased in over 5 years.	30%	40%	50%	Subject matter expertise and judgment. The levels are consistent with other target initiatives, including DLA's inbound transportation effort.

General Assumptions on Spending and Benefits

Table C-2 outlines the general spending and benefits (transportation savings) amounts we estimated. The spending data include the estimated purchases and the estimated transportation cost for those purchases. The benefits cover the potential transportation savings and the effectiveness levels for those savings, based on an assumption that the transportation savings would never be 100 percent realized because of the peculiarities of each scenario.

Table C-2. Global Spend and Benefit Assumptions

Description	Low (30%)	Target (40%)	High (50%)	Source or comment	Applicable scenarios
Spending assumptions					
The total estimated FY2011 purchase costs for the 23 target agencies.	$160,830,583,690.00	$160,830,583,690.00	$160,830,583,690.00	Based on FPDS-NG FY2011 data for 23 CFO Act agencies and all FSC groups.	All
The total estimated cost on goods and materials that require delivery and are likely to be considered for conversion to FOB origin. Excludes services, large end-items, munitions, liquid bulk commodities, and other items.	$37,784,262,989.95	$37,784,262,989.95	$37,784,262,989.95	Based on FPDS-NG FY2011 data for 23 CFO Act agencies for a subset of FSC groups only. Assumes 5 percent is already managed inbound.	All
The percentage of the eligible FY2011 cost that is under FOB destination terms.	95.00%	95.00%	95.00%	Based on OGP decision and estimate.	All
The total estimated cost of goods and materials that require delivery and are likely to be considered for switch to FOB origin. Excludes services, large end-items, liquid bulk commodities, and other items.	$35,895,049,840.45	$35,895,049,840.45	$35,895,049,840.45	Calculated by multiplying total eligible transportation spend by 95 percent.	All
The percentage estimate of transportation contained within the total cost of a delivered item.	3.79%	3.79%	3.79%	Establish, Inc. 2011 survey on logistics costs as percentage of sales.	All
The estimate of transportation cost annually built into inbound material from the subset of materials that are promising for inbound transportation management.	$1,360,422,388.95	$1,360,422,388.95	$1,360,422,388.95	Calculated by multiplying total estimated cost of goods purchased under FOB destination terms by 3.79 percent.	All
The estimate of annual transport cost that would be switched to FOB origin, based on participation level.	$408,126,716.69	$544,168,955.58	$680,211,194.48	Estimated transportation cost multiplied by participation level (30%, 40%, or 50%).	All

Table C-2. Global Spend and Benefit Assumptions

Description	Low (30%)	Target (40%)	High (50%)	Source or comment	Applicable scenarios
Benefit assumptions					
Savings					
The percentage of savings that a well-managed inbound transportation initiative would see.	5.00%	12.50%	15.00%	GENCO ATC estimated range was 2%– 27%; GSA preferred the following range: 5%, 12.5%, 15%.	All
The number of years' benefits that would be phased-in after year 1; assumes a constant rate each year.	5	5	5		All
Percentage of potential benefits phased-in after year 1.	20.00%	20.00%	20.00%	Starting in year 2, the percentage of the potential benefits the government would achieve over a period of 5 years.	All
The range of annual transport saved costs, based on participation level and savings attained.	$20,406,335.83	$68,021,119.45	$102,031,679.17	The lowest amount represents the lowest eligible transportation cost and the lowest percentage of estimated savings shown in the section above. The highest amount represents the highest eligible transportation cost and the highest percentage of estimated savings. The target amount represents the target eligible cost and the target savings rate.	All
Effectiveness Level					
Independent agencies managing their own inbound transportation would not experience 100 percent efficiency and would likely only get some fraction of the potential of centralized inbound transportation management.	60%	65%	70%	LMI.	2
Centralized management would realize most of the efficiencies, but not the maximum, unless expertise parallels commercial levels.	80%	83%	85%	A minimum of 6% less than 3PL savings because of GSA pass-through into rates—then further reduced, given GSA would only have government shipments (vs. government and commercial) to bargain with when negotiating rates.	3
A 3PL would use government shipments and its commercial movements to maximize savings.	95%	98%	100%	LMI.	4

SCENARIO COSTS

This section presents the cost breakouts for each of the scenarios, with two tables for each scenario. The first table summarizes the applicable costs for each scenario and the amounts by which they varied based on participation rates (if applicable). The second table contains the start-up and recurring costs.

Scenario 2: Independent Agency Approach

Table C-3 lists the cost categories and amounts we used in Scenario 2, the independent agency approach.

Table C-3. Independent Agency Approach Cost Categories

Variable	Description	Low (30%)	Target (40%)	High (50%)	Source or comment
TMS and IA costs					
TMS cloud setup	The initial cost to setup and start TMS cloud services.	$262,500.00	$262,500.00	$262,500.00	GENCO ATC, based on 80,000 transactions/year, mid-level TMS.
TMS cloud annual fee	The annual costs to keep using TMS cloud services.	$170,000.00	$170,000.00	$170,000.00	GENCO ATC, based on 80,000 transactions/year, mid-level TMS.
IA —first year	The costs to pass FISMA and other cyber security requirements.	$100,000.00	$125,000.00	$150,000.00	LMI; GSA TPI Project.
IA—ongoing	The costs to address new FISMA or cyber security requirements.	$78,000.00	$97,500.00	$117,000.00	LMI (smoothed to 78% of first year—really 100% every third year and around 67% every other year).

Table C-3. Independent Agency Approach Cost Categories

Variable	Description	Low (30%)	Target (40%)	High (50%)	Source or comment
Change management and training costs					
Change management FTE costs	The costs for an FTE of change management effort.	$215,280.00	$215,280.00	$215,280.00	Based on average annual cost of a management consultant.
Training—first year	The costs to develop and roll out users training—per FTE to be trained.	$800.00	$1,000.00	$1,200.00	LMI.
Additional acquisition and transportation FTE costs					
Transportation FTEs					
Current DoD transportation FTEs	The total number of transportation professionals reported by DoD as a whole.	1,374	1,374	1,374	Office of Personnel Management website on federal workforce counts (fedscope.opm.gov).
Non-applicable DoD transportation FTEs	FTEs removed based on job post and likely duties.	884	884	884	Office of Personnel Management website on federal workforce counts (fedscope.opm.gov).
Applicable DoD transportation FTEs	Estimate of transportation professionals who process shipping full time.	490	490	490	Current DoD transportation professionals reported minus non-applicable transportation FTEs.
Estimated DoD FY2011 transportation costs	The estimated transportation cost for DoD.	$2,303,421,406.85	$2,303,421,406.85	$2,303,421,406.85	US Bank—Syncada FY 2011 invoice records for DoD.
Estimated DoD transportation cost per FTE	The estimated amount of transportation spend handled by each FTE.	$4,700,860.01	$4,700,860.01	$4,700,860.01	Estimated DoD transportation cost divided by estimated full-time transportation personnel.
Acquisition FTEs					
Current federal contract specialists and officers	The number of contract specialists and contracting officers at the 23 federal CFO Act agencies.	11,998	11,998	11,998	Federal Acquisition Institute FY2010 Annual Report on the Federal Acquisition Workforce (excludes DoD).
Percentage impacted	The percentage of these acquisition people impacted because they deal with material eligible for inbound transportation management.	22.32%	22.32%	22.32%	Based on total number of FY2011 purchases, whether products or services, divided by estimated spend eligible for inbound transportation management.
Number of impacted FTEs	The number of acquisition personnel impacted.	2,678	2,678	2,678	Number of contracting personnel times percentage of impacted spend.
Percentage additional work	The increase in work for each FTE based on needing to source transportation.	10.00%	15.00%	20.00%	LMI.

Table C-4 shows the start-up and recurring costs we calculated for Scenario 2, independent agency approach.

Table C-4. Independent Agency Approach Start-up and Recurring Costs

Cost type	Description	Low (30%)	Target (40%)	High (50%)	Comments
Start-up	Number of agencies setting up a TMS	10	17	23	LMI
	TMS cloud setup for all agencies	$2,625,000.00	$4,462,500.00	$6,037,500.00	GENCO ATC, based on 80,000 transactions/year, mid-level TMS
	IA—first year—all agencies	$1,000,000.00	$2,125,000.00	$3,450,000.00	LMI; GSA TPI Project
	Change management FTEs needed per agency	2.00	2.50	3.00	FTEs (estimated)
	Change management—first year (all agencies)	$4,305,600.00	$9,149,400.00	$14,854,320.00	Number of agencies times average management consultant salary times number of change management FTEs
	FTEs requiring training—all agencies	287	459	651	FTEs based on total government personnel being added for this scenario
	Training—first year—all agencies	$229,600.00	$459,000.00	$781,200.00	LMI
Recurring	*Recurring Costs Independent of the Number of Agencies*[a]				
	TMS cloud annual fee—all agencies	$1,700,000.00	$2,890,000.00	$3,910,000.00	Per agency
	IA—ongoing—all agencies	$780,000.00	$1,657,500.00	$2,691,000.00	Assuming this starts year 1 (FY2014)
	Additional transportation FTEs—all agencies	147	196	245	Maximum number of FTEs times participation rate (assuming GS-13, Step 4)
	Additional transportation FTE costs—all agencies	$19,615,356.60	$26,153,808.80	$32,692,261.00	

Table C-4. Independent Agency Approach Start-up and Recurring Costs

Cost type	Description	Low (30%)	Target (40%)	High (50%)	Comments
Recurring (continued)	Additional acquisition FTEs	80	161	268	Maximum number of FTEs times participation rate (assuming GS-13, Step 4)
	Additional acquisition FTE costs—all agencies	$10,675,024.00	$21,483,485.80	$35,761,330.40	Cost
	Agency-Specific Recurring Costs[b]				
	Change management FTEs need per agency–ongoing	0.50	0.50	0.50	FTE (estimated)
	Change management—ongoing—all agencies	$1,076,400.00	$1,829,880.00	$2,475,720.00	Average management consultant salary times number of participating agencies times number of change management FTEs
	Estimated FTEs requiring training—all agencies—ongoing	72	115	163	Assuming 25 percent of original population (those trained in first year), which would account for "turnover" and training for new developments
	Training—ongoing	$57,600.00	$115,000.00	$195,600.00	User training costs times estimated number of FTEs needing ongoing training
	Integrated Program Team Support for Each Agency[c]				
	Government personnel				
	IT program manager	1	1	1	GS-15, Step 5
		$191,102.89	$191,102.89	$191,102.89	
	Business process owner/subject matter expert	1	1	1	GS-15, Step 5
		$191,102.89	$191,102.89	$191,102.89	
	IT specialist	2	2	2	GS-13, Step 5
		$274,963.40	$274,963.40	$274,963.40	
	IT security specialist	1	1	1	GS-13, Step 5
		$137,481.70	$137,481.70	$137,481.70	
	Contracting specialist	1	1	1	GS-12, Step 5
		$115,614.94	$115,614.94	$115,614.94	
	Contractor personnel				
	Contractor—senior project leader (planning, acquisition)	0.50	0.50	0.50	FTE
		$226,044.00	$226,044.00	$226,044.00	Cost
	Contractor—senior project leader (maintenance)	0.25	0.25	0.25	FTE
		$113,022.00	$113,022.00	$113,022.00	Cost
	Contractor—senior specialist (planning, acquisition)	0.50	0.50	0.50	FTE
		$143,244.00	$143,244.00	$143,244.00	Cost
	Contractor—senior specialist (maintenance)	0.50	0.50	0.50	FTE
		$143,244.00	$143,244.00	$143,244.00	Cost
	Contractor—analyst (planning, acquisition)	2.00	2.00	2.00	FTE
		$334,512.00	$334,512.00	$334,512.00	Cost
	Contractor—analyst (maintenance)	1.00	1.00	1.00	FTE
		$167,256.00	$167,256.00	$167,256.00	Cost

[a] The numbers in this section were estimated globally and are not dependent on the number of agencies implementing a TMS.
[b] The numbers in this section will be multiplied by the number of agencies implementing a TMS.
[c] OMB mandates an integrated program team for IT programs. We assumed a basic team configuration, although they can be much larger. Salaries are stated at the current rates; adjustments for future periods used the inflation factors in Chapter 2.

Scenario 3: GSA-Managed Approach

Table C-5 lists the cost categories and amounts we used in Scenario 3, GSA-managed approach.

Table C-5. GSA-Managed Approach Cost Categories

Cost type	Description	Low (30%)	Target (40%)	High (50%)	Comments
IA costs					
IA—first year	The costs to pass FISMA and other cyber security requirements.	$100,000.00	$125,000.00	$150,000.00	LMI; GSA TPI Project.
IA—ongoing	The costs to address new FISMA or cyber security requirements.	$78,000.00	$97,500.00	$117,000.00	LMI (smoothed to 78% of first year—is really 100% every third year and around 67% every other year).
Change management and training costs					
Change management FTE costs	The costs for an FTE of change management effort.	$215,280.00	$215,280.00	$215,280.00	Based on average annual cost of one management consultant.
Training—first year	The costs to develop and roll out user training—per FTE to be trained.	$800.00	$1,000.00	$1,200.00	LMI.
GSA funding costs					
GSA industrial funding fee (%)	The percentage GSA would charge for the use of TPI and the management of inbound transportation.	N/A	N/A	N/A	Accounted for in the estimated effectiveness level for this approach.

Table C-6 shows the start-up and recurring costs for Scenario 3, GSA-managed approach.

Table C-6. GSA-Managed Approach Start-up and Recurring Costs

Cost type	Description	Low (30%)	Target (40%)	High (50%)	Comments
Start-up	IA—first year—central manager	$100,000.00	$125,000.00	$150,000.00	
	Change management FTEs needed—central manager	4.00	5.00	6.00	FTE (estimated).
	Change management—first year—central manager	$861,120.00	$1,076,400.00	$1,291,680.00	Number of change management FTEs times average management consultant salary.
	FTEs requiring training—all agencies	230	370	523	FTE based on total government personnel being added for this scenario.
	Training—first year—all agencies	$184,000.00	$370,000.00	$627,600.00	Number of change management FTEs times average management consultant salary times number of participating agencies.
Recurring	IA—ongoing	$78,000.00	$97,500.00	$117,000.00	
	Change management FTEs needed per agency	0.50	0.75	1.00	FTE (estimated).
	Change management—ongoing	$107,640.00	$161,460.00	$215,280.00	Change management FTEs needed per agency times average management consultant salary.
	FTEs requiring training—all agencies	58	93	131	Assuming 25% of original population (those trained in first year), which would account for “turnover” and training for new developments.
	Training—ongoing	$46,000.00	$92,500.00	$156,900.00	User training costs times estimated number of FTEs needing ongoing training.
	Additional transportation FTEs—all agencies	147	196	245	Number max FTEs times participation rate (assuming GS-13, Step 4).
	% additional transportation FTEs	75%	75%	75%	% of calculated FTEs for decentralized assumptions (fewer FTEs will be required under this scenario).
	% additional transportation FTEs (adjusted for scenario)	110	147	184	Number of FTEs, adjusted.
	Additional transportation FTE costs	$14,678,158.00	$19,615,356.60	$24,552,555.20	Cost.
	Additional acquisition FTEs—all agencies	80	161	268	Number max FTEs times participation rate (assuming GS-13, Step 4).
	% additional acquisition FTEs	75%	75%	75%	% of calculated FTEs for decentralized assumptions. Less FTEs will be required under this scenario.
	% additional acquisition FTEs (adjusted for scenario)	60	121	201	Number of FTEs adjusted.
	Additional acquisition FTE costs	$8,006,268.00	$16,145,973.80	$26,820,997.80	Cost.
	GSA industrial funding fee	$0.00	$0.00	$0.00	Accounted for in the estimated effectiveness level for this approach.

Scenario 4: 3PL Approach

Table C-7 lists the cost categories and amounts we used in Scenario 4, 3PL approach.

Table C-7. 3PL Approach Cost Categories

Variable	Description	Low (30%)	Target (40%)	High (50%)	Source or Comment
IA costs					
IA—first year	The costs to pass FISMA and other cyber security requirements.	$100,000.00	$125,000.00	$150,000.00	LMI; GSA TPI project.
IA—ongoing	The costs to address new FISMA or cyber security requirements.	$78,000.00	$97,500.00	$117,000.00	LMI (smoothed to 78% of first year—really 100% every third year and around 67% every other year).
Change management and training costs					
Change management FTE costs	The costs for an FTE of change management effort.	$215,280.00	$215,280.00	$215,280.00	Based on average annual cost of a management consultant.
Training—first year	The costs to develop and roll out users training—per FTE to be trained.	$800.00	$1,000.00	$1,200.00	LMI.
PMO and 3PL costs					
PMO annual operations—contractor	The annual costs of likely contractor support for the PMO.	$1,500,000.00	$1,800,000.00	$2,100,000.00	LMI; DTC PMO.
PMO annual operations—staff	The annual staff costs likely for a 3PL PMO.	$1,000,000.00	$1,150,000.00	$1,300,000.00	LMI; DTC PMO.
3PL management fees	The guaranteed annual fees for a 3PL to manage the transportation.	3.00%	5.50%	8.00%	GENCO ATC recommended 3-10%. A 3PL effort involving civilian agencies is not likely to be as requirements driven as DoD, so using 3–8%.
3PL award fees	The potential incentive fees a 3PL may earn if meeting performance thresholds.	0.50%	1.00%	1.50%	GENCO ATC.

Table C-8 shows the cost breakout for Scenario 4, 3PL approach.

Table C-8. 3PL Approach Start-up and Recurring Costs

Cost type	Description	Low (30%)	Target (40%)	High (50%)	Comments
Start-up	IA—first year—3PL	$100,000.00	$125,000.00	$150,000.00	Left in, to be conservative.
	Change management FTEs needed	5.00	7.00	9.00	FTEs (estimated).
	Change management—first year	$1,076,400.00	$1,506,960.00	$1,937,520.00	Number of change management FTEs times average management consultant salary.
	FTEs requiring training—all agencies	196	316	446	FTEs based on total government personnel being added for this scenario.
	Training—first year—all agencies	$156,800.00	$316,000.00	$535,200.00	
	PMO standup—staff	$1,000,000.00	$1,150,000.00	$1,300,000.00	DTC staff levels.
	PMO standup—contractor support	$3,000,000.00	$3,600,000.00	$4,200,000.00	Double DTC contractor costs for extra work during first year.
Recurring	IA—ongoing	$78,000.00	$97,500.00	$117,000.00	
	Change management FTEs needed—ongoing	2.00	3.00	2.00	FTEs (estimated).
	Change management—ongoing	$430,560.00	$645,840.00	$430,560.00	
	FTEs requiring training—all agencies	49	79	112	Assuming 25% of original population (those trained in first year), which would account for “turnover” and training for new developments.
	Training—ongoing	$39,200.00	$79,000.00	$133,800.00	
	Additional transportation FTEs—all agencies	147	196	245	Number of maximum FTEs times participation rate (assuming GS-13, Step 4).
	% additional transportation FTEs	60%	60%	60%	% of calculated FTEs for decentralized assumptions. Fewer FTEs will be required under this scenario.
	% additional transportation FTEs (adjusted for scenario)	88	118	147	Number of FTEs, adjusted.
	Additional transportation FTE costs	$11,742,526.40	$15,745,660.40	$19,615,356.60	

Table C-8. 3PL Approach Start-up and Recurring Costs

Cost type	Description	Low (30%)	Target (40%)	High (50%)	Comments
Recurring (continued)	Additional acquisition FTEs—all agencies	80	161	268	Number max FTEs times participation rate (assuming GS-13, Step 4).
	% additional acquisition FTEs	60%	60%	60%	% of calculated FTEs for decentralized assumptions. Less FTEs will be required under this scenario.
	% additional acquisition FTEs (adjusted for scenario)	48	97	161	Number of FTEs adjusted.
	Additional acquisition FTE costs	$6,405,014.40	$12,943,466.60	$21,483,485.80	
	PMO operations—staff	$1,000,000.00	$1,150,000.00	$1,300,000.00	DTC PMO staff levels.
	PMO operations—contractor support	$1,500,000.00	$1,800,000.00	$2,100,000.00	DTC PMO contractor support levels.
	3PL management fee	$9,795,041.20	$11,971,717.02	$10,203,167.92	Low participation uses the higher 3PL fee because less transactional volume to recover costs; the higher the participation, the lower the fee per transaction—so the high participation looks lower using these assumptions.
	3PL award fee	$612,190.08	$2,176,675.82	$5,101,583.96	Retained incentive fees based on volume—lower transactions probably means more fee baked into management fee and less into award and vice versa.

Appendix D
Abbreviations

3PL	third-party logistics
BCA	business case analysis
CFO	Chief Financial Officer
DLA	Defense Logistics Agency
DORRA	DLA Office of Operations Research and Resource Analysis
DTC	Defense Transportation Coordination
FDTPI	First Destination Transportation and Packaging Initiative
FISMA	Federal Information Security Management Act
FOB	free on board
FPDS-NG	Federal Procurement Data System-Next Generation
FSC	Federal Supply Class
FTE	full-time equivalent
FY	fiscal year
GS	general schedule
GSA	General Services Administration
IA	information assurance
IT	information technology
NASA	National Aeronautics and Space Administration
OGP	Office of Governmentwide Policy
OMB	Office of Management and Budget
PMO	program management office
ROI	return on investment
TMC	transportation management center
TMS	transportation management system
TMSS	Transportation Management Services Solution
TPI	TransPort Integrator