



MICHAEL VASSEUR, ELLEN M. PINT, LAURA H. BALDWIN, MARIA MCCOLLESTER, MAX STEINER,
LIAM REGAN, LIAM MCLANE

Independent Evaluation of the Transportation Working Capital Fund

Assessment and Recommendations to Improve
Effectiveness and Efficiency

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Preface

This project was conducted to meet the requirement of Section 1716 of the National Defense Authorization Act for Fiscal Year 2020 to perform an independent review of the Transportation Working Capital Fund (TWCF). This review includes an assessment of the financial viability of the TWCF as it is currently structured and makes recommendations to restructure the fund to make it more effective and efficient, including potential alternative funding mechanisms for some cost components.

The research reported here was completed in February 2020 and underwent security review with the sponsor and the Defense Office of Prepublication and Security Review before public release.

This research was sponsored by the Office of the Under Secretary of Defense (Comptroller) and conducted within the Acquisition and Technology Policy Center of the RAND National Security Research Division (NSRD), which operates the RAND National Defense Research Institute (NDRI), a federally funded research and development center (FFRDC) sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense intelligence enterprise.

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Summary

In Section 1716 of the National Defense Authorization Act for Fiscal Year 2020 (Pub L. 116-92, 2019), Congress created a requirement for an independent review of the Transportation Working Capital Fund (TWCF), which funds the operations of U.S. Transportation Command (USTRANSCOM). Congress required that the review provide the following:

1. an assessment of the viability of the TWCF as it is currently structured (as of December 2019)
2. an assessment of any instances in which excess TWCF funds were used for procurement or modernization efforts that would not otherwise have been funded using appropriations intended for operation and maintenance
3. recommendations for how the TWCF could be restructured to be more effective and efficient
4. potential alternative funding mechanisms for components of the TWCF, including the channel system
5. findings on any other matters that the Secretary of Defense and the secretaries of the military departments jointly determine to be appropriate.

This report describes our findings from that review, which we conducted through interviews with fund customers and providers, an analysis of available USTRANSCOM budget data, and a review of relevant regulatory documents and related literature. In this analysis, we assess the current structure, identify potential cost-recovery options to address challenges in the current structure, and recommend preferred approaches that are tailored to each USTRANSCOM line of business. Assessment criteria focused on USTRANSCOM readiness needs; objectives for Defense Working Capital Funds (DWCFs), including cost-control incentives for both customers and providers; and administrative objectives.

Drawing on our review of DWCF literature and broader business literature, as well as our discussions with customers, stakeholders, and other subject-matter experts (SMEs), we developed a set of potential cost-recovery options: Appropriations; Variable Cost Pricing (recommended by the business literature) with fixed costs recovered separately from rates or prices; Commercial Benchmark, in which rates are set to be equivalent to outside options, with all costs beyond the benchmark recovered separately; and Cost Plus, in which customers pay rates designed to cover the average or actual cost of movements plus a share of overhead costs, based on forecasted workload. Table S.1 summarizes the alternative cost-recovery courses of action (COAs) analyzed.

Table S.1. Cost-Recovery Courses of Action Analyzed

Name	What Customers Pay	Other Cost-Recovery Methods	Other Features
Appropriations	Nothing	Appropriated to USTRANSCOM	No TWCF, no ARA
Variable Cost Pricing	Rates or prices (actual costs) reflect costs that customers impose on the system (variable costs)	Costs that are not directly associated with customer movements (fixed costs) are recovered into the TWCF through SLB or appropriation	USTRANSCOM does not currently separate fixed and variable costs when recovering costs from customers
Commercial Benchmark	Commercial price for movement	All shortfalls between DTS costs and commercial pricing, including overhead, are recovered through SLB or appropriation	Already done for some business lines, could be expanded to others
Cost Plus	Rates or prices for service include all overhead costs	None	Already done for some business lines, could be expanded to others

NOTE: ARA = Airlift Readiness Account; DTS = Defense Transportation System; SLB = service-level bill.

Assessment of Alternative Courses of Action

Our approach to assessing the potential COAs is threefold. First, we assess whether a business line should remain within the TWCF. Second, we assess the business line’s contributions to readiness. Third, with this knowledge in hand, we identify which particular COA is most appropriate for each business line.

As mentioned, we begin our assessment of business lines by asking whether each is appropriate to remain within the TWCF. If a business line is not appropriate, we recommend that costs be covered through direct appropriation. We recommend appropriated funding rather than the TWCF if the workload is known in advance and fixed with respect to customer decisions. Thus, budgets can be accurately programmed in advance, and costs are not adversely affected by customers not receiving a bill for their movements.

If the business line is not appropriate for appropriated funding and should remain in the TWCF, the next question for assessment is whether the workload contributes to the readiness of the DTS to meet wartime requirements. If the workload does contribute to readiness, cost recovery should be structured to encourage customers to use the DTS to meet their movement requirements.¹ Thus, the costs that customers pay should be no greater than any alternative

¹ The Defense Transportation Regulations require U.S. Department of Defense (DoD) customers “to use the DTS services . . . except when they are Service-unique or theater-assigned transportation assets” (DoD Directive [DoDD]

transportation options. If customers have cheaper options outside the DTS, they might decide to use those options instead, thus reducing readiness by reducing readiness-generating shipment volume within the DTS. Among options that retain readiness workload within the DTS, the option that provides the greatest cost-control incentives for customers and USTRANSCOM is the one we recommend. If Variable Cost Pricing is no higher than any alternative options and thus results in keeping the workload within the DTS, this COA is recommended, because it provides the strongest incentives for cost control for customers; customers see the costs that their requirements impose upon the DTS and make decisions that are optimal from an enterprise cost perspective. Otherwise, the Commercial Benchmark COA is preferred, because it will deter customers from sending workload outside DTS and will provide some incentive to control costs, since customers will pay the commercial equivalent price for movements. In either case, fixed costs, as well as variable costs above the commercial benchmark for the second option, should be recovered through direct appropriation, which provides the opportunity to see and approve USTRANSCOM costs in advance, to provide cost-control incentives. The appropriation could go to USTRANSCOM, its service component commands, or the services as a pass-through, whichever approach provides the most ability to influence costs.

If a business line's workload does not contribute to readiness, Variable Cost Pricing is preferred, to provide incentives for customers to seek the lowest-cost option, with fixed costs recovered through appropriation. The Cost Plus COA is generally not preferred, because rates or prices are set above the costs imposed by customers and thus could cause workload to leave the DTS, but this COA might be acceptable if fixed costs are low and customer demand is not very sensitive to price.

This assessment methodology is focused on supporting USTRANSCOM readiness needs and improving cost-control incentives for customers and USTRANSCOM. The assessment approach will lead to one or more recommended COAs that meet these goals for each business line. It should also lead to better alignment of costs and revenues each year. Rate revenue will be more-closely tied to the costs associated with customer demands, and fixed costs will be recovered separately from rates, with recovery not subject to differences in actual versus predicted workload. Appropriations for fixed costs would be paid into the TWCF to preserve funding flexibility. Accumulated operating results should also be recovered through appropriation so that they do not influence customer rates in the future.

Major Assumptions

Three important assumptions drive our analysis and recommendations. The first assumption is that customer behavior is influenced by TWCF rates and prices for transportation services.

4500.9-R, 2014, Chapter 201, p. 1) or the DTS does not provide the required services and there would be a "negative critical mission impact" (DoDD 4500.09, 2019, p. 3). However, in the past, concerns have been expressed that some customers are able to go outside the DTS in some cases to avoid costs.

Customers have fixed resources for their transportation needs. When there are alternative options (i.e., options exist and customers are not required by policy or regulation to use the DTS for the movement), they will seek the lowest-cost transportation option that meets their requirements for location and delivery timeline. DoD is not a commercial business, but prior research has validated these behaviors within DWCF constructs.²

The second, even broader, assumption is that working capital funds (WCFs) make sense within the DoD context—that is, when appropriately implemented, they accomplish their stated objectives. During our interviews, we heard anecdotes about the value of funding flexibilities offered through the WCF construct, but we are unaware of definitive research on this question. It is worthy of future study.

The third assumption is that (a) future steady-state operations are more or less a continuation of operations today and (b) emerging and surge operations are presently anticipated in today's force planning requirements.

Findings and Recommendations, by National Defense Authorization Act Area of Interest

The Viability of the Transportation Working Capital Fund as It Is Currently Structured (as of December 2019)

Discussions with customers and providers of the TWCF, as well as an analysis of USTRANSCOM budget data, did not raise concerns about the ability of the TWCF to effectively conduct steady-state operations or recover costs. The broader literature does indicate potential concerns over the ability of USTRANSCOM to conduct surge operations.³ Existing customer concerns instead focus on the efficiency of the system. We find that the TWCF is perceived to

- lack cost-control incentives for USTRANSCOM and, to a lesser degree, customers; although USTRANSCOM indicates that it makes efforts to control costs, customers said that they do not have visibility into the costs included in rates
- lack stability and predictability of charges to customers; customer rates are set two years in advance and stabilized during the year of execution, but there are often large year-to-year changes in rates
- introduce a need to frequently reprogram funds relating to the ARA; the Air Force does not always fully program for the ARA, in part because, in the past, costs often changed in the year of execution
- lack simplicity and transparency in its cost-recovery approach; customers would like to better understand the reasons for rate changes and see more details of what is included in the bills they receive from USTRANSCOM.

² See, for example, Camm and Shulman, 1993; and Baldwin and Gotz, 1998.

³ See, for example, Martin and Yardley, 2019.

Any Instances in Which Excess Funds from the Transportation Working Capital Fund Were Used for Procurement or Modernization Efforts That Would Not Otherwise Have Been Funded Using Appropriations Intended for Operation and Maintenance

Through our discussions with customers and USTRANSCOM SMEs, an analysis of existing budget data, and a review of USTRANSCOM's Capital Investment Program, we found no indication of TWCF funds being used for procurement or modernization efforts that would not otherwise have been funded. USTRANSCOM has requested that its largest planned procurement effort, the Transportation Management System software system, be funded outside the TWCF.

Recommendations for How the Transportation Working Capital Fund Could Be Restructured to Be More Effective and Efficient

To maintain USTRANSCOM readiness (effectiveness) and improve customer and USTRANSCOM cost-control incentives (efficiency), we recommend that most business lines be structured to follow Variable Cost Pricing within a WCF context. This model, preferred in the business and economics literature as the best way to guide customer decisionmaking to support enterprise objectives, suggests that customers should pay for the costs that they impose on the system (*variable costs*) and that other costs should be recovered separately.⁴ We recommend that those other costs be recovered through an appropriation to the services that is passed to USTRANSCOM through an SLB-like mechanism or through direct appropriation to USTRANSCOM, whichever allows for greater transparency and scrutiny of costs before they are incurred.⁵ The appropriation should be paid into the TWCF to preserve funding flexibility.

We recommend that this Variable Cost Pricing model be adopted for ten of the 14 USTRANSCOM business lines, with one caveat. More data are required to determine whether commercial benchmark prices are lower than organic variable costs for some lines of business. When this is the case and the workload contributes to readiness, customers should be charged commercial benchmark prices, as many business lines do today, to keep the readiness-generating workload within the DTS. In each case, costs above those covered by rates should be recovered through direct appropriation.

For Military Sealift Command's Reduced Operating Status (ROS) business line, we recommend the Commercial Benchmark COA to meet USTRANSCOM's readiness needs while improving cost-control incentives. In this case, customers should pay the estimated commercial

⁴ For our purposes, Variable Cost Pricing is equivalent to the marginal cost approach discussed in Chapter 2. *Marginal costs* are the costs imposed by customer decisions to use DTS for their movements. For all of the benefits described in the literature to be achieved, all fixed costs should be removed from the rates that customers pay, but some improvements on cost-control incentives would be made if even easily identifiable fixed costs (e.g., overhead) were removed from the rates.

⁵ Some additional preference for appropriation over SLBs occurs when DoD is funded through continuing resolutions, a measure that in recent years has led to delays in service payments into the TWCF, potentially introducing cash balance concerns.

costs of their movements, even if their movements are completed on organic ships that are activated for readiness purposes, and any remaining costs should be covered through an appropriation to USTRANSCOM.

In addition to modifying cost recovery for lines of business, we recommend that USTRANSCOM increase engagement with customers to improve transparency and understanding of costs. Table S.2 describes our recommended COAs for each business line.

Potential Alternative Funding Mechanisms for Components of the Transportation Working Capital Fund, Including the Channel System

Our analysis indicates that the remaining three business lines—Air Mobility Command (AMC) Training, Military Surface Deployment and Distribution Command (SDDC) Traffic Management, and SDDC Global Privately Owned Vehicle (POV)/Defense Personal Property Program—could be removed from the TWCF. Training and Traffic Management fit the criteria for business lines that could be recovered through full appropriation; these business lines have predictable workloads, and customers are not making decisions that drive costs. However, USTRANSCOM representatives indicated that the same aircraft used for Training are also used for AMC’s other business lines, so taking Training out of the TWCF could complicate recovery of operating costs for these aircraft. USTRANSCOM has requested that the third of these business lines, POVs, be removed from the TWCF to better align it with the funding process for other permanent change of station (PCS) movements of household goods. Our analysis does not indicate any reason to oppose this request. If this business line is retained in the TWCF, costs should be recovered using Variable Cost Pricing. We do not recommend removing the channel system, or any of the remaining business lines, from cost recovery through the TWCF. Except for these specific business lines, our assessment of the TWCF indicates a general endorsement of most workload remaining within the TWCF.

Table S.2. Transportation Working Capital Fund Cost-Recovery Recommendations

Business Line	Current Cost Recovery	Recommended Course of Action	Explanation
Channel Passenger	Commercial Benchmark plus ARA	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates
Channel Cargo	Commercial Benchmark plus ARA	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates

Business Line	Current Cost Recovery	Recommended Course of Action	Explanation
SAAM/Contingency	Organic: Commercial Benchmark plus ARA Commercial: Cost Plus	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates
JETP	Organic: Commercial Benchmark plus ARA Commercial: Cost Plus	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates
Training	Cost per flying hour	Appropriations	Appropriate to Air Force/AMC
Cargo (Charter/Activation)	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
POL	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Army Prepositioned Ships	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Air Force Prepositioned Ships	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Surge/ROS	Cost Plus	Commercial Benchmark	Customer pays commercial cost, remainder appropriated to USTRANSCOM
Port Operations	Cost Plus plus Port Readiness SLB	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Liner Operations	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Traffic Management	Traffic Management SLB	Appropriations	Keep as SLB or appropriate, whichever would produce greater scrutiny
Global POV/DP3	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB No reason identified not to follow USTRANSCOM request to remove business line from TWCF to align with other aspects of PCS moves

NOTE: DP3 = Defense Personal Property Program; JETP = Joint Exercise Transportation Program; POL = Petroleum, Oil, and Lubricants; SAAM = Special Assignment Airlift Mission. For SAAM/Contingency and JETP, the commercial benchmark is set at 91 percent of organic operating costs and the remainder is recovered through the ARA.

Closing Thoughts

The preceding recommendations are informed by the best available data on USTRANSCOM business lines, customer judgments on historical TWCF performance, prior research on DWCFs, and economic best practices. However, time and resources available for our study did not permit a detailed accounting of the costs and benefits of implementing any COAs; thus, we note that further analysis is needed to determine whether the value of the benefits to be gained from implementing the recommended COAs exceeds the costs of implementing them. It is possible that the benefits, via increased cost-control efficiencies, are small relative to the cost of implementing the COAs, including transition costs. Such cost-benefit analysis would include estimations of the elasticity of customer demand for different types of customers and movements, to understand the price sensitivity of TWCF customers, and a deeper examination of USTRANSCOM business processes, information technology systems, and personnel requirements to understand the costs. Such analysis would need to be conducted for all business lines and for any WCF-focused COAs and would need to account for interdependencies between business lines. In view of these limitations, these recommendations can be interpreted as partial justification for the WCF model for the majority of USTRANSCOM business lines and as scoping of viable options for implementation.

Acknowledgments

Stephen Sullivan, Ty Peoples, Christopher Heinbach, and Shawn Lennon from the Office of the Under Secretary of Defense (Comptroller) provided excellent feedback and guidance throughout the course of this project. We thank Terri Dilly and Bill Pray, both of U.S. Transportation Command (USTRANSCOM) Program Analysis and Financial Management, who helped us make connections at USTRANSCOM and across the U.S. Department of Defense (DoD). We benefited immensely from the input of numerous subject-matter experts across the military services, across DoD more broadly, and within USTRANSCOM.

Our RAND Corporation colleagues Yun Kang and Joel Predd provided program leadership to the study team. Michael Kennedy, Elvira Loredó, Chris Mouton, and Steven Popper provided quality assurance while this report was in progress and greatly improved the analysis presented within. We appreciate their efforts on our behalf. Ed Keating of the Congressional Budget Office and Michael Kennedy of RAND provided constructive reviews of an earlier draft that helped to strengthen this final report.

Abbreviations

A&S	Acquisition and Sustainment
A4	Air Force Logistics
AAFES	Army and Air Force Exchange Service
AFWCF	Air Force Working Capital Fund
AMC	Air Mobility Command
AOR	accumulated operating result
ARA	Airlift Readiness Account
CAPE	Cost Assessment and Program Evaluation
COA	course of action
CRAF	Civil Reserve Air Fleet
DeCA	Defense Commissary Agency
DLA	Defense Logistics Agency
DoD	U.S. Department of Defense
DP3	Defense Personal Property Program
DTS	Defense Transportation System
DWCF	Defense Working Capital Fund
FMR	Financial Management Regulation
FY	fiscal year
GAO	U.S. Government Accountability Office
IT	information technology
J8	Program Analysis and Financial Management
JDPAC	Joint Distribution Process Analysis Center
JETP	Joint Exercise Transportation Program
MSC	Military Sealift Command
NAVSUP WSS	Naval Supply Systems Command Weapon System Support
NDAA	National Defense Authorization Act

NOR	net operating result
OPNAV N41	Navy Logistics Supply Chain Operations Division
OSD	Office of the Secretary of Defense
OUSD	Office of the Under Secretary of Defense
PCS	permanent change of station
POL	Petroleum, Oil, and Lubricants
POV	Privately Owned Vehicle
RFID	Radio Frequency Identification
ROS	Reduced Operating Status
SAAM	Special Assignment Airlift Mission
SDDC	Military Surface Deployment and Distribution Command
SLB	service-level bill
SME	subject-matter expert
TCOF	Transportation Customer Outreach Forum
TMS	Transportation Management System
TWCF	Transportation Working Capital Fund
USAFE	U.S. Air Forces in Europe
USTRANSCOM	U.S. Transportation Command
WCF	working capital fund

1. Introduction

In Section 1716 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2020 (Pub. L. 116-92, 2019), Congress created a requirement for an independent review of the Transportation Working Capital Fund (TWCF), which funds the operations of U.S. Transportation Command (USTRANSCOM). Congress required that the review provide the following:

1. an assessment of the viability of the TWCF as it is currently structured (as of December 2019)
2. an assessment of any instances in which excess TWCF funds were used for procurement or modernization efforts that would not otherwise have been funded using appropriations intended for operation and maintenance
3. recommendations for how the TWCF could be restructured to be more effective and efficient
4. potential alternative funding mechanisms for components of the TWCF, including the channel system
5. findings on any other matters that the Secretary of Defense and the secretaries of the military departments jointly determine to be appropriate.

The Office of the Under Secretary of Defense (OUSD) (Comptroller) asked the RAND Corporation's National Defense Research Institute to perform the required analysis and develop a report for Congress. This report represents the results of these analyses and our findings and, where appropriate, recommends changes to the TWCF to better meet USTRANSCOM mission objectives and U.S. Department of Defense (DoD) objectives for working capital funds (WCFs).

Methods

For this analysis, we sought inputs from a wide variety of TWCF stakeholders, including customers in the military services, USTRANSCOM headquarters and its service component commands, and DoD policy organizations. These included subject-matter experts (SMEs) from Air Force Logistics (A4), Financial Management and Comptroller, and the Air Force Working Capital Fund (AFWCF); Air Mobility Command (AMC); the Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) and the OUSD for Acquisition and Sustainment (A&S); Military Sealift Command (MSC), Navy Logistics Supply Chain Operations Division (OPNAV N41), Naval Supply Systems Command Weapon System Support (NAVSUP WSS), and Financial Management and Comptroller; the Defense Logistics Agency (DLA); the Army Deputy Chief of Staff for Logistics (G-4); Military Surface Deployment and Distribution Command (SDDC) Comptroller; Joint Chiefs of Staff J4 (Logistics); U.S. Air Forces in Europe (USAFE) A4; and USTRANSCOM Program Analysis and Financial Management (J8), the Joint

Distribution Process Analysis Center (JDPAC), and Transportation Management System (TMS) program development.

We also conducted analyses of data on TWCF operations, including time trends in revenues, expenses, and net operating results (NORs) for the service components and USTRANSCOM as a whole; customer rates by line of business; and the Airlift Readiness Account (ARA). Our data sources included the TWCF annual budget estimates submitted as part of the AFWCF budget for FY 2009 through FY 2021 and annual Billing Rate Computation and Proposed Adjustments (also known as IF-12 exhibits) prepared by each USTRANSCOM component command for FY 2015 through FY 2021.⁶

Throughout the analysis, we drew on DoD and USTRANSCOM documents outlining USTRANSCOM missions, Defense WCF (DWCF) objectives, and TWCF policies. These documents included the following:

- 10 U.S.C. § 2208, Working-Capital Funds
- 10 U.S.C. § 2631, Supplies: Preference to United States Vessels (Military Preference Cargo Act of 1904)
- DoD Directive (DoDD) 4500.09, *Transportation and Traffic Management* (2019)
- DoDD 4500.9-R, Part I, *Passenger Movement* (May 2016, includes changes through December 2020); and Part II, *Cargo Movement* (May 2014, includes changes through August 6, 2020)
- DoD 7000.14-R, *Financial Management Regulation* (FMR) (DoD, 2017)
 - Vol. 1 (December 2020; see DoD, 2020c)
 - Vol. 2B, Chapter 9 (December 2014; see DoD, 2014)
 - Vol. 11B, Chapter 2 (February 2020; see DoD, 2020a)
 - Vol. 11B, Chapter 3 (September 2020; see DoD, 2020b)
- DoD Instruction (DoDI) 4515.13, *Air Transportation Eligibility* (2016)
- Pub. L. 66-261, Merchant Marine Act of 1920 (Jones Act), now codified in multiple sections of the U.S. Code, including 46 U.S.C. § 55102, Transportation of Merchandise.

We used these data to accomplish five tasks: (1) assess customer concerns about current TWCF practices; (2) examine recent TWCF costs, rates, and expenditures; (3) develop alternative courses of action (COAs) and evaluation criteria; (4) recommend promising COAs to improve the viability of the TWCF; and (5) develop a peer-reviewed final report to meet NDAA requirements.

⁶ The IF-12 exhibits that we received from USTRANSCOM were limited to budget estimates for FY 2015 to FY 2021. Ideally, analysis would have included additional historical data, as well as execution data, to better understand any fluctuations in costs over a longer period of time and the difference between budgets and execution. Also note that the difference between budgets and execution might be greater for FY 2020 and FY 2021 than for prior years because of the impacts of the coronavirus disease 2019 pandemic on customer demand for USTRANSCOM services.

Organization of This Report

This report describes our analytic approach and the findings and recommendations from our analyses. Chapter 2 presents background material relevant to these analyses. This includes a discussion of USTRANSCOM and its business lines, how readiness is assessed in this context, and background on WCFs in commercial and defense settings. Chapter 3 describes our analytic approach, including the evaluation criteria we used to assess each USTRANSCOM business line and the COAs we considered. Chapter 4 presents our analysis of the current state of the TWCF using these assessment criteria. Chapter 5 describes our analysis of each COA for the AMC Channel Cargo business line and our resulting recommendations. Chapter 6 summarizes our findings and recommendations. Appendix A contains our detailed analysis of all other USTRANSCOM business lines.

2. Background

This chapter provides background information on USTRANSCOM and the TWCF and insights on the use of WCF-like constructs in DoD and beyond.⁷

U.S. Transportation Command Structure and Mission

USTRANSCOM manages the Defense Transportation System (DTS), which provides full-spectrum peacetime transport for DoD customers and maintains a surge capacity required for wartime needs to project and sustain military power. According to its stated mission, USTRANSCOM “conducts globally integrated mobility operations, leads the broader Joint Deployment and Distribution Enterprise, and provides enabling capabilities in order to project and sustain the Joint Force in support of national objectives” (USTRANSCOM, undated a).

USTRANSCOM has its roots in the Goldwater-Nichols Department of Defense Reorganization Act of 1986, which allowed DoD to unify transportation into a single functional command, originally known as the Unified Transportation Command (Pub. L. 99-433, 1986). The ideal structure was debated, and the President’s Blue Ribbon Commission on Defense Management, also known as the Packard Commission, formed USTRANSCOM in 1988, which is when it became an operational unified combatant command (Engstrom, 1991). In these early years, the mission was “to provide global air, land, and sea transportation to meet national security objectives” (Engstrom, 1991, p. 6).

The military’s wartime readiness relies on a robust and responsive supply chain. USTRANSCOM plays a critical transportation role in that chain through its integrated multimodal distribution network that crosses the Air Force’s AMC, the Army’s SDDC, and the Navy’s MSC.⁸ AMC provides a variety of airlift services, including channel movements and unit moves.⁹ SDDC provides port-handling services, liner movements on cargo ships, rail transport, multimodal transportation, and trucking and personal-vehicle transportation. MSC provides both organic and commercial ship charters.

More broadly, USTRANSCOM offers a variety of important transportation-enabling services in support of movements, including coordination of complex movements across multiple modes

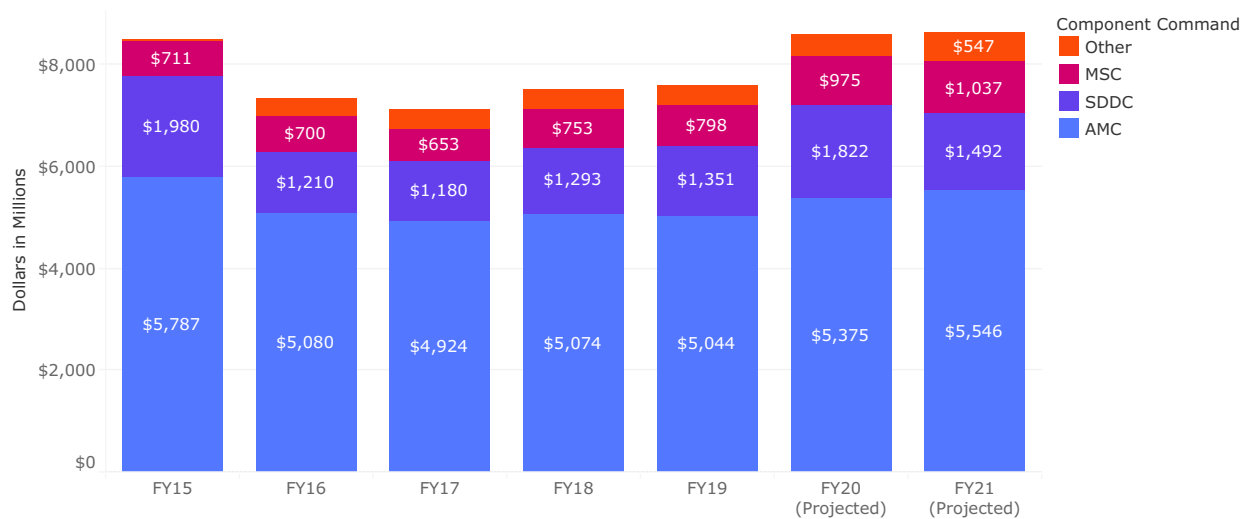
⁷ The material in this chapter is heavily derived from an earlier RAND report on USTRANSCOM’s TWCF, *Aligning Incentives in the Transportation Working Capital Fund: Cost Recovery While Retaining Readiness in Military Transportation* (Connor, Vasseur, and Baldwin, 2019).

⁸ We use the terms *Air Force*, *Army*, and *Navy* to refer to personnel, organizations, and other facets of the Department of the Air Force, the Department of the Army, and the Department of the Navy, respectively.

⁹ Unit moves are when an entire military unit moves with much of its equipment for an exercise, special operation, or contingency overseas.

to meet required timelines, adjudication of scarce transportation resources during peacetime and wartime, and strategic management of relevant industrial bases. In FY 2020, USTRANSCOM employed 4,456 civilians and 12,330 military personnel. In addition, USTRANSCOM costs and revenues in FY 2020 were projected to be over \$8.5 billion. Figure 2.1 separates this revenue by component command from FY 2015 through FY 2021.

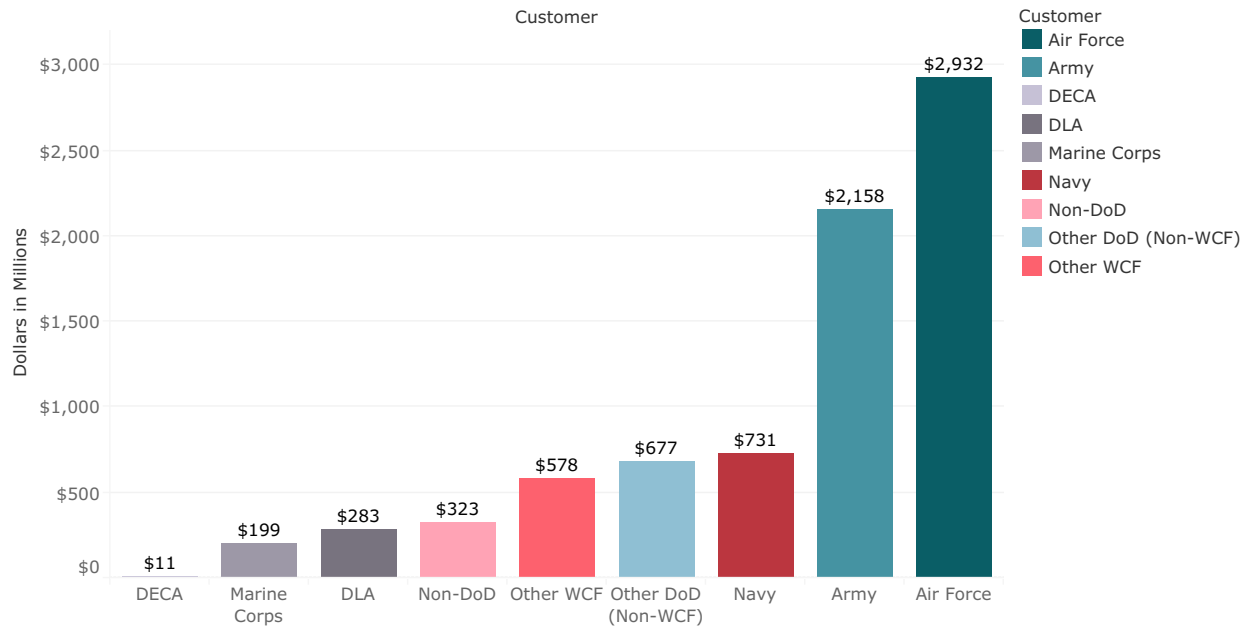
Figure 2.1. U.S. Transportation Command Revenue, by Component Command



SOURCE: TWCF budget estimates from FY 2017 through FY 2021 (Financial Management and Comptroller, undated).

USTRANSCOM conducts the majority of its business, about three-quarters in FY 2020, with the military services. Other DoD customers include U.S. Special Operations Command, the Joint Chiefs of Staff, DLA, and the Defense Commissary Agency (DeCA). Roughly 3–4 percent of revenue in recent years was collected from Foreign Military Sales or other non-DoD customers. Figure 2.2 presents the distribution of revenue across major customers.

Figure 2.2. Average U.S. Transportation Command Revenue, by Customer, Fiscal Years 2015 to 2021



SOURCE: TWCF budget estimates from FY 2017 through FY 2021 (Financial Management and Comptroller, undated).

All USTRANSCOM customers move materiel to support two major categories of activities: sustainment and unit move.

Sustainment customers tend to move smaller amounts (i.e., amounts are smaller than an entire unit move but can have varying and sometimes substantial size and weight) of materiel per shipment in individual door-to-door shipments on a regular basis. Examples of this type of move would be sending U.S.-made food products to Europe to restock the commissaries or replenishing spare parts. Another source of sustainment customers is Foreign Military Sales—customers need to move weapon systems and spares purchased from the United States to their home countries. Because these customers tend to use door-to-door shipments, they receive very little direction from booking specialists in USTRANSCOM. These customers pay for these movements directly from their own budgets and often have options outside the DTS, including using such commercial carriers as UPS, FedEx, or DHL.¹⁰ As a result, customers are very price-sensitive and will choose to go outside USTRANSCOM if there is a lower-price option. As part of this process, the services and other customers (e.g., DLA, Army and Air Force Exchange Service [AAFES], DeCA) submit long-range workload forecasts to USTRANSCOM that inform USTRANSCOM forecasts of the transportation workload factor expected in future years.

¹⁰ In some cases, these services are also available within the DTS, under such commercial contracts as Global Heavyweight Service and Next Generation Delivery Service.

Unit move customers are of two types: those who are moving an entire unit's worth of materiel for an *exercise* and those who are carrying out a *contingency* operation. *Exercise* customers are moving their entire units to participate in an exercise, either with another country or with the other military services. These customers usually have a long lead time prior to their demand for mobility and have reasonably predictable requirements. They tend to work closely with the combatant command and USTRANSCOM planners to ensure that the command can meet the required delivery date. They are somewhat price-sensitive—because they are given a budget for the exercise, and any costs that are above that budget might need to come from unit funds—but the exercises are not typically canceled if the costs are above budget. *Contingency* customers are at the heart of USTRANSCOM's wartime mission. Typically, they are moving their entire units overseas to meet a specific mission and required delivery date, and the mode of transportation is specified in Time-Phased Force Deployment Data. For some contingency customers, funding comes indirectly, through a regional combatant command, rather than from unit funds. Because these customers do not directly pay for the move, and because the purpose is to directly meet military missions, they are more concerned with the timely arrival of materiel than the cost of a movement.

Regardless of the nature of their activities, customers have some ability to make choices when interacting with USTRANSCOM. All customers decide what materiel is to be shipped, how much is to be shipped, and the required delivery date. Depending on the type of materiel being moved, the customer might also have choices regarding who moves the materiel. The sustainment customers tend to shop around for the best prices by looking at the costs for purchasing services through USTRANSCOM, direct booking, and outside carriers. For instance, DeCA is allowed under regulation to contract for its own movements outside the DTS.¹¹ In contrast, unit move customers are less likely to choose to go outside the system, because of the restrictions on moving materiel. For instance, hazardous material and ammunition movements will greatly constrict the customer's shipping options.

Decisions about the details of the movement process—including the shipping mode, carriers, and routings—are made by USTRANSCOM. Some of these decisions are constrained by customer choices. For example, customers with a short required delivery date will require airlift rather than sealift capacity, or certain types of materiel (such as ammunition and hazardous materials) can be shipped only organically. In all cases, it is USTRANSCOM that decides what specific aircraft or ships will be involved in a movement and the route and timing that a movement will take.

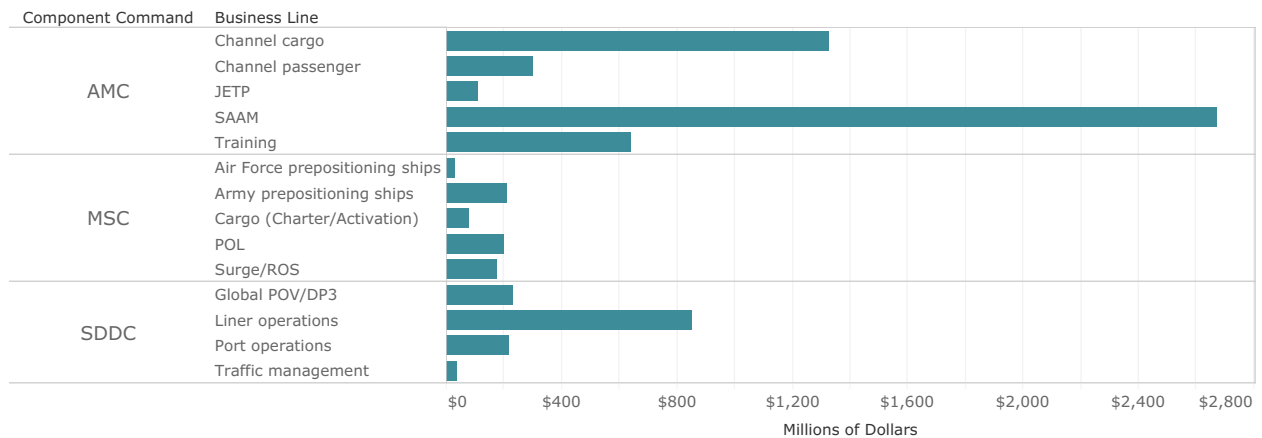
USTRANSCOM supplies mobility services through several business lines funded through the TWCF, which include the following:

¹¹ In practice, SDDC charges DeCA a lower cost-recovery rate than it charges other customers for direct booking of ocean shipments, and channel cargo rates are set by commercial benchmarking, so only a small percentage of DeCA's movements go outside the DTS. See, for example, SDDC, 2017.

- AMC
 - Channel Cargo
 - Channel Passenger
 - Special Assignment Airlift Mission (SAAM)/Contingency
 - Joint Exercise Transportation Program (JETP)
 - Training
- SDDC
 - Port Operations
 - Liner Operations
 - Traffic Management
 - Global Privately Owned Vehicle (POV)/Defense Personal Property Program (DP3)
- MSC
 - Cargo (Charter/Activation)
 - Surge/Reduced Operating Status (ROS)
 - Petroleum, Oil, and Lubricants (POL)
 - Army Prepositioned Ships
 - Air Force Prepositioned Ships.

Figure 2.3 shows average revenue for each of these business lines from FY 2015 through FY 2021.

Figure 2.3. Average Revenue, by Business Line, Fiscal Years 2015 to 2021



SOURCE: IF-12 exhibits provided by USTRANSCOM.

The AMC business lines for Channel Cargo and Channel Passenger are regularly scheduled flights that the military can use to airlift equipment and people to set locations around the world. In these channel business lines, the customer pays for the number of people or pounds of

materiel being moved on established routes. If a customer needs to move materiel to a location not serviced by channel schedules or needs an entire aircraft, then the customer uses a charter through the SAAM and JETP lines of business. In addition to moving military equipment cargo, AMC is involved in specialized missions—for example, aerial refueling and aeromedical evacuation. AMC also has training activities that are paid for directly by the Air Force through the WCF structure. AMC activities are supported with organic aviation assets and commercial aircraft through the Civil Reserve Air Fleet (CRAF) program. The CRAF program has historically provided about 40 percent of the airlift for DoD cargo and about 90 percent for passengers (McDew, 2017).

SDDC contracts with ports to provide such local services as stevedoring and has military battalions located at certain ports to assist with loading and unloading ships under port operations. The SDDC Liner Operations business line maintains a contract with cargo shippers for less than full-ship charters. SDDC also moves personal vehicles owned by service members and their families around the world in its vehicle-transportation and storage business line (DP3). In addition, SDDC does extensive work on multimodal surface transportation that combines rail, road, and ship cargo movements. Its Traffic Management business line provides overall management services, such as Radio Frequency Identification (RFID) tags on cargo, that are not directly linked to individual customer movements and funds the Transportation Engineering Agency, which conducts deployment feasibility studies and assessments of the outloading capacity of ports and Army installations.

MSC works with the same U.S.-flagged carriers as SDDC to allow for full-ship charters to move materiel to ports around the world on its contracts. Although some of these charters are for container cargo, others are for specialized missions, such as moving POL. In addition, MSC works with the Army and the Air Force to preposition materiel on ships to rapidly respond to contingency requirements. MSC also manages a fleet of organic ships that can be called on to provide additional ship capacity during contingencies.

Both SDDC and MSC use primarily U.S.-flagged commercial capacity to meet peacetime movement requests because of the Jones Act (Pub. L. 66-261, 1920) and the Military Cargo Preference Act of 1904 (10 U.S.C. 2631). During wartime, 90 percent of cargo is moved on commercial surface assets, on average (McDew, 2017). In addition, in theory, this reliance on commercial partners allows the U.S. government to have surface surge capacity on contract without having to pay the full cost for this capacity in peacetime. Economic forces have reduced demand for U.S.-flagged ships in favor of cheaper foreign-flagged vessels, so the U.S. military is a growing portion of the U.S.-flagged fleet's customer base. In comparison, air, rail, and trucking are less reliant on U.S. military demand. The Air Force does not have as many statutory limitations and therefore continues to provide organic capacity for much of its cargo movements, but it does manage the CRAF program to allow for additional wartime surge capacity. AMC accounts for the majority of USTRANSCOM's business by dollars, roughly two-thirds in recent

years. SDDC and MSC are both significantly smaller, with SDDC accounting for 15–20 percent of revenue and MSC 10–12 percent.

U.S. Transportation Command Readiness

For USTRANSCOM to be ready to meet its mission requirements, it needs to maintain a wide variety of capabilities. USTRANSCOM defines *readiness* as “the underlying infrastructure, assets, and people that provide USTRANSCOM with the ability to provide a global spectrum of mobility solutions and related enabling capabilities” (USTRANSCOM, 2016). Surge mission requirements—including surge capacity to accommodate the volume of cargo needed to move by surface (a combination of cargo ships, rail, and trucking) and air according to Time-Phased Force Deployment Data—are derived from operational plans and peacetime training and exercises. Readiness requirements apply to both USTRANSCOM headquarters and the service components.

In this analysis, we do not assess the types and levels of activity required for USTRANSCOM to be ready, because this question is beyond the scope of this effort.¹² We also do not draw a line at which steady state shifts into surge, because recent history has shown that there is a continuum in terms of materiel movement. Instead, we focus on the elements that go into readiness—people, equipment, and infrastructure—and how they align with steady-state activities.

First, USTRANSCOM must have trained personnel who can meet the requirements of the mission. At the headquarters level, this means that personnel need to understand how to develop and update joint distribution processes, contract with transportation providers, work within legal constraints, assess threats to intermodal operations, use and develop transportation management information technology (IT) systems, and develop policy to synchronize complex mobility operations (USTRANSCOM, undated b). Within the service components, these trained personnel include pilots, maintainers, loaders, schedulers, and specialists in port operations. In the case of MSC ROS ships, the U.S. merchant mariner workforce is an important limitation. Unfortunately, the pool of merchant mariners is aging, and certifications for steam-turbine ships that are present within the ROS fleet are dwindling.

Second, USTRANSCOM relies on its components and contractors to provide ready equipment. AMC uses both organic assets and commercial assets that must be balanced. This equipment includes organic aircraft, maintenance capabilities, and spares required for maintenance. In contrast, SDDC’s business lines rely less on organic assets and more on contracted assets and therefore must consider the U.S.-flagged shipping industrial base. The U.S.-flagged shipping industry faces limited capacity for building cargo ships and a highly

¹² Training requirements and levels of movement required for readiness were not available at the USTRANSCOM level. AMC has defined training requirements for its organic airlift that have been met or exceeded in recent years.

regulated and aging Merchant Marine workforce. MSC works with the Maritime Administration to manage the fleet of reserve ships available for defense purposes, directly contracts ships supporting Army and Air Force prepositioned stocks, and employs the same Merchant Marine workforce on full-ship charters. Although most of these assets are not owned or administered by USTRANSCOM, peacetime movements demonstrate the capacity of these components to integrate into the broader DTS.

Third, USTRANSCOM readiness relies on infrastructure, such as contracts for commercial services and ports, as well as IT systems. Contracts are a critical form of readiness capacity because the government does not have sufficient organic transportation capacity to meet wartime surge requirements. Contracts can include both direct transportation services (such as ship charters and container movements) and indirect support services (such as port operations stevedoring contracts). IT systems (such as transportation management business systems) are also crucial to USTRANSCOM operations because they provide the conduit for warfighters to communicate their needs with transportation providers and to manage operations effectively.

Many types of steady-state operations offer opportunities for USTRANSCOM to perform activities needed to stay ready for surge operations. For example, steady-state operations offer the opportunity for personnel to perfect skills, such as workload planning, palletizing materiel, loading and unloading, normal flying operations, and port operations. Other training falls outside normal peacetime operations and must be planned for separately. For instance, in port operations, additional experience is necessary to load certain large, wheeled military equipment, but stevedores would rarely get experience with these vehicles in normal commercial operations. AMC pilots need to execute assault landings and flying with one engine inoperative, which they cannot do while carrying customer cargo. Other activities (such as moving service members' personal vehicles) do not directly aid USTRANSCOM readiness but do provide morale and welfare impacts for other portions of DoD. Although we do not define what level of activity is necessary or sufficient to prepare for surge operations, we do identify how USTRANSCOM can price its services to maintain readiness-generating workload within the DTS.

Transportation Working Capital Fund

USTRANSCOM uses the TWCF to recover many of the costs of providing transportation services to DoD.¹³ Within this market-like environment, USTRANSCOM provides such transportation services as surface cargo movement and passenger flights to DoD customers, and these customers pay rates for the services. Rate revenue from customers is supplemented with

¹³ Interestingly, the TWCF originated in the 1950s, before USTRANSCOM existed, when DoD issued its initial guidance on industrial funds. Industrial funds were meant for organizations that produced goods or services and could support a buyer-seller relationship (DoD, 2014). As a result of this guidance, all three components that became USTRANSCOM started using industrial funds in the 1950s. Over the years, the names and details of how the industrial funds were run changed, but in the mid-1990s, the funds were pulled into the DWCF structure that exists in policy today (Connor et al., 2008).

revenue from other sources, including service-level bills (SLBs) for USTRANSCOM services, such as traffic management, and the Air Force's ARA.¹⁴ Another source of revenue for USTRANSCOM is direct appropriations from Congress for one-time programs, such as the Fallen Heroes program. We refer to these revenues as *non-rate revenue*. Overall, SLBs and the ARA accounted for an average of 14 percent of AMC's budgeted revenue and 13 percent of SDDC's budgeted revenue over the period from FY 2015 to FY 2021. MSC recovered all of its costs through rates or direct reimbursements from customers.¹⁵

Because the DoD budget process precedes execution by two years, the rate-setting process also occurs far in advance of the actual demand for mobility services, based on workload estimates from the services and analysis conducted by JDPAC. Lags between rate-setting and execution can lead to imbalances in cost recovery, because actual demand for services can differ from estimates. For instance, during the year of execution, the Army might decide to do fewer exercises than originally estimated. Customers do not have to actually buy all of the movements that they estimated in the projections.¹⁶ This can result in an operational loss for USTRANSCOM, which has limited ability to encourage more movements. USTRANSCOM tracks differences between revenues and costs as NORs within the TWCF and adjusts future rates to account for these overages or surpluses for an accumulated operating result (AOR) of zero over time (DoD, 2014). In addition, some costs can change over the course of the year, which creates imbalances. Therefore, both projected costs and workload and cost-recovery imbalances affect rates; these imbalances are based on differences between prior estimates and actual execution.

Why Have a Working Capital Fund?

Organizations can budget and recover costs in a multitude of ways. Most government functions receive appropriated funds; therefore, activities are provided to other departments without the need to recover costs through rates to customers. Appropriations work well for activities for which the requirement is fairly predictable and costs are well understood. The downside is that, if the requirement increases between budgeting and execution, program leadership will need to obtain additional funding to cover the increase in mission or will be unable to satisfactorily fulfill that mission.

¹⁴ SLBs include traffic management, port readiness, vehicle-processing-center charges, distribution-process-owner management, RFID tags, and Integrated Data Environment Global Transportation Network Convergence asset visibility (McCord, 2016).

¹⁵ Reimbursements are a type of customer payment to cover shipments booked directly with commercial carriers or other costs, such as landing fees, port charges, and ground transportation in overseas locations, incurred by USTRANSCOM for customers outside normal rates.

¹⁶ In addition, even if workload forecasts are accurate, workload can sometimes be shifted between business lines (e.g., between SDDC Liner Operations and MSC Cargo [Charter/Activation]), which affects revenues and operating results in individual business lines.

DoD has chosen a WCF approach for transportation services because of several characteristics of these activities, including the customer and provider market environment. The rates in a WCF play a useful resource allocation role, especially for limited air assets. Customers can shape requirements in ways that increase the costs of transportation services and excessively tax the system. If movements were free, customers would have no incentives to prioritize and limit items that must travel by air or to limit the quantities of materiel being sent to only what is needed for a particular mission or exercise. These unconstrained demands would impose huge costs on the system and exceed current resources. Therefore, customers need to prioritize their transportation requests, and rates can help accomplish this. By seeing the implications of different priority forms of shipping, customers can make informed decisions within their own portfolios based on their priorities and use premium transport assets for those movements with greatest urgency, using lower-cost channels for other movements. However, WCFs, as they are typically structured, make the supplier organization's revenues more uncertain. Fixed costs, including the resources required to maintain wartime capacity, must be spread across many customers and could be over- or under-recovered if actual workload does not match planned levels.¹⁷

In addition, many costs that DoD faces, such as fuel costs, are highly variable. It is difficult to account for this variation in appropriations. Moving highly variable costs into WCFs allows for DoD to smooth out costs so that the rates do not change from day to day for the internal customers. Unfortunately, having steady rates also means that customers do not respond to the price increase by moving less materiel. The downside of short-term price stability is that, if fuel or other costs skyrocket and the WCF does not recover these costs, then recovering these losses can raise future prices more than if customers paid market rates. In addition, the customers who benefit from below-market rates might not be the same ones who pay above-market rates in other years. Also, WCFs allow for quicker surging of activity in response to contingencies than would be possible through reliance on appropriations, but the trade-off is that this allowance makes the appropriation process much more complicated, because each customer must receive appropriations to buy services from the WCF. Finally, a WCF can provide visibility into how much activities will cost (Stewart, 2016).

In DoD, WCF rates are typically set to recover the expected total cost of providing the goods or services. Keating et al., 2015, p. ix, described this as follows:

A DWCF provider, in conjunction with the customer, estimates how much and what types of work the DWCF provider will perform, along with the costs it will incur. Costs are allocated across the provider's products. Then, each product's price is set as the ratio of expected costs allocated to the product divided by the quantity expected to be sold.

¹⁷ A WCF needs to break even in the budget year, which is typically two years after budget estimates are developed (DoD, 2014).

FMR policy suggests that the DWCF should not make or lose money by providing services, so the pricing is designed to break even if workload is similar to the forecast (DoD, 2017). Each year, USTRANSCOM JDPAC develops forecasts of workload. Then, USTRANSCOM J8 develops its own expected average rates for most of the business areas, except where the costs are covered by SLBs or when policy dictates that the rate will be based on commercial rates. Most of the rates include overhead costs, such as capital depreciation and general and administrative expenses,¹⁸ and the AOR surcharge. However, for some business lines, there are rules that adjust the percentage of total costs that will be recovered through the rates. Then, these costs are divided over the anticipated workload for the coming years.

The customer rate structure varies by business line, as described in Table 2.1, and is used to support peacetime- and wartime-related movements. The table identifies the component commands and business lines and provides a brief description of the rate-setting method. For example, for SDDC Liner Operations rates, the cost analysis department sets rates to recover 100 percent of expected costs, based on the payments made to carriers, plus overhead costs and the AOR from the past year. The average carrier contract costs, also known as *blended rates*, are based on the average cost to move between two regions (i.e., traffic area pairs), average accessorial fees, and the size of the shipment in measurement tons (USTRANSCOM, 2015). Policy states that, ideally, the AOR should equal zero in the budget year, which is typically two years after the budget estimates are developed (DoD, 2014). For organic SAAM and JETP flights, the rate is designed to recover 91 percent of expected costs, including overhead, but for commercial flights, the rate incorporates commercial costs plus overhead. Under this rate structure, commercial SAAM or JETP flights are sometimes cheaper than organic ones, but many customers are moving loads that require organic assets, such as ammunition. MSC typically charges its contract cost plus an administrative fee. The one exception is ROS ships in the Ready Reserve Force. The costs of staffing and maintaining these government-owned ships when they are not in use are recovered from the Navy, and additional costs incurred for usage—i.e., when ships are activated for readiness purposes or during wartime when demand exceeds commercial capacity—are charged to customers.

¹⁸ The DoD FMR requires capital assets (including property, plant, equipment, and software) to be depreciated if they are acquired and replaced using WCF funds, have a cost of \$250,000 or more, and have a useful life of two years or greater. See DoD, 2014, pp. 9-10-9-12.

Table 2.1. Customer Rate Structure, by Component Command and Business Line

Component Command and Business Line	Rate-Setting Method
AMC	
Channel Cargo	Rate per pound; commercial benchmark
Channel Passenger	Rate per passenger; commercial benchmark
Organic SAAM/JETP	Rate per flying hour plus overhead
Commercial SAAM/JETP	Commercial rate per flying hour plus overhead
Training	Rate per flying hour plus overhead
SDDC	
Liner Operations	Blended rate, if traffic area pair; costs, if multimodal or one-time only
Port Operations	Contract cost plus overhead for stevedore services; SLB for port readiness costs
Traffic Management	SLBs based on estimated costs
Global POV/DP3	Contract costs plus overhead
MSC	
Cargo (Charter/Activation)	Daily rate based on costs plus overhead
POL	Daily rate based on contract costs plus overhead
Army and Air Force Prepositioned Ships	Daily rate based on costs plus overhead
Surge/ROS	Operating costs plus overhead

NOTE: For organic SAAM/Contingency and JETP, the rate is set at 91 percent of organic operating costs and the remainder is recovered through the ARA.

Non-Rate Revenues

Some of USTRANSCOM’s revenue is collected apart from customer rates. These non-rate revenues include reimbursables for services rendered to customers outside the normal lines of operation, such as arranging ground transportation in the U.S. Central Command area of responsibility or via SLBs. SLBs are primarily used to recover fixed costs and are paid by the services either with appropriated funds or from their respective WCFs. SLBs are established in advance for planning purposes via a memo from the OUSD (Comptroller) (see McCord, 2016, for an example). Other factors required for the DTS to function—primarily, organic asset procurement—are the responsibility of the services to appropriate without passing funds to USTRANSCOM. Finally, the TWCF occasionally receives one-time revenues to account for unique costs or unforeseen events, such as increases in fuel prices and C-17 engine support costs. For AMC, the primary source of revenue other than customer rates is the ARA, paid directly by the Air Force.

Insights from Prior Research on Working Capital Fund Constructs

In this section, we provide an overview of how WCF-like constructs are used in the commercial sector and best practices from the business literature. We also compare the use of WCFs in the commercial sector with the use of WCFs within DoD.

Commercial Sector

A review of relevant business and economic literature indicates that a WCF is an effective method for cost recovery in organizations with decentralized decision authority. Within an organization that has independent decentralized components, a WCF is a method to allocate resources in a way that is beneficial to the enterprise as a whole. WCFs do this by providing a market-based structure through which independent parts of an overarching organization can exchange goods or services (Hirshleifer, 1956; Williamson, 1979). In a commercial scenario, the motive is generally to lower costs for the enterprise, but WCFs can be organized using a variety of price structures based on the characteristics of the relationships they are working to optimize. For example, a WCF would be structured differently if components had a choice to work outside the system to meet their needs or if components had some ability to control the scale and timing of their demands. In general, WCFs function best when prices reflect only the cost of the demand that customers level directly on the system. Any costs that are not imposed by the customer are recovered through other mechanisms. This two-part pricing system gives customers incentives to make decisions that are cost-effective for the organization as a whole while still facilitating cost recovery.

The preferred pricing strategy to incentivize customers to make decisions that are good for the enterprise is a marginal-cost-recovery approach (Baldenius and Reichelstein, 2006; Baldwin and Gotz, 1998; Brauner et al., 2000; Byrnes, 1993; Camm and Shulman, 1993; Göx and Schiller, 2006; Heath, Huddart, and Slotta, 2009; Hirshleifer, 1956; Keating and Gates, 1999; Keating and Gates, 2002; Keating et al., 2001; Keating et al., 2003; Keating et al., 2015; Keating and Sommerhauser, 2012; Sahay, 2003).¹⁹ In this model, costs are recovered through a two-step process known as *nonlinear* pricing. Prices reflect only the costs that customers directly impose on a system with their requests. Other costs, to the extent that they exist, are recovered separately through fees. If customers' demands can be met at the cheapest rate with internal options, then

¹⁹ Literature about commercial WCFs commonly discusses the concept of transactions between different business units within a corporation as *transfer pricing*. We use commercial WCFs as a method to refer to the aspects of transfer pricing that are comparable to the TWCF case—the movement of funds between independent business units as part of a broader shared enterprise—and exclude the portions of the transfer pricing literature that are focused on issues outside our scope, such as tax avoidance by multinational corporations using transfer pricing mechanisms. The most-recent literature in this field focuses on tax avoidance, which falls outside the scope of this study; thus, the citations that we use reach further back.

customers will choose these options; if not, then the choice to use an external provider that is cheaper than the internal source will lower the cost of the enterprise as a whole.²⁰

We might consider an organization with an internal print shop as an example of a commercial WCF. In this model, an organization would have several business units that use a common internal print shop. The print shop charges rates designed to incentivize customers to make printing decisions that reduce costs for the organization as a whole. Business units are charged for what is required to fulfill specific orders: materials, labor hours, and so on. In many cases, this pricing will lead the print shop to be cheaper than outside commercial options. In these cases, when business units use the print shop's services, the entire enterprise saves money. If the print shop is not cheaper, business areas will use outside printing services for less frequent or specialty tasks for which it would be costly to maintain equipment or trained personnel. In these instances, the enterprise saves money as well, because outsourcing these orders is cheaper in the long run than it would be for the print service to internally maintain expensive or rarely used capacities. Other costs required to maintain the print shop, such as its general overhead, are recovered separately from the prices charged to customers. For example, these costs could be recovered through a budget for the printing department or fees charged to each business unit based on its prior-year use. Separating fixed costs from the prices that customers pay directly facilitates periodic reevaluation of the need for an internal capability—e.g., if customers become unhappy with the fixed fees that they are charged or find the rates uncompetitive. This arrangement ensures that business units make decisions that are cost-effective for the organization as a whole and that, at the same time, the print shop is able to recover all of its costs and continue operations.

U.S. Department of Defense

DoD, unlike private industry, does not have an interest in profits, but it can and should have an interest in cost minimization and cost-efficiency. But DWCFs face other challenges that commercial WCFs do not (Byrnes, 1993; Keating and Gates, 2002; Rogerson, 1995; Thompson, 1991). They are subject to regulations beyond cost-effectiveness; therefore, the DWCF's goals can be wartime readiness and price or cost stabilization for customers, along with cost-efficiency. In addition, the DWCF information systems tend to have limited detail on the costs associated with particular services that DWCFs provide to customers.²¹ DWCFs historically have used full cost recovery through rates, or a "break-even principle," rather than a marginal-cost

²⁰ Note that if internal customer demands based on marginal-cost pricing exceed the capacity of the internal supplier organization and expanding capacity would incur additional fixed costs, a separate analysis is needed to determine whether expansion would be in the best interest of the organization as a whole. See, for example, Hirshleifer, 1956, p. 180.

²¹ For instance, most DWCFs do not track the amount of time that customer service employees spend on arranging particular customer requests in existing IT systems. In other cases, there are lags in billing from commercial suppliers that make sharing actual costs associated with a transaction impractical.

approach (Keating and Gates, 2002; Rogerson, 1995). The approach that DWCFs have tended to take hinders customers' ability to understand what they are truly paying for (Rogerson, 1995) and confuses the link between activity and cost for customers (Byrnes, 1993). Also, unlike with private print shops, it is undesirable for these internal services to shut down because of irregular use, because they are needed to meet wartime requirements. Thus, there is a need to encourage customers to use these internal services, either through mandates in DoD regulations, such as the 50-50 rule for depots,²² or financially, through a combination of appropriations and mandatory fees. Mandates to use the WCF will also require auditing and penalty functions for enforcement. Even if DWCFs sometimes have different objectives than commercial WCFs, commercial best practices can still be applied. For resource allocation within a WCF to be aligned with broader DoD objectives, especially those focused on readiness and cost control, customers should be charged prices to recover costs that they directly impose upon the system, and other fixed costs should be recovered separately.

²² Under the 50-50 rule, each military department cannot spend more than 50 percent of its depot maintenance funding on work done by private-sector contractors (10 U.S.C. 2466).

3. Analytic Approach

In this chapter, we describe the analytic approach that we used to assess current and proposed TWCF structures. Our approach included the development of evaluation criteria, the development of COAs considered as alternative funding mechanisms for each line of business, and the identification of key issues that informed our assessments and resulting recommendations.

Evaluation Criteria

To assess current and proposed TWCF structures, we developed selection criteria that reflect both the important missions of USTRANSCOM and DoD objectives for WCFs. The criteria broadly address three main questions: (1) Does the current structure of the TWCF support USTRANSCOM's readiness to meet its missions? (2) Does the current structure meet objectives that DoD has for its DWCFs? (3) Does the current structure meet administrative objectives for the TWCF?

To evaluate whether the TWCF supports USTRANSCOM readiness, we examined whether the current structure

- promotes readiness of organic and commercial capabilities to support surge operations
- effectively meets steady-state transportation requirements
- provides flexible capability to support deviations from planned workloads, such as emerging operational requirements.

To evaluate whether the TWCF meets DoD's objectives for WCFs, we assessed whether the current structure provides for

- full cost recovery
- cost-control incentives for both customers and USTRANSCOM
- stable and predictable rates within customer planning horizons.

To evaluate whether the TWCF meets administrative objectives for WCFs, we assessed whether the current structure provides for

- the reduced need to reprogram funds
- a simple and transparent cost-recovery approach, including customer rates.

We used the same criteria to evaluate potential COAs developed to address current shortfalls to inform our recommendations. To the extent that WCF objectives conflicted with the ability of USTRANSCOM to meet its missions, we favored mission over WCF objectives (effectiveness over efficiency) in our recommendations.

Identification of Potential Courses of Action to Address Shortfalls

Drawing on our review of DWCF and broader business literature, as well as our discussions with customers, stakeholders, and other SMEs, we developed a set of potential COAs to address shortfalls identified in the current TWCF structure. These COAs include the following: Appropriations; Variable Cost Pricing with fixed costs recovered separately from rates or prices, as recommended by business literature; Commercial Benchmark, in which rates are set to be equivalent to outside options, with all costs beyond the benchmark recovered separately; and Cost Plus, in which customers pay rates based on the average or actual cost of movements plus a share of overhead costs, based on projected workload.

Appropriations

In this COA, all costs currently recovered through the TWCF are paid for through appropriation to USTRANSCOM. Customers do not pay rates or SLBs for their movement requirements; there is no ARA.

Variable Cost Pricing

In this COA, customers pay according to the costs that their transportation requirements impose upon the DTS—i.e., the *variable costs* associated with movements. This might take the form of a rate that represents the average cost of a particular type of movement or a price that represents the actual cost of a particular movement. Fixed costs are recovered separately from individual movements, through either a pass-through appropriation from customers to USTRANSCOM or an appropriation directly to USTRANSCOM, but these funds are also deposited into the TWCF.²³ As we discussed in Chapter 2, the business and economics literature highlights this COA as the cost-recovery scheme that aligns incentives of customers and service suppliers with what is best for the enterprise as a whole from a cost-efficiency perspective.

Commercial Benchmark

In this COA, customers pay the commercial equivalent cost of their movement as if it were conducted outside the DTS. All additional costs (any additional variable costs and all fixed costs) are recovered separately from individual movements, through either a pass-through appropriation from customers to USTRANSCOM or an appropriation directly to USTRANSCOM. This COA is designed to provide incentives for customers to keep workload within the DTS even if there are lower-cost commercial options.

²³ AORs would also be managed through appropriations, but this COA should reduce imbalances in cost recovery. Rate revenue would be more closely tied to the costs associated with customer demands, and fixed costs, which are relatively predictable, would be recovered through appropriations. As a result, errors in forecasting workload should have less effect on cost recovery.

Cost Plus

In this COA, the full cost of transportation services is recovered through customer charges. Customers pay a rate (average cost) or price (actual cost) plus a share of overhead costs based on projected workload. For some TWCF services that currently use Cost Plus pricing, total forecasted costs are divided by projected workload to set a unit price. In other cases, a percentage charge is added to commercial contract costs.

Table 3.1 presents a summary of the different cost-recovery COAs considered in our analysis. For each COA, we note what customers would pay, how any other costs would be recovered, and other features.

Table 3.1. Cost-Recovery Courses of Action Analyzed

Name	What Customers Pay	Other Cost-Recovery Methods	Other Features
Appropriations	Nothing	Appropriated to USTRANSCOM	No TWCF, no ARA
Variable Cost Pricing	Rates or prices (actual costs) reflect costs that customers impose on the system (variable costs)	Costs that are not directly associated with customer movements (fixed costs) are recovered into the TWCF through SLB or appropriation	USTRANSCOM does not currently separate fixed and variable costs when recovering costs from customers
Commercial Benchmark	Commercial price for movement	All shortfalls between DTS costs and commercial pricing, including overhead, are recovered through SLB or appropriation	Already done for some business lines, could be expanded to others, no ARA
Cost Plus	Rates or prices for service include overhead costs	None	Already done for some business lines, could be expanded to others

Rates Versus Prices and Service-Level Bills Versus Appropriation

Several of the above COAs leave options, both in terms of what customers pay and how other costs are to be recovered, unspecified. Deciding between charging customers a price that represents the actual cost of a movement and charging a rate that represents the average cost for movements of that type, and between SLBs and a direct appropriation to USTRANSCOM or its service component commands, does not change our assessments of the cost-recovery COAs but is important when considering the overall structure of the TWCF. Should different cost-recovery COAs be adopted, these details would need to be worked out between USTRANSCOM, the services, and DoD as a whole. Rather than offering detailed recommendations, we offer the following clarifying points on how best to address these questions.

In terms of prices versus rates, selecting which to charge customers under the Variable Cost Pricing COA is a balance between providing the clearest signal to customers as to the costs of their movements and providing as much stability and predictability as possible. Prices representing actual costs incurred for movements (organic variable costs or the price paid to a commercial carrier) provide a clearer cost signal—customers see the exact costs they impose on the system with their movements—but costs are likely to be more volatile from year to year, because they are subject to fluctuations in commercial pricing and other costs in the year of execution. Rates representing average expected variable costs provide additional stability and predictability because they are published in advance and average out fluctuations in the cost of any individual movement; however, this can make it less clear to customers what true variable costs were associated with their movements. An additional point of concern on rates arises when customers can choose transportation alternatives outside the DTS. Although this is not the case in all business lines, in those in which customers have options to leave the DTS, rates can introduce a cost-recovery concern if customers are able to send only the most expensive movements through the system and to book others directly for cheaper prices. In these cases, the WCF as a whole would fail to recover its costs, because it recovers only the averaged overall cost from customers. Similarly, under a Cost Plus COA, blended rates provide more stability and predictability for customers in the year of execution but could make it more difficult for the WCF to recover its costs if workload varies from the plan.²⁴

Perhaps more important is the difference between SLBs and direct appropriations. In this case, we recommend that preference be given to whichever method provides the most transparency and opportunity for scrutiny of USTRANSCOM costs before they are incurred. It is unclear at this time whether this would be achieved through the departmentwide budgeting process for an appropriation or through the services using an SLB-like construct. The key to either method is ensuring that those outside USTRANSCOM understand what costs are planned to be recovered through the TWCF and have an opportunity to influence those costs before they are incurred. Some additional factors to consider for SLBs are that a methodology would be needed to divide costs among customers and that there can be delays in SLBs being paid into the TWCF by customers during the year of execution, particularly if DoD is operating under a continuing resolution.

Regulatory and Administrative Changes

In addition to cost-recovery COAs, we consider two regulatory and administrative changes that could increase stability in TWCF rates and address concerns raised in our discussions with

²⁴ For example, during Operation Enduring Freedom, USTRANSCOM charged a blended rate for transportation of supplies into Afghanistan. When the supply route through Pakistan was closed, all supplies had to be routed through the former Soviet republics to the north of Afghanistan, which was more expensive. This change resulted in a deficit in the TWCF that required additional appropriated funding to rectify.

stakeholders, which we discuss in Chapter 4. These changes could be combined with any of the cost-recovery options and are as follows:

- increase engagement with customers about the details that underlie rates and costs
- increase oversight of USTRANSCOM overhead costs recovered through the TWCF to provide greater cost-control incentives.

These COAs do not fundamentally change the cost-recovery structure of the TWCF as it exists today, but they could be combined with any other cost-recovery-focused COAs, including the current system.

Assessment of Courses of Action, by Business Line

Key features of each business line should be taken into account when considering application of the potential COAs. These features include the following:

- How is revenue in the business line recovered?
- Do customers have the option of going outside DTS?
- Is the activity mainly provided by organic or commercial assets and people?
- How much does the movement contribute to wartime readiness?
- Is the capability dedicated or purchased at the time of need (or is there a limited degree of flexibility)?

Table 3.2 shows the distribution of revenues by business line. Most business lines recover most of their revenue directly from customers, either through rates or as a reimbursement. Business lines in AMC recover the remainder of their costs through the ARA. Within SDDC, Port Operations and Traffic Management have SLBs that recover some (Port Operations) or all (Traffic Management) of the costs. MSC recovers all of its TWCF-related costs through rates or reimbursements.

Table 3.2 also shows the percentage of costs in each business line that vary with customer demand and the extent to which these variable costs are spent on commercial hires rather than fuel and other variable costs associated with organic assets. Most business lines consist primarily of variable costs, and, as discussed in Chapter 2, many business lines use a mix of organic and commercial assets.

Table 3.2. Source of Revenue and Expenditures, by U.S. Transportation Command Business Line

Business Line	Revenues (Millions of Dollars)	Percentage of Revenue Recovered from Customers	Percentage of Revenue Recovered via Airlift Readiness Account/Service-Level Bill	Variable Costs as Percentage of Total^a	Commercial as Percentage of Variable
AMC					
Channel Passenger	\$300	72	28	81	86
Channel Cargo	\$1,326	58	42	73	31
SAAM/Contingency	\$2,671	93	7	78	32
JETP	\$108	94	6	83	46
Training	\$639	>99	<1	68	0
SDDC					
Port Operations	\$216	51	49	42	80
Liner Operations	\$850	100	0	84	98
Traffic Management	\$36	0	100	0	0
Global POV/DP3	\$229	97	3	75	98
MSC					
Cargo (Charter/Activation)	\$81	100	0	89	76
Surge/ROS	\$178	100	0	48	78
Army Prepositioned Ships	\$210	100	0	66	55
Air Force Prepositioned Ships	\$29	100	0	85	64
POL	\$196	100	0	86	76

SOURCE: Numbers are based on averages of FY 2015–2021 budgets from IF-12 exhibits provided by USTRANSCOM. Annual data on revenues and costs over this period are displayed in Appendix A.

^a Variable costs were estimated using SME input and include fuel, commercial hires, and some maintenance activities.

Table 3.3 examines other characteristics of these same business lines: whether customers have options outside USTRANSCOM for their transportation movements and whether these movements contribute to organic or commercial readiness. Two factors are of particular importance. First, in most business lines, customers theoretically could go outside the DTS to perform movements. This is obviously limited in some cases, but, for the majority of business lines, customers theoretically have other options. These options influence how we consider cost-control incentives for both customers and USTRANSCOM when we assess each business line against alternative COAs (see Chapter 5).

Second, most business lines contribute something to USTRANSCOM readiness. This can be through such activities as exercises and training generated for organic capabilities or through support for an industrial base or commercial contract that is expected to be needed during surge

operations. Therefore, the implications for readiness of any proposed changes to the current cost-recovery approach are a key factor in our assessments.

Table 3.3. Characteristics of U.S. Transportation Command Business Lines

Business Line	Customers Have Options Outside the Defense Transportation System^a	Contributes to Organic Capability Readiness^b	Contributes to Commercial Capability Readiness^b
AMC			
Channel Passenger	Yes	N/A	Yes
Channel Cargo	Yes	Yes	Yes
SAAM/Contingency	Yes	Yes	Yes
JETP	Yes	Yes	No
Training	No	Yes	N/A
SDDC			
Port Operations	Yes	Yes	Yes
Liner Operations	Yes	N/A	Yes
Traffic Management	No	Yes	Yes
Global POV/DP3	No	No	No
MSC			
Cargo (Charter/Activation)	Yes	N/A	Yes
Surge/ROS	No	Yes	N/A
Army Prepositioned Ships	No	Yes	Yes
Air Force Prepositioned Ships	No	Yes	Yes
POL	Yes	Yes	Yes

NOTES: N/A = not applicable.

^a We assess options relative to whether capability exists to conduct these movements outside the DTS, not whether customers are allowed to use options outside the system according to current regulations.

^b We do not measure the level of readiness that a business line contributes, instead marking “yes” if it contributes any level of organic or commercial readiness.

4. Assessment of the Current Structure of the Transportation Working Capital Fund

In this chapter, we report the results of our independent assessment of the current state of the TWCF. This assessment, based on interviews with SMEs and an analysis of available budget data, revealed several shortfalls in meeting DoD objectives. Importantly, these shortfalls occur primarily in the areas of efficiencies sought by DoD WCF objectives and in administrative concerns, not in the day-to-day effectiveness of USTRANSCOM or its readiness. In this chapter, we describe these findings in detail.

Perspectives on the Current System

One of our five main tasks was to assess customer concerns about current TWCF practices. We spoke with customer agencies, service-providing agencies, and joint and DoD offices with functions related to the TWCF to identify issues and concerns with the current structure, rates, and billing practices of the TWCF. We held these interviews from August to December 2020. In the course of our interviews, we spoke with representatives from the following entities:

- OUSD(A&S)
- OSD CAPE
- OUSD Comptroller
- Joint Chiefs of Staff J4 (Logistics)
- USTRANSCOM J8
- JDPAC
- SDDC
- AMC
- MSC
- DLA
- Air Force Logistics (A4)
- Air Force Budget Operations and Personnel (FMBO)
- USAFE
- NAVSUP WSS
- OPNAV N41
- Army Deputy Chief of Staff for Logistics, Operations Directorate
- AFWCF
- USTRANSCOM TMS SMEs.

The focus of these interviews was to learn about the functioning of the TWCF and how the business relationships formed through the fund's structure facilitate air, marine, and surface transportation movements. During these discussions, we learned about the rate-setting processes

from USTRANCOM component commands, AMC, MSC, and SDDC; the financial interactions they have with service customers; and the difficulties they face when managing their TWCF-related responsibilities. These discussions provided context for those with service customers, who identified specific challenges they face in their day-to-day interactions with the TWCF. As a consequence, although our focus was on TWCF customer concerns, we learned about challenges faced by the TWCF from a variety of perspectives.

In our interviews, TWCF customers and providers did not raise concerns about the ability of USTRANCOM to achieve its readiness objectives; however, they consistently expressed several concerns with the current structure's ability to meet what we identified as DWCF and administrative objectives. These concerns include a lack of understanding of what costs are included in TWCF rates and other charges, perceptions that rates include costs that should be recovered through other methods, and how the hybrid nature of the TWCF creates financial challenges in both planning and execution. We discuss each of these in turn.

Lack of Transparency in Rates and Other Charges

Transparency and Detail in Transportation Working Capital Fund Rates and Service-Level Bills

Customer, service-provider, and related transportation management agencies noted challenges related to the transparency of rates and SLBs. None of the customers had a good understanding of what was included in the rates charged by USTRANCOM for transportation services, and many of them were unable to identify the particular amounts they pay for individual shipments.²⁵ Customers attributed this lack of understanding and transparency to the minimal detail or lack of detail provided by USTRANCOM component commands in their rates and bills for shipments. Customers described their bills as “lump sum,” in that they receive invoices for large charges, but costs are not broken down by line, item, or service. In the words of one interviewee, customers are charged for a “big chunk of money with no detail.” In a specific example, an interviewee described receiving a bill for a \$500,000 due payment but no breakdown of how the \$500,000 total was calculated.²⁶

This lack of transparency not only causes frustration and confusion for customers but also prevents effective troubleshooting and sound decisionmaking. First, without detailed descriptions of the costs and rates charged, customers are unable to identify why they might have been charged extra for a particular movement. Customers are essentially left with higher costs and no way of knowing how they occurred or how to prevent any mistakes in paperwork or other administrative processes that might have led to the higher charges. If there are “ancillary costs from a contractor,” such as delay fees due to paperwork issues, it is difficult to know how to

²⁵ Interviews with Air Force, Army, Navy, and DoD officials. Interviewees' names and offices were withheld to preserve anonymity. All interviews were conducted in 2020 by the authors via telephone and Microsoft Teams.

²⁶ Interview with DoD officials.

avoid similar mistakes in future transactions.²⁷ By contrast, if such detail were available, then customers would be able to determine where issues occurred in the process and ensure that similar mistakes do not occur again, or implement safeguards to avoid them.²⁸

Second, without full knowledge and understanding of the costs of their movements, customers cannot make sound financial decisions when choosing which transportation options to use. One of the main purposes for using the WCF structure for transportation is to encourage efficient choices by the services. The businesslike structure is intended to constrain customer costs. Although USTRANSCOM can provide cost comparisons in some cases, the current system does not always provide enough transparency for customers to make informed decisions, and thus reduces the effectiveness of the WCF structure. As one customer stated, “we would want to see what the transportation cost actually is. It allows customers to make better decisions on what to ship and how much to ship when they know actual costs.”²⁹ However, this concern over transparency from customers is not lost on USTRANSCOM. In fact, officials directly recognized the concern in an interview, stating, “Our customers are concerned about lack of transparency, what is covered in the rates, and not knowing what the bills will be until they receive them. What they put into the system may be different from what shows up at the port.”³⁰ As a consequence, USTRANSCOM has made efforts to address these concerns.

Customer and service-providing agencies recognized general and specific efforts to address rate and bill transparency. One customer related generally that USTRANSCOM is improving its explanations of the costs included within the TWCF. The customer reported not understanding, until a few years ago, what was included in the rates, but added that there is now more clarity.³¹ Other interviewees mentioned that USTRANSCOM used to hold more-frequent meetings to explain funding and rate mechanisms. Rate and cost topics would be discussed at least twice a year during quarterly meetings. However, for unclear reasons, costs and rates are now discussed only once a year, with the level of detailed discussion at these meetings diminished compared with previous meetings. Customers expressed disappointment in this trend and encouraged USTRANSCOM to reengage in more-frequent and more-detailed events.³² Interviewees mentioned such forums as the Distribution Steering Group, Transportation Customer Outreach

²⁷ Interview with DoD officials.

²⁸ WCF constructs generally lead to financial accounting data that offer more detail than through appropriations (see Keating and Sommerhauser, 2012), but, in the case of the TWCF, those data are not widely accessible by customers and are fragmented across information systems within USTRANSCOM. Therefore, even if the data are presently available somewhere, they are not organized in such a way as to address the noted concerns.

²⁹ Interview with Air Force officials.

³⁰ Interview with DoD officials.

³¹ Interview with Army officials.

³² It should be noted that one interviewee (DoD official) stated that services should take more advantage of the annual “rates briefing,” which allows service customers to inquire about costs and rates.

Forum (TCOF),³³ and Joint Transportation Business Review as examples of forums for this type of effective communication.³⁴ On a related note, one of the service providers described an effort to be more detailed and transparent with the bills that it sends to customers so that customers can verify charges before they are billed. The service provider stated that it has been working with individual services to decentralize their bills from the command level to the fund center level, or from movement level to unit level. This gives customers more detail and insight into specific charges, shifting downward to what one official described as “a house rather than neighborhood level.”³⁵

Timeliness and Access to Data

USTRANSCOM relies on historical data and workload forecasts from its customers to develop its estimated costs and rates for transportation movements. Consequently, services require as accurate and robust data as possible to inform their workload estimations. However, interviewees highlighted difficulties in accessing the requisite data needed for this level of accuracy from the myriad of systems that they use to compile data. In one instance, a customer in one of the services reported having less visibility into aggregate data of the service’s transportation movements than USTRANSCOM did, requiring the service to take a more piecemeal approach in using historical data to inform future workload estimates. Its access was impeded by the seven to eight different systems from which it needed to collect the data.³⁶ A representative from another agency seconded these difficulties in accessing data, stating that the difficulties had contributed to delays in making time-sensitive decisions. The interviewee identified data problems relating to IT systems, contractors, and processes. First, the interviewee stated that the multiple systems used to house data contributed to the problem, because many of these systems do not speak to one another, requiring users not only to gain access to multiple systems but also to deconflict the different systems’ data, which have varying levels of quality. Second, waiting for contractors and third-party providers to send bills and other cost-related data slowed the agency’s processes. Third, in-house procedures differed by bill type. Thus, bills needed to be processed separately and differently based on their unique fund sources, such as the TWCF or the general fund.³⁷

Both of these customers acknowledged that, ideally, the development of USTRANSCOM’s new TMS should lead to improvements in data-sharing and providing cost comparisons for

³³ A DoD official indicated that the responsibilities of the TCOF have been incorporated into the Transportation Financial Auditability Working Group, which has a similar set of participants.

³⁴ Interview with DoD and Navy officials.

³⁵ Interview with Air Force officials.

³⁶ Interview with DoD, Army, and Navy officials. Interviewees did not always specify which data systems they were using; some could be service-owned rather than USTRANSCOM systems.

³⁷ Interview with DoD officials.

different transportation options. The agencies hope that the TMS will greatly speed up the process for data collection and processing, allowing customers to access data at a faster pace than they do now. The TMS should also make it easier to share data across the services and service providers.³⁸

Perception That Rates Include Costs That Could Be Better Recovered by Other Methods

Readiness Costs Incorporated into Rates

In the current TWCF structure, some readiness costs associated with USTRANSCOM are included in the rates charged to service customers. Both customers and providers voiced concern over this approach. As discussed in Chapter 2, USTRANSCOM must make some transportation decisions based on readiness. For instance, a service might need to send cargo from one port to another. The service, if given the chance, likely will choose a commercial carrier, assuming that it will provide the most cost-effective option. However, USTRANSCOM might need to exercise an organic ship between those two ports and might decide to send that customer's cargo via an organic carrier, which is often more expensive. The service then must make up the difference for these readiness costs. However, how these costs are spread across all of the services is not clear to customers. In the example, the customer could end up with a higher bill than anticipated because of readiness-related decisions. These decisions and processes, therefore, might lead to discrepancies between what the customer expects to pay and what it ends up paying, making it difficult for the customer to plan and budget for transportation.³⁹

The officials who voiced concern over which costs are incorporated into TWCF rates did not question the need for USTRANSCOM to exercise organic assets in the DTS to support readiness. Still, some questioned whether the TWCF was the appropriate mechanism for recovering these types of costs. Essentially, customers end up footing the bill for readiness in a way that might not be fair among the services, because one service could end up paying more than others. Because of the cross-service benefits provided by USTRANSCOM readiness efforts, interviewees suggested that readiness costs would be better recovered through a separate funding mechanism other than customer rates. The interviewees recommended that readiness costs be estimated and presented to senior leadership for approval on an annual basis. Then, once approved, readiness costs could be shared across the services via SLBs or a similar mechanism in an equitable manner. This also would increase transparency for readiness costs so that all of the services would understand what they are supporting through these charges. The officials whom

³⁸ Interview with Army and DoD officials.

³⁹ Interview with Army officials.

we interviewed believe that this structure would have a calming effect on TWCF rates and the fund's cash balance compared with the current structure.⁴⁰

Use of Funds from the Transportation Working Capital Fund

Aside from readiness costs, interviewees expressed a general concern over the types of costs (not just those related to readiness) covered by the TWCF. They expressed a belief that some costs, such as the procurement of IT systems or the fulfillment of maintenance shortfalls for USTRANSCOM, might be outside the scope of TWCF purposes. They stated that such costs might be better funded through more-traditional routes, such as operational or contingency funds. Interviewees stated that the inclusion of these costs in the TWCF rate structure seems inappropriate given the objectives of the TWCF. One official recommended that, instead, only overhead related to movement of equipment or personnel should be included in rates, while all other costs should be funded by other mechanisms, such as SLBs and direct appropriations.⁴¹ Multiple customers asserted that they thought that USTRANSCOM overhead costs were higher than needed, and they suggested that additional scrutiny should be applied to these funds. Customers expressed worry that they are paying for any number of items, such as staff travel, that might not be of direct benefit to readiness or other customer-related needs. They recognized that this is only a perception, but the fact that the perception exists is of concern.⁴²

USTRANSCOM officials indicated that they are making efforts to control costs, and, in 2020, they conducted a comparison of USTRANSCOM's overhead costs with overhead costs of several commercial transportation providers. They assessed their overhead costs, defined as the headquarters costs of USTRANSCOM and its service component commands, as comparable with or lower than those of relevant commercial industry.

Customers who articulated these concerns believe that such perceptions of the TWCF could be addressed by increased and clearer communication from USTRANSCOM about its rates and costs. Because customers do not know or understand the details of the rates and costs charged, the impression is created that there might be costs included that are unrelated to customers' shipments or readiness needs. In addition to the suggested forums for increased engagement highlighted earlier, interviewees provided related examples. For instance, one interviewee described an effort by DLA to increase communication with its service customers. DLA developed a pamphlet detailing the costs and rates for its services and used the pamphlet to brief customer agencies, offering a chance for deeper discussion. The pamphlet included such information as the costs for particular services, overhead costs, related personnel costs, and other costs that influence the rates charged by DLA. Another interviewee noted an example of costs that were previously removed from the TWCF and suggested that the example be used as a basis

⁴⁰ Interview of Air Force, Army, and DoD officials.

⁴¹ Interviews with Army, DoD, and Navy officials.

⁴² Interviews with Air Force and DoD officials.

for future rate adjustments. The RFID tag program used to be included in TWCF rates, but the services made the case that it did not make sense to include these costs within customer rates given that not all customers required their use. They suggested that these costs be recovered through a user fee instead. USTRANSCOM subsequently removed the tag costs from the TWCF and now charges customers for the tags through an SLB.⁴³

Oversight of the Transportation Working Capital Fund

Related to the use of TWCF funds, there appeared to be some confusion among customers as to what procedures or policies exist regarding oversight of USTRANSCOM's management of the TWCF. One interviewee expressed uncertainty as to which organization or position conducted TWCF oversight and whether the oversight process was sufficient to ensure proper performance and use of the TWCF. The interviewee voiced concern that, with such a large organization as USTRANSCOM, and the expansive nature of the services it provides and funds through the TWCF, oversight might be difficult if not articulated and supported in a clear and robust manner. The interviewee wondered whether USTRANSCOM is required to justify its costs that are covered by the TWCF and not through direct appropriations. Without there being enough oversight, customers worry that they are paying for costs that are not necessary and for which USTRANSCOM is not being held accountable.⁴⁴

Hybrid Transportation Working Capital Fund Structure Produces Issues for Customers in Programming and Year of Execution

U.S. Transportation Command Rate-Setting Processes

Many of the service providers with whom we spoke highlighted the challenges they face in setting their transportation rates two years in advance of the year of execution using the workload estimates provided to them by customer agencies. For example, workload forecasts using data available in FY 2020 were used as the basis for the rates to be charged in FY 2023. USTRANSCOM and customer agencies stated that they use all available historical and current data to inform their calculations. For instance, some of their anticipated workload is fairly stable from year to year. However, unforeseen events, such as a decrease in demand caused by the global coronavirus disease 2019 pandemic or fluctuations in oil prices, can greatly affect workload and costs in the year of execution. Engagement by the military in new contingencies also plays a role in shifting demands, which trickle down through the rates that USTRANSCOM must charge.⁴⁵

⁴³ Interview with Army officials.

⁴⁴ Interviews with DoD and Navy officials.

⁴⁵ Interviews with Air Force, Army, and DoD officials.

Interviewees described some specific challenges that make forecasting difficult. One interviewee stated that the data used to forecast workload could be improved. For example, systems used to track historical data, such as the Joint Operation Planning and Execution System and the Global Air Transport Execution System, include free text fields in which users can input multiple types of data. This creates opportunities for data to be incomplete, wrong, or incomparable with other data within the same system. Interviewees stated that improvements in data quality would help regardless of whether current budgeting processes remain in place.⁴⁶ Several interviewees also voiced frustration that there is no process in place to make adjustments to budget estimates after they are submitted, even if USTRANSCOM or customer agencies gain new information that could influence demand.⁴⁷ They stated that there should be some option for making adjustments to forecasts to help address changes as they develop in real time. Because an even AOR balance must be maintained within the TWCF, forecasting difficulties and unexpected events often translate into larger shifts in TWCF cash balance than would be necessary if changes could be made as needed.⁴⁸

On a closely related note, interviewees made similar statements regarding the rate-setting timeline that USTRANSCOM agencies must follow. Rates are based on forecasted workload and demand, two fiscal years prior to their implementation. Once they are formalized for a particular year, they cannot be altered, regardless of external or other influences which might affect movement costs. Although this provides stability in the year of execution, the system essentially has to be reactive to these influences after the fact, using rate adjustments in the following years to make up for any positive or negative differences in the current year. Building in options for rate adjustments in the year of execution would allow USTRANSCOM component commands to be proactive and would reduce the year-to-year fluctuations in rates that can otherwise occur under the current TWCF structure. One interviewee gave an example for how these rate adjustments might occur: USTRANSCOM agencies could provide rate ranges each year, so customers could still plan for their anticipated costs, but service providers could then adjust the rates upward or downward within that range based on real-time circumstances.⁴⁹

Navy officials noted that, even for business lines in which workload is relatively predictable, such as maintaining ships in ROS, there can be discrepancies between the TWCF rate approved by OSD and the (lower) appropriation approved by Congress as part of the Navy's operations

⁴⁶ Interview with DoD officials.

⁴⁷ It should be noted that one provider with whom we spoke stated that it does not have as much difficulty with forecasting, because it had been working to improve its processes over recent years. As a consequence, the provider did not believe that there needed to be widespread change in how USTRANSCOM budgets and plans for its future workload (interview with Air Force officials).

⁴⁸ Interviews with Air Force, Army, and DoD officials.

⁴⁹ Interviews with Army officials.

and maintenance budget. This causes problems in the year of execution and contributes to net operating losses, which must be recovered in future rates.⁵⁰

A major consequence of the forecasting and rate-setting timelines is the difficulty of maintaining year-to-year stability in the rates charged to customers, because they depend on prior-year operating results.⁵¹ Multiple service providers with whom we spoke stated that they knew that their customers wanted more-stabilized rates than the current TWCF structure provides. They have heard from customers that rates are not as directly tied to costs as customers would expect and that costs outside those tied to customers' movements are "peanut butter spread" across the services, further contributing to rate fluctuations.⁵² Unfortunately, this lack of stability goes against one of the major purposes of DWCFs, which is to make rates predictable for customer agencies.⁵³

Budgeting and Funding for the Airlift Readiness Account

AMC employs a unique funding instrument to help manage its TWCF funds: the ARA. The Air Force officials we interviewed each noted their concerns regarding the ARA. They generally recognized that the ARA helps AMC balance its TWCF accounts more easily from year to year compared with other service providers within USTRANSCOM. However, there were questions as to whether the ARA was the best mechanism for this purpose and whether another option would be better suited.⁵⁴ One interviewee noted difficulties with budgeting for the ARA accurately and stated that it was often underfunded from year to year.⁵⁵ Another interviewee contended that the costs that are currently recovered by the ARA should be covered by the rates charged to customers instead. Including these costs in the ARA essentially makes AMC's portion of the TWCF less like a business model, which goes against the intended purpose and objectives of employing a WCF structure. Despite their desire for a better approach, the interviewees recognized that removing the ARA completely would pose challenges to keeping costs low and close to commercial benchmarks in order to keep business within the DTS.⁵⁶ To address this problem, one interviewee recommended that the TWCF be funded, through rates, at the necessary levels to meet demand rather than rely on such mechanisms as the ARA.⁵⁷

⁵⁰ Information provided by the Navy Office of Budget.

⁵¹ DoD, 2019, "Charters," pp. 1-5-1-7.

⁵² Interviews with Air Force, Army, and DoD officials.

⁵³ DoD, 2019, "Charters," pp. 1-5-1-7. Although rates are set two years in advance, they can vary considerably from year to year, as we discuss later in this chapter.

⁵⁴ Interview with Air Force officials.

⁵⁵ Interview with Air Force officials.

⁵⁶ Interview with Air Force officials.

⁵⁷ Interview with Air Force officials.

Assessment of the Current Structure

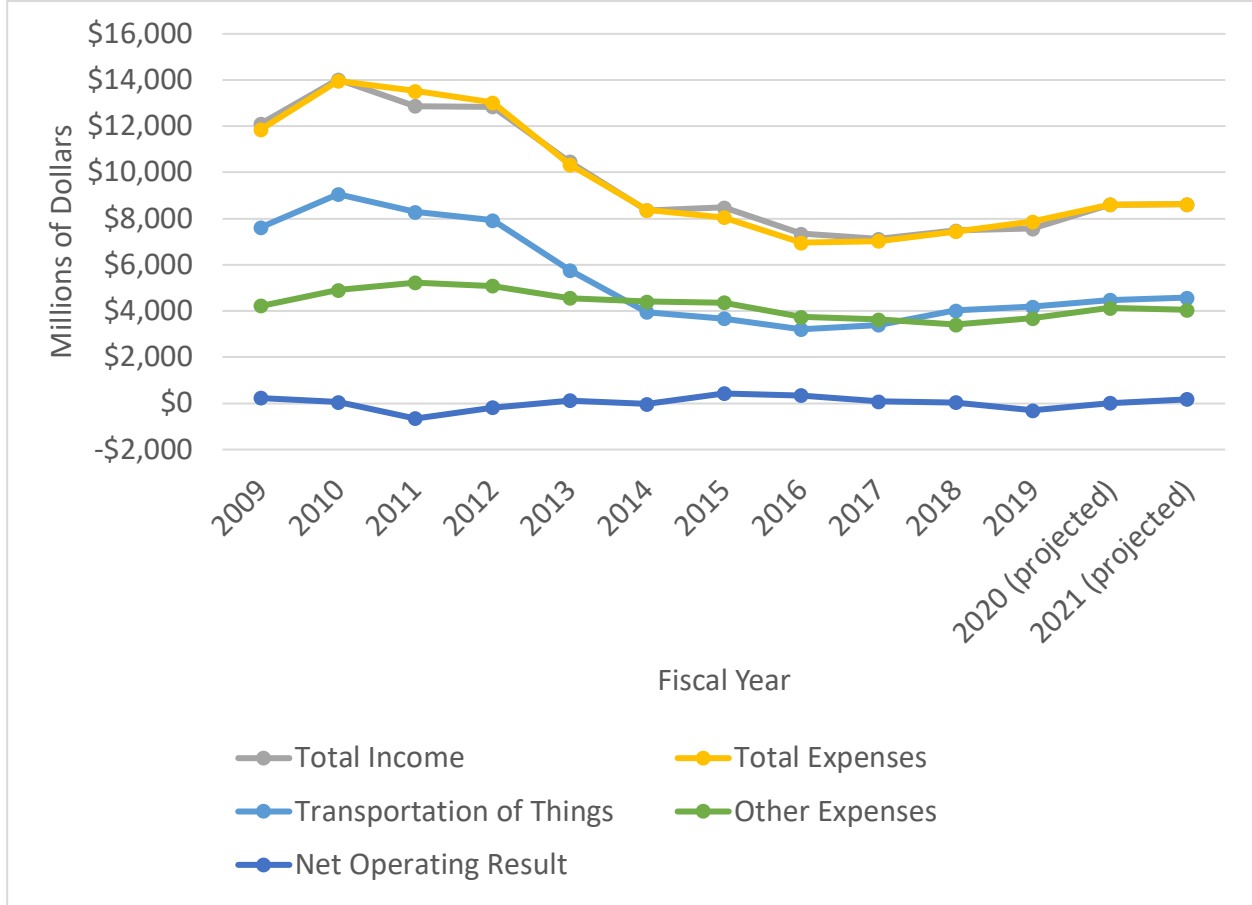
In addition to stakeholder interviews, we used two main data sources to evaluate the existing structure and financial viability of the TWCF. These were the annual budget estimates for the TWCF, submitted as part of the AFWCF budget estimates for FY 2011 through FY 2021,⁵⁸ and the annual Billing Rate Computation and Proposed Adjustments (also known as IF-12 exhibits) prepared by each component command for FY 2015 through FY 2021. Although the TWCF budget estimates cover a longer time period, they primarily provide composite data for the TWCF as a whole, whereas the IF-12 exhibits provide greater detail on the revenues, costs, and operating results for each line of business.

In this section, we provide an overview of the financial status of the TWCF as a whole and then drill down into financial results and characteristics of the component commands and individual lines of business.

Figure 4.1 shows the financial results for the TWCF as a whole from FY 2009 through FY 2019, along with projected results for FY 2020 and FY 2021, based on the TWCF budget estimates. The top two lines show the total revenues and expenses of the TWCF, and the bottom line shows the NOR. The TWCF as a whole has come close to breaking even throughout the period, with a NOR ranging from -4.8 percent of costs in FY 2011 to 5.4 percent of costs in FY 2015. The primary source of variable costs is “Transportation of Things” (the light blue line), which follows the general trend of revenues and expenses. Most other costs (the green line) remained fairly stable as workload changed during the period.

⁵⁸ The Air Force assumed responsibility for TWCF cash management in FY 1998, and the TWCF cash balance is included in the AFWCF cash balance. See U.S. Government Accountability Office (GAO), 2018.

Figure 4.1. Transportation Working Capital Fund Financial Results



SOURCE: TWCF budget estimates from FY 2011 through FY 2021 (available from Financial Management and Comptroller, undated).

However, the financial results for the individual component commands are more variable from year to year, as shown in Figure 4.2. AMC’s NOR ranged from a 7.4-percent gain in FY 2009 to a 4.1-percent loss in FY 2011. MSC’s NOR fluctuated from a 16.7-percent loss in FY 2009 to an 18.9-percent gain in FY 2014. SDDC’s NOR ranged from a loss of 12.8 percent of costs in FY 2011 to a gain of 13.7 percent in FY 2015. These gains and losses occur because the component commands must forecast workload and costs two to three years in advance. Although customer rates are set somewhat differently for each line of business, generally speaking, overhead and other fixed costs are spread across projected workload and recovered as a mark-up on commercial rates or organic operating costs. If customer priorities change during the year of execution and workload is higher than expected, then fixed-cost recovery will be greater than actual fixed costs, so the business line will have a net gain. Conversely, if workload is lower than expected, fixed-cost recovery will fall below actual fixed costs and the business line will have a net loss. There also might be unexpected changes in forecasted costs, such as changes in the

price of aviation fuel or commercial transportation or the costs of maintaining aging ships in the Ready Reserve Force.

Figure 4.2. Net Operating Results, by Component Command

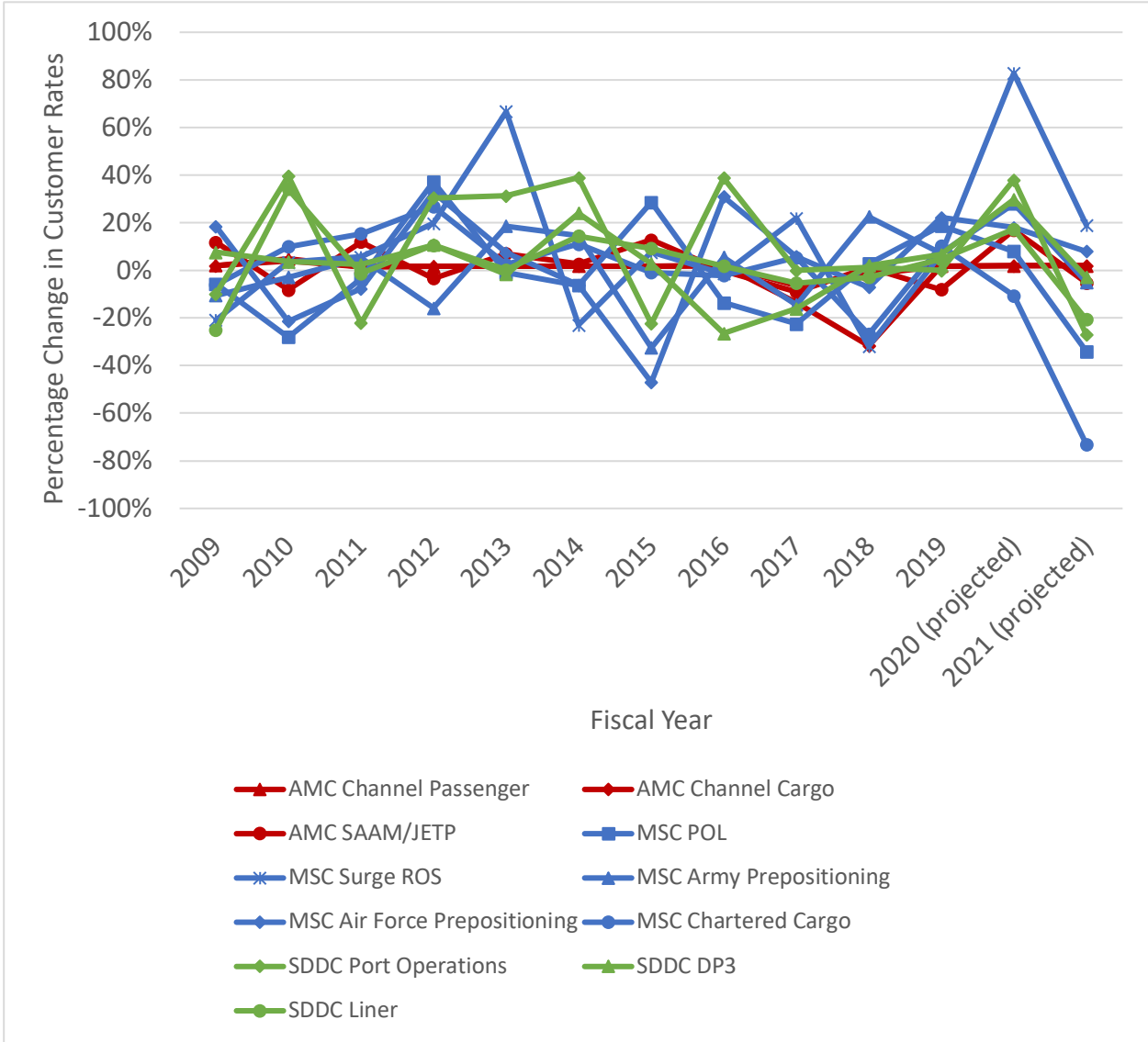


SOURCE: TWCF budget estimates from FY 2011 through FY 2021 (available from Financial Management and Comptroller, undated).

Under the DoD FMR, customer rates must be set to return the fund’s AOR to zero in the budget year, which is typically two years in the future. In practice, TWCF customer rates typically are set to return each line of business’s AOR to zero in a single year. Because of forecasting errors and the need to return prior-year gains or recover prior-year losses from customers, there can be wide swings in customer rates from year to year, as shown in Figure 4.3. MSC has had some of the largest customer rate changes, up to 83-percent increases and 73-percent reductions. SDDC has ranged from 40-percent increases to 26-percent reductions in composite customer rates. As shown by the red lines in Figure 4.3, AMC customer rates generally have been much more stable because the ARA, which is paid by the Air Force, is designed to cover all costs that are not recovered by customer rates. In most years, customer rates

changed less than 10 percent, with a few exceptions, ranging from a 32-percent reduction to a 17-percent increase. As a result, however, this variability has been transferred to the ARA.

Figure 4.3. Annual Change in Composite Customer Rates, by Business Line

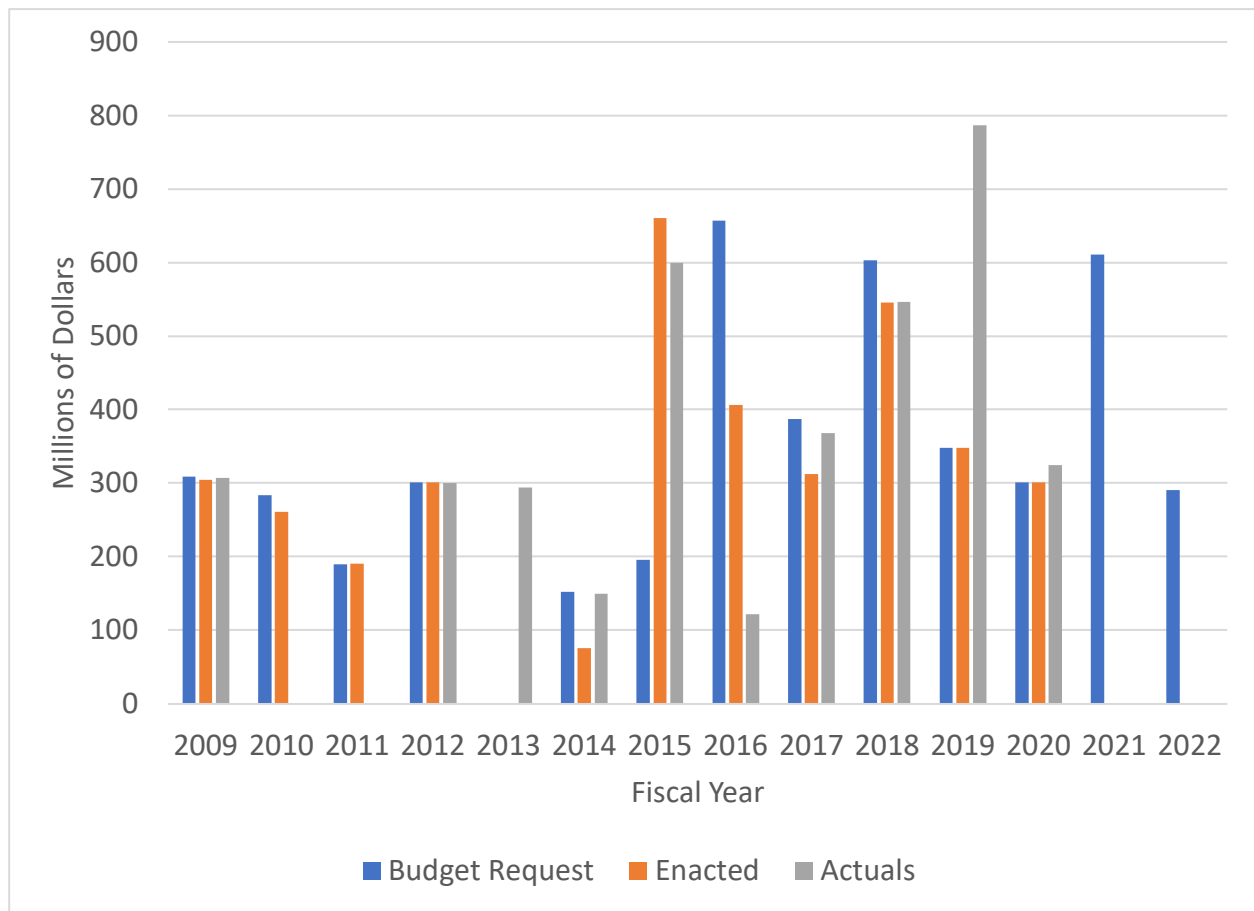


SOURCE: TWCF budget estimates from FY 2011 through FY 2021 (available from Financial Management and Comptroller, undated).

Figure 4.4 shows comparisons of the amounts requested in the President’s Budget, enacted by Congress, and paid by the Air Force for the ARA from FY 2009 through FY 2020 and includes the budget requests for FY 2021 and FY 2022. These amounts varied from year to year by hundreds of millions of dollars. Additionally, while the AMC business lines appear more stable in terms of year-to-year rate changes, in many years, the amounts actually paid by the Air Force for the ARA were much higher or lower than budgeted or enacted. As a result, the Air

Force has had to reallocate operations and maintenance funding to or from other purposes to the ARA, in some cases requiring reprogramming approval from Congress. The GAO reviewed the ARA in FY 2018 and found that the Air Force had stopped including specific ARA information in its budget requests in FY 2010, in part because USTRANSCOM had not been providing cost estimates in time to support Air Force budget preparations. An underlying issue is the difficulty with forecasting workload two to three years in advance of execution due to changes in customer priorities, the global security environment, natural disasters, and force structure (GAO, 2018).

Figure 4.4. Airlift Readiness Account



SOURCES: GAO, 2018; and data provided to us by the Air Force.

Insights on Wartime Readiness from Related Literature

Although our discussions with stakeholders and SMEs in this assessment did not raise concerns about USTRANSCOM’s readiness to execute its missions, those discussions primarily focused on steady-state, day-to-day transportation requirements. Several RAND research projects have raised concerns about USTRANSCOM’s ability to meet its full mission

requirements, including during wartime. As an example, one study examined readiness of the sealift fleet to meet National Defense Strategy requirements and activation practices used to assess readiness.⁵⁹ The report provided recommendations to improve the fleet's readiness.

In our assessment of the current TWCF structure and candidate COAs, we take current capabilities and capacity as given and evaluate how well COAs support DTS readiness instead of evaluating its sufficiency to meet wartime requirements. Thus, we focus on whether the current TWCF structure supports (1) DTS movements in steady state that enhance wartime readiness and (2) needed investments in the readiness of both the organic and contract fleets and their related personnel.

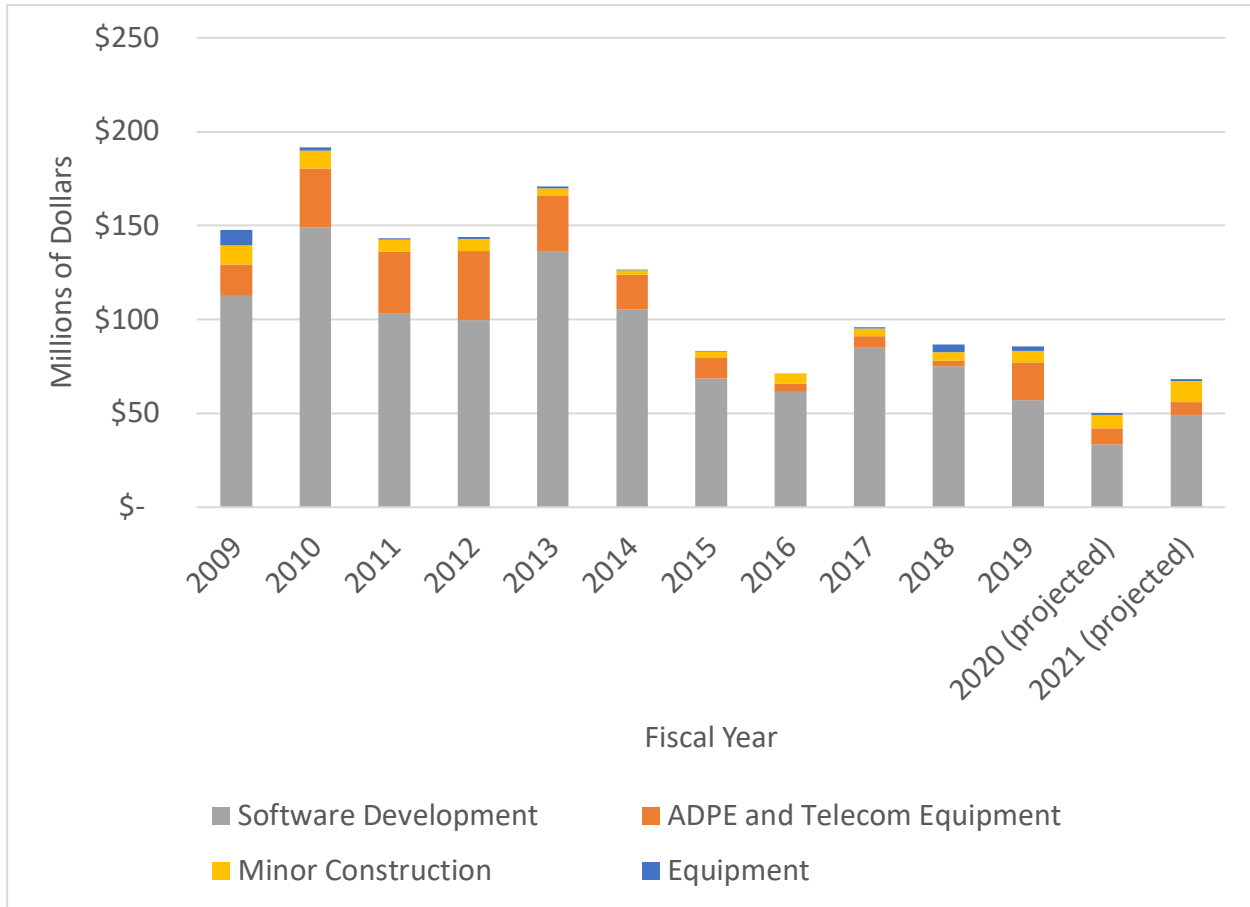
Use of Funds from the Transportation Working Capital Fund for Procurement

Because the NDAA language specifically required an assessment of any instances in which excess TWCF funds were used for procurement or modernization efforts that would not otherwise have been funded using amounts made available for operation and maintenance, we examined the uses of funds in the TWCF Capital Investment Program, as specified in the TWCF budget estimates. Figure 4.5 shows capital expenditures for FY 2009 through FY 2019 and projected amounts for FY 2020 through FY 2021. Over this period, the TWCF Capital Investment Program averaged 1–2 percent of total costs, and about 80 percent of the funds were spent on software development. There have been more than 40 software systems funded. Some of the most expensive development programs were the Global Decision Support System (\$175 million in total spending), the Defense Personal Property System (\$145 million) and the Global Air Transportation Execution System (\$96 million). However, USTRANSCOM has requested that its planned TMS software system be funded outside the TWCF.

Thus, we did not find any evidence of TWCF funds being used inappropriately for procurement or modernization. Discussions with congressional staffers suggest that the concern expressed in the NDAA language might be related to TWCF funds that were returned to customers late in the fiscal year because of billing discrepancies and that were spent by those customers, not to spending within the TWCF itself.

⁵⁹ Martin and Yardley, 2019.

Figure 4.5. Transportation Working Capital Fund Capital Investment Program



SOURCE: TWCF budget estimates from FY 2011 through FY 2021 (available from Financial Management and Comptroller, undated).
 NOTE: ADPE = automated data-processing equipment.

Findings on Shortfalls in Meeting Objectives

Discussions with customers and providers of the TWCF, as well as an analysis of USTRANSCOM budget data, primarily raised concerns about the current TWCF system’s ability to meet DWCF and administrative objectives. We do not find concerns over the ability of USTRANSCOM to meet steady-state readiness needs, but we do find that the current system

- lacks cost-control incentives for USTRANSCOM and, to a lesser degree, customers
- lacks stability and predictability of charges to customers
- introduces a need to frequently reprogram funds relating to the ARA
- lacks simplicity and transparency in its cost-recovery approach.

In the next chapter, we will assess alternative structures to close these gaps and address broader effectiveness and efficiency priorities.

5. Recommendations to Address Shortfalls

In this chapter, we provide our recommendations for each business line to address the shortfalls in the current system, as described in Chapter 4. We start by describing our approach to assessing each business line, by COA, then present a detailed application of this approach to the AMC Channel Cargo business line. We then provide similar recommendations for other business lines. Finally, we examine the regulatory and administrative COAs. Detailed analysis of additional business lines is found in Appendix A.

Approach for Assessing Courses of Action

Our approach to assessing the potential COAs, as outlined in Chapter 3, is threefold. First, we assess whether a business line should remain within the TWCF. Second, we assess the business line's contributions to readiness. Third, with this knowledge in hand, we identify which particular COA is most appropriate for each business line.

First, we assess whether the business line is appropriate for inclusion in the TWCF. We use two criteria for this assessment. The first is whether the workload is predictable. If workload is not predictable, then it is difficult to plan and program in advance for the resources needed to meet requirements in any given year. Appropriating too many funds leads to inefficient use of resources. Appropriating too few funds leads to shortages in needed capabilities during a fiscal year. Either can be addressed through reprogramming, but this adds significant time and burden to the process. The second criterion is whether requirements are affected by customer decisions, such as decisions about how much should be shipped and with what level of urgency. Deciding to ship additional cargo or requiring faster shipping drives up transportation costs. When customers make these types of decisions that affect costs, paying for transportation services can provide cost-control incentives to temper their demands, limiting costs incurred by the DTS and prioritizing use of limited transportation capacity. However, if customers are not making decisions that influence the cost of shipments—that is, if requirements are essentially fixed—then their actions are not influenced by how much (if anything) they pay for movements. In these cases, receiving transportation services for free would not be expected to lead to decisions that would increase the overall cost of the DTS.

Thus, if the business line has an unpredictable workload and customer decisions affect requirements, the business line should be further assessed (specific steps are provided later in this chapter). However, if the business line has a predictable workload and customer decisions do not affect costs and workload, we recommend that costs be covered through direct appropriation to USTRANSCOM (our Appropriations COA).

Second, once it is determined that a business line is appropriate for the TWCF, we assess whether the workload contributes to the readiness of the DTS to meet wartime requirements. If the workload does contribute to readiness, cost recovery should be structured to encourage customers to use the DTS to meet their movement requirements. Thus, the costs that customers pay should be no greater than any alternative transportation options. However, if the workload does not contribute to readiness, then it is in the best interest of DoD for customers to choose the transportation option that meets requirements at the lowest cost.

Third, we assess which particular COA is most appropriate for each business line by determining whether our Variable Cost Pricing COA would lead to readiness-generating work leaving the DTS. If the business line's workload does contribute to readiness and customers have cheaper options outside the DTS, they might decide to use those options instead and thus reduce readiness by reducing readiness-generating shipment volume within the DTS. If Variable Cost Pricing results in keeping the workload within the DTS, this COA provides the strongest incentives for cost control for customers—customers see the costs that their requirements impose upon the DTS and make decisions that are optimal from an enterprise cost perspective.

Otherwise, the Commercial Benchmark COA is preferred, because it will deter customers from sending workload outside DTS and will provide some incentive to control costs, since customers will pay the commercial equivalent price for movements. In any case, fixed costs, as well as variable costs above the commercial benchmark for the second option, should be recovered through direct appropriation, which provides the opportunity to see and approve USTRANSCOM costs in advance to provide cost-control incentives. The appropriation could go to USTRANSCOM or to the services as a pass-through, whichever approach provides the most ability to influence costs. These appropriations should be paid into the TWCF to preserve funding flexibility.

If the business line's workload does not contribute to readiness, Variable Cost Pricing is preferred, to provide incentives to seek the low-cost option, and fixed costs are recovered through appropriation. Cost Plus pricing is generally not preferred, but might be acceptable if fixed costs are low or demands are infrequent enough that it is not worth the effort to implement the more complex Variable Cost Pricing COA.

Benefits of Following Recommendations

The assessment methodology discussed in the previous section focuses on supporting USTRANSCOM readiness needs and improving cost-control incentives for customers and USTRANSCOM. The assessment approach leads to a recommended COA (or multiple COAs) that meets these goals for each business line.

Furthermore, and importantly for the WCF context, the recommended COA should significantly reduce over- or under-recovery of costs each year for many business lines. The recommended Variable Cost Pricing approach will create rates that are tied to the costs that

customer demands impose on the DTS. If demands are higher or lower than predicted, variable costs also will be and should largely track with revenue from customers. This will never be perfect, because rates are set in advance and costs can change unexpectedly, but variable cost and rate revenue should be closer under this pricing scheme than under others. Removing fixed costs and any costs above commercial benchmark rates (for business lines for which Variable Cost Pricing would be detrimental to readiness workload) from the rates paid by customers and recovering those through appropriation should also lead to improvements over today's cost recovery for many business lines. Fixed costs should be predictable, and recovery of fixed costs would not be dependent on workload forecasts, which should reduce variability in NORs. Any imbalances between rates and actual variable costs could be addressed through future appropriation rather than through rates, because rates are associated with future workload, which is subject to variability.

Assessment of Individual Courses of Action

We used the assessment methodology described earlier in this chapter to develop a recommended cost-recovery approach for each of the business lines. In this section, we discuss the Channel Cargo line in detail. Assessment details for the other business lines are provided in Appendix A.

Channel Cargo

The AMC business line for channel air cargo consists of regularly scheduled flights that the military can use to airlift equipment to a set of locations around the world. The customer pays for the number of pounds of materiel being moved on established routes. As discussed earlier, the current cost-recovery approach for Channel Cargo is based on a commercial benchmark. Customers pay a rate per unit of weight that is based on commercial rates, and all costs beyond the commercial rate (any additional variable costs and all fixed costs) are recovered through the ARA. This cost-recovery scheme is designed to keep movements in the DTS to promote readiness. We did not perform an independent comparison of DTS costs and commercial alternative costs, but the cost-recovery scheme suggests that, for at least some types of movements, DTS costs are greater than commercial benchmarks.

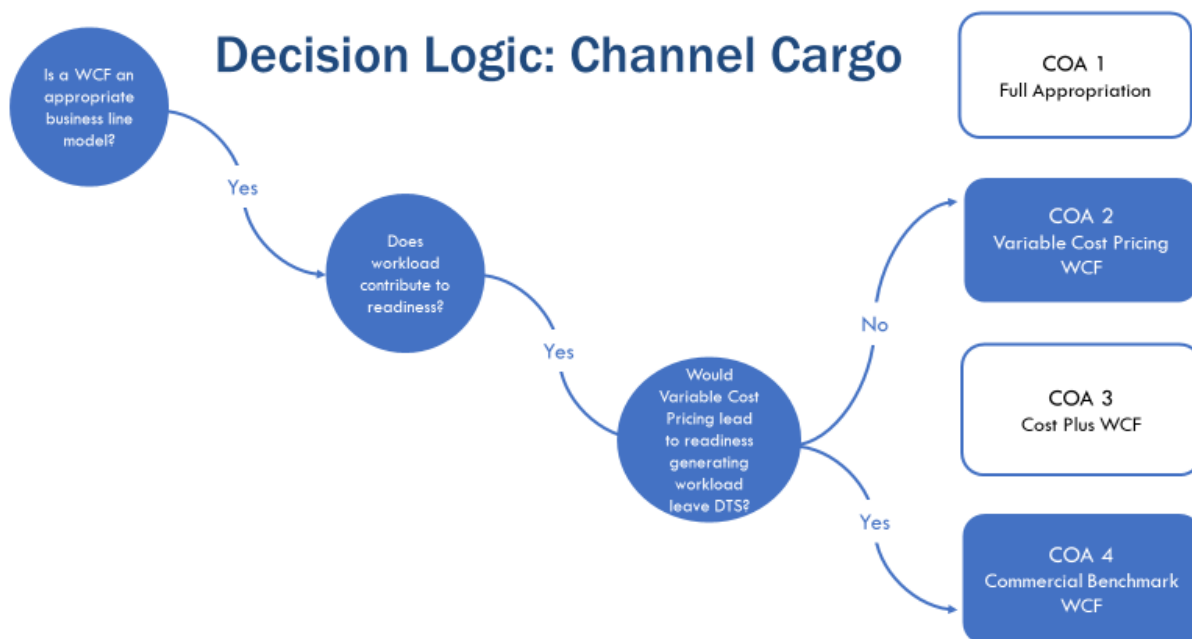
Figure 5.1 shows the decision logic for our COA assessment for the Channel Cargo line of business. In our assessment, this workload does not meet the criteria for recommending that costs be recovered through appropriation; thus, it should remain in the TWCF. Channel Cargo shipments usually involve small amounts of materiel that are not predictable in advance, such as parts needed for sustainment. In addition, the small-package nature of the movements is, to some

degree, at the discretion of customers. Paying a price for shipments provides cost-control incentives.⁶⁰

Furthermore, USTRANSCOM views this workload as contributing to readiness and seeks to keep it within the DTS. The remaining question is whether Variable Cost Pricing would provide incentives for customers to make decisions to use DTS for these movements. There are robust commercial options for small-package shipping for many items that go through the channel system; thus, rates paid by customers must be competitive with commercial prices. If DTS variable costs (primarily variable costs of organic channel transport) are no more than commercial prices for movements, then Variable Cost Pricing is preferred. If DTS variable costs (organic variable costs) exceed commercial prices, then the current cost-recovery approach of Commercial Benchmark is preferred.

In either case, we recommend that fixed costs, and any variable costs not recovered through rates, be recovered through appropriation to USTRANSCOM or the services rather than through the ARA.

Figure 5.1. Decision Logic for Channel Cargo Assessment



⁶⁰ Although individual shipments are not easily predictable, in steady-state operations, the aggregate tonnage between locations is relatively stable and is used to predict future workload on each route.

Recommended Courses of Action for Each Business Line

Following the same logic that we used for the Channel Cargo business line, we recommend that most of the other business lines, which are described in more detail in Appendix A, should be structured to adopt Variable Cost Pricing (remove fixed costs from rates paid by customers), with four exceptions. These recommendations are summarized in Table 5.1.

Although some business lines, such as Channel Cargo, require additional examination before a COA is decided upon, implementing the Variable Cost Pricing or Commercial Benchmark COA involves two concrete steps, regardless of the cost-recovery COA ultimately selected. First, we recommend changes to how non-rate revenue is recovered. In all cases, non-rate revenue should be recovered through an appropriation—to USTRANSCOM, a component command, or the military services—in a process that provides an opportunity for stakeholders to influence those costs before they are incurred. This would involve a restructuring of how costs are recovered for several business lines, particularly those that are currently covered by the ARA. Unlike the current ARA, these appropriations would be established in advance during the budgeting process and would not depend on changes in costs during the year of execution. However, they should be easier to predict, because they are based on fixed costs that do not vary with customer demand.

The second concrete step sets an upper bound on what rates charged to customers should be. For required readiness to be achieved, and for the control efficiencies of a WCF to be obtained, rates charged to customers should not exceed the variable costs of a movement. In some cases, as in the Channel Cargo example, it might be desirable to charge less than the variable costs, to keep readiness-generating movements in the DTS. Yet, to keep cost-control incentives in line, we would not recommend recovering anything beyond variable costs from customers.

Three business lines could be removed from the TWCF. Traffic Management is already 100 percent fixed costs and is recovered through an SLB rather than customer rates. If an appropriation would increase scrutiny on these costs, Traffic Management could be removed from the WCF. Similarly, AMC Training is entirely an Air Force bill and could be removed from the WCF, and the funds could be directly appropriated to AMC instead. However, additional analysis of this recommendation is needed to identify whether the benefits to be gained by removing this business line from the TWCF would outweigh the additional complications that would be imposed upon other AMC lines of business that share the same aircraft used for Training. Finally, we observe no reason not to follow USTRANSCOM's request to remove Global POV/DP3 from the TWCF to align it with other aspects of permanent change of station (PCS) movements. If this business line remains in the TWCF, we recommend that it recover costs using Variable Cost Pricing.

For MSC's Surge/ROS business line, we recommend the Commercial Benchmark COA to meet USTRANSCOM's readiness needs while improving cost-control incentives. In this case, customers should pay the estimated commercial costs for the same route and cargo, even if their

movements are completed on organic ships that are activated for readiness purposes, and any remaining costs should be covered through an appropriation to USTRANSCOM. The steady-state costs of maintaining the ships in the Ready Reserve Force would also be covered by appropriations.

Table 5.1. Transportation Working Capital Fund Cost-Recovery Recommendations

Business Line	Current Cost Recovery	Recommended Course of Action	Explanation
Channel Passenger	Commercial Benchmark plus ARA	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates
Channel Cargo	Commercial Benchmark plus ARA	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates
SAAM/Contingency	Organic: Commercial Benchmark plus ARA Commercial: Cost Plus	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates
JETP	Organic: Commercial Benchmark plus ARA Commercial: Cost Plus	Variable Cost Pricing or Commercial Benchmark	Variable cost from customer, fixed costs appropriated/SLB If organic variable costs are significantly higher than commercial rates, maintain commercially benchmarked rates
Training	Cost per flying hour	Appropriations	Appropriate to Air Force/AMC
Cargo (Charter/Activation)	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
POL	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Army Prepositioned Ships	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Air Force Prepositioned Ships	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Surge/ROS	Cost Plus	Commercial Benchmark	Customer pays commercial cost, remainder appropriated to USTRANSCOM
Port Operations	Cost Plus plus Port Readiness SLB	Variable cost pricing	Variable cost from customer, fixed costs appropriated/SLB

Business Line	Current Cost Recovery	Recommended Course of Action	Explanation
Liner Operations	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB
Traffic Management	Traffic Management SLB	Appropriations	Keep as SLB or appropriate, whichever would produce greater scrutiny
Global POV/DP3	Cost Plus	Variable Cost Pricing	Variable cost from customer, fixed costs appropriated/SLB No reason identified not to follow USTRANSCOM request to remove business line from TWCF to align with other aspects of PCS moves

Regulatory and Administrative Changes

In addition to cost-recovery COAs, we consider several regulatory and administrative changes that could increase stability in TWCF rates. We also address concerns raised in our discussions with stakeholders. These regulatory and administrative changes could be combined with cost-recovery options.

Increase Engagement with Customers About the Details That Underlie Rates and Costs

Through this administrative change, USTRANSCOM would increase or reinstate regular interactions with customers to share information regarding costs and rates included within the TWCF. In speaking with both customer and service-provider entities, we heard time and again that there is a lack of transparency in the TWCF rates. Customers are unaware of the actual costs that they impose on the system, because the bills they receive are not broken down by category and do not provide much detail. We heard from multiple interviewees that increased opportunities for discussion about the rates and what costs are included in them could help address some of the confusion brought about by this lack of transparency and detail. Interviews with representatives of the services and OUSD (Comptroller) provided examples of forums and mechanisms through which such engagement could take place.

One of the main types of forums mentioned was regularly scheduled meetings.⁶¹ Interviewees indicated that there were several of these in the past but that their frequency has diminished or ceased altogether. Examples of such meetings included the TCOF, the Distribution Steering Group, and the Joint Transportation Business Review. Interviewees noted that these forums had been especially helpful because they included lower-level officials who worked with

⁶¹ In addition to increased opportunities for meetings between customers and service providers, efforts previously made by DLA to increase its customer engagement were mentioned by one interviewee. DLA developed a pamphlet for each of the services to describe how it determines its rates and what costs are included in them. A senior leader then scheduled meetings with each of the services' undersecretaries to explain the rates personally, using the agency's pamphlet as reference. Interviewees noted that a similar effort from USTRANSCOM would be desirable to explain its TWCF rate-setting process and decisionmaking.

the TWCF in their day-to-day roles. Although some meetings to share information on TWCF rates still do occur,⁶² they often consist of senior leadership, which means that information still needs to trickle down through their respective organizations to be useful. Additionally, these meetings might not address more-detailed questions and concerns that only those individuals tasked with TWCF responsibilities might know to ask.⁶³

Increase Oversight of U.S. Transportation Command Overhead Costs Recovered Through the Transportation Working Capital Fund to Provide Greater Cost-Control Incentives

As discussed in Chapter 4, in our interviews with customer and service-provider agencies, we heard about concerns over the lack of transparency and apparent oversight of the rates charged for services provided through the TWCF. This included confusion over the current processes for oversight of USTRANSCOM costs and how those costs are distributed across rates within the TWCF. It is unclear to customers which office is responsible for oversight of the TWCF and what processes are used to ensure that costs included within rates are justified, whether in terms of readiness requirements or as directly associated with transportation movements.⁶⁴ Changes to recovery of USTRANSCOM overhead costs that provide greater visibility of those costs in advance of the year of execution could lead to increased scrutiny and greater opportunity to increase efficiency of operations. Recovering such costs through direct appropriation is a way to accomplish this. Costs would need to be specified in advance and approved for funding. Continued scrutiny of this appropriation would be required, because even though costs are fixed with respect to customer movements, they can increase over time. Even if all of the details of the appropriation are not reviewed annually, this approach offers greater opportunities for scrutiny than the current USTRANSCOM cost-recovery model does.

Major Assumptions and Caveats

We conclude with a discussion of three important assumptions that drive our analysis and recommendations, as well as two caveats. The first assumption is that customer behavior is influenced by TWCF rates and prices for transportation services. Customers have fixed resources for their transportation needs. When there are alternative options (i.e., options exist and customers are not required by policy or regulation to use the DTS for the movement), customers will seek the lowest-cost transportation option that meets their requirements for location and delivery timeline. DoD is not a commercial business, but prior research has validated these behaviors within DWCF constructs.⁶⁵ Because defense budgets are expected to become

⁶² Officials noted that there is a rate briefing held annually by the OUSD (Comptroller) at which services can ask questions about the rates within each line of business.

⁶³ Interviews with Navy and DoD officials.

⁶⁴ Interviews with Navy and DoD officials.

⁶⁵ See, for example, Baldwin and Gotz, 1998; and Camm and Shulman, 1993.

increasingly tight in future years, there will be natural pressure to find ways to save money. However, these incentives become diluted when the customers who are making decisions about transportation requirements are not the same personnel who are paying the bills. Better understanding of the resource implications of transportation decisions leads to improved decisionmaking from a DoD enterprise perspective.

The second, even broader, assumption is that WCFs make sense within the DoD context—that is, when appropriately implemented, they accomplish their stated objectives. During our interviews, we heard anecdotes about the value of funding flexibilities offered through the WCF construct, but we are unaware of definitive research on this question. It is worthy of future study.

The third assumption is that (a) future steady-state operations are more or less a continuation of operations today and (b) emerging and surge operations are presently anticipated in today's force planning requirements.

We also note two caveats. First, we do not consider the cost to implement any proposed COAs as part of our evaluation criteria. We evaluate COAs at a future steady state, not the transition from the current system to this future state. Evaluating this transition would require a level of detail on the future states that is beyond what can be specified in this analysis. Second, we do not quantitatively assess the linkage between TWCF cost-recovery approaches and readiness. Rather, support for readiness under a given COA is represented by whether the COA creates incentives for customers to keep readiness-generating workload within the DTS.

Finally, we note that implementing our recommendations to adopt Variable Cost Pricing requires three additional conditions to be true to obtain the benefits of this approach. First, for this cost-recovery structure to function properly, USTRANSCOM cost-recovery systems must be able to distinguish clearly between variable and fixed costs. Although it is possible to use USTRANSCOM budget data to estimate the share of costs that appear to vary with customer demand, as was done by the study team in this report, more-precise estimates of true variable costs, which are not currently produced during USTRANSCOM operations, are required to fully implement this COA. Second, the variable costs of movements to be paid by customers must be transparently communicated before a movement occurs. Our assessment of the current system notes this as a challenge. Third, further analysis is needed to determine whether the value of the benefits to be gained from implementing Variable Cost Pricing or other COAs exceeds the costs of implementing the new system. It is possible that the benefits, via increased cost-control efficiencies, are small relative to the cost of implementing the COA. An analysis that provides a deeper understanding of both benefits and costs should be completed before any costly implementation actions are undertaken. This analysis would include estimations of the elasticity of customer demand for different types of customers and movements, to understand the price sensitivity of TWCF customers. A deeper examination of USTRANSCOM business processes, IT systems, and personnel requirements also would be required to understand the costs of adopting Variable Cost Pricing or other COAs. Importantly, this analysis would need to be conducted for all business lines and for any WCF-focused COAs. This analysis, more broadly

focused on whether different lines of business are appropriate for a WCF construct, and the likely trade-offs in terms of readiness and cost control across various WCF options, was beyond the scope of our report.

6. Summary of Findings and Recommendations

This chapter summarizes the findings and recommendations from our analyses, by area of interest specified in the FY 2020 NDAA.

The Viability of the Transportation Working Capital Fund as It Is Currently Structured (as of December 2019)

Discussions with customers and providers of the TWCF, as well as an analysis of USTRANSCOM budget data, did not raise concerns about the ability of the TWCF to effectively conduct steady-state operations or recover costs. The broader literature does indicate potential concerns over the ability of USTRANSCOM to conduct surge operations. Existing customer concerns instead focus on the efficiency of the system. We find that the TWCF is perceived to

- lack cost-control incentives for USTRANSCOM and, to a lesser degree, customers
- lack stability and predictability of charges to customers
- introduce a need to frequently reprogram funds relating to the ARA
- lack simplicity and transparency in its cost-recovery approach.

Any Instances in Which Excess Funds from the Transportation Working Capital Fund Were Used for Procurement or Modernization Efforts That Would Not Otherwise Have Been Funded Using Appropriations Intended for Operation and Maintenance

Through our discussions with customers and USTRANSCOM SMEs, an analysis of existing budget data, and a review of USTRANSCOM's Capital Investment Program, we found no indication of TWCF funds being used for procurement or modernization efforts that would not otherwise have been funded. USTRANSCOM has requested that its largest planned procurement effort, the TMS, be funded outside the TWCF.

Recommendations for How the Transportation Working Capital Fund Could Be Restructured to Be More Effective and Efficient

To maintain TWCF readiness (effectiveness) and improve customer and USTRANSCOM cost-control incentives (efficiency), we recommend that most business lines be structured to follow Variable Cost Pricing within a WCF construct. This model, preferred in the business and economics literature as the best way to guide customer decisionmaking to support enterprise objectives, suggests that customers should pay for the costs that they impose on the system

(variable costs) and that other costs should be recovered separately. We recommend that those other costs be recovered through an appropriation to the services that is passed to USTRANSCOM through an SLB-like mechanism or through direct appropriation to USTRANSCOM, whichever allows for greater transparency and scrutiny of costs before they are incurred.

We recommend that this Variable Cost Pricing model be adopted for ten of the 14 USTRANSCOM business lines, with one caveat. More data are required to determine whether commercial benchmark prices are lower than organic variable costs. When this is the case and the workload contributes to readiness, customers should be charged commercial benchmark prices, as many business lines do today, to keep the readiness-generating workload within the DTS. In each case, costs above those covered in rates should be recovered through direct appropriation.

For MSC's Surge/ROS business line, we recommend the Commercial Benchmark COA to meet USTRANSCOM's readiness needs while improving cost-control incentives. In this case, customers should pay the commercial costs of their movements, even if their movements are completed on organic ships that are activated for readiness purposes, and any remaining costs should be covered through an appropriation to USTRANSCOM.

In addition to modifying cost recovery for lines of business, we recommend increasing engagement between customers and USTRANSCOM to improve transparency and understanding of costs.

Potential Alternative Funding Mechanisms for Components of the Transportation Working Capital Fund, Including the Channel System

We recommend that three business lines be removed from the TWCF: AMC Training, SDDC Traffic Management, and SDDC Global POV/DP3. Training and Traffic Management fit the criteria for business lines that could be recovered through full appropriation; these business lines have predictable workloads, and customers are not making decisions that drive costs. However, USTRANSCOM representatives indicated that the same aircraft used for Training are also used for AMC's other business lines, so taking Training out of the TWCF could complicate recovery of operating costs for these aircraft. Given the interconnected nature of business lines, especially Training with other AMC operations, additional analysis is required to understand whether the benefits to be gained by removing these business lines from the TWCF outweigh the complications imposed on other areas of the TWCF. USTRANSCOM has requested to remove the third business line, Global POV/DP3, from the TWCF to better align it with the funding process for other PCS movements. Our analysis does not indicate any reason to oppose this request. If Global POV/DP3 remains in the TWCF, we recommend that costs be recovered using Variable Cost Pricing. We do not recommend removing the channel system, or any of the remaining business lines, from cost recovery through the TWCF. Except for these specific

business lines, our assessment of the TWCF indicates a general endorsement of most workload remaining within the TWCF.

Appendix A. Course of Action Analysis, by Line of Business

This appendix includes detailed discussions of our assessment of USTRANSCOM business lines that were not captured in Chapter 5.

Air Mobility Command

AMC operates five lines of business: Channel Cargo, Channel Passenger, SAAM/Contingency, JETP, and Training. In this section, we provide a brief description of each line of business and its current cost-recovery approach and then assess the alternative COAs, following the methodology described in Chapter 3.⁶⁶

Channel Cargo

Our assessment of the Channel Cargo business line is discussed in the main text in Chapter 5.

Channel Passenger

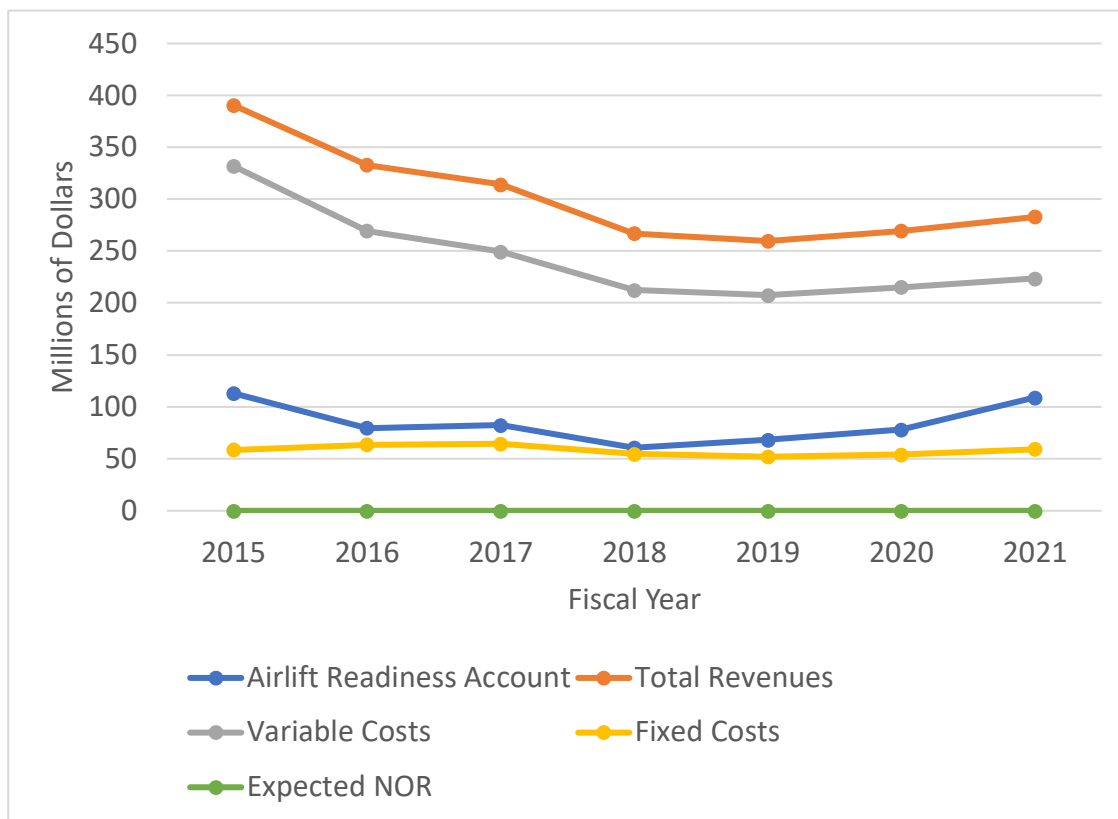
The AMC business line for Channel Passenger consists of regularly scheduled flights that the military can use to airlift people to set locations around the world. In these channel business lines, the customer pays for the number of people being moved across established routes. As we discussed in Chapter 5, the current-cost recovery approach for Channel Passenger is based on a commercial benchmark. Customers pay a rate per passenger that is based on airfares established by the U.S. General Services Administration (GSA), and all costs beyond this rate (any additional variable costs and all fixed costs) are recovered through the ARA. This cost-recovery scheme is designed to keep movements in the DTS to promote readiness. Almost all Channel Passenger movements are provided through commercial carriers. Rather than paying for travel per person, AMC charts the entire aircraft. Spreading that cost across an estimated workload to calculate DTS variable costs, it is unlikely that the GSA rates are equivalent to variable costs per passenger incurred by AMC.

Figure A.1 shows budgeted financial data for the Channel Passenger business line over the period from FY 2015 through FY 2021. The top (orange) line shows budgeted total revenues, which are equivalent to budgeted total costs because the ARA covers any additional costs above customer rates. As a result, the expected NOR, shown in the bottom (green) line, is zero. Budgeted revenues averaged \$300 million per year during this period, and about 28 percent of total costs were covered by the ARA. Customer rates generally increased 2 percent per year, with some small rate reductions in FY 2017 and FY 2018. The variable costs of Channel Passenger

⁶⁶ Descriptions of business lines were largely drawn from Connor, Vasseur, and Baldwin, 2019.

(gray line) track closely with the slope of total costs and represent about 81 percent of total costs during the period.⁶⁷ Approximately 86 percent of these costs are associated with commercial augmentation costs. Fixed costs (yellow line) were fairly stable and had an average value of \$58 million during the period.

Figure A.1. Budgeted Financial Data for Channel Passenger



SOURCE: AMC IF-12 exhibits provided by USTRANSCOM.

In our assessment of the cost-recovery COAs, this business line does not meet the criteria for recommending that costs be recovered through appropriation; thus, it should remain in the TWCF. Workload is not easily predictable two to three years in advance and could change in the year of execution because of changes in customer priorities or unforeseen contingency operations. In addition, customer demand drives workload for this business line. Paying a price for these passenger movements provides cost-control incentives.

⁶⁷ We estimated variable costs for each line of business using USTRANSCOM SMEs' assessments of each cost category reported in IF-12 exhibits as variable, partially variable, or fixed (see Connor, Vasseur, and Baldwin, 2019). We allocated partially variable costs based on the proportions of other costs that were designated as either fully variable or fully fixed.

Furthermore, USTRANSCOM views this workload as contributing to readiness and seeks to keep it within the DTS. The remaining question is whether the Variable Cost Pricing COA would provide incentives for customers to make decisions to use DTS for these movements. Because AMC charters commercial carriers to operate these routes, the variable cost per passenger could be higher than the commercial benchmark, depending on utilization, and this could create financial incentives for customers to go outside the DTS. In that case, the Commercial Benchmark COA would be preferred. In either case, we recommend a change to recovery of fixed costs. We recommend that fixed costs be recovered through appropriation to USTRANSCOM (i.e., AMC) or the services, rather than through the ARA, to increase visibility and scrutiny of these costs and to provide cost-control incentives. This appropriation would still be paid into the TWCF, but it would differ from the current ARA in the sense that it would be established in advance, based on projections of fixed costs and the difference between rates and variable costs, and would not be adjusted in the year of execution. The AOR would be incorporated into future appropriations.

Special Assignment Airlift Mission/Contingency and Joint Exercise Transportation Program

When customers charter an entire aircraft to move personnel, materiel, or both, this workload is allocated to the SAAM/Contingency or JETP line of business.⁶⁸ The aircraft could be an organic aircraft owned by the Air Force or a commercial aircraft chartered by USTRANSCOM, depending on such factors as the type of cargo and the locations of the movement. Prior to requesting a movement, customers make choices about how much materiel or how many people to move and the schedule for the move.

When chartering an organic aircraft, customers pay a rate per flying hour that is benchmarked to recover approximately 91 percent of the costs, including flying hours required to position or deposition the aircraft. The remainder is recovered through the ARA. When a commercial aircraft is chartered, cost recovery is through a Cost Plus structure. The customer pays the actual cost of the charter plus a 10-percent fee to cover overhead costs. The customer receives a 10-percent discount on organic or commercial airlift if the service is booked at least 30 days in advance and there are no significant user changes during the 30 days prior to the original requested operating date (AMC, 2020).

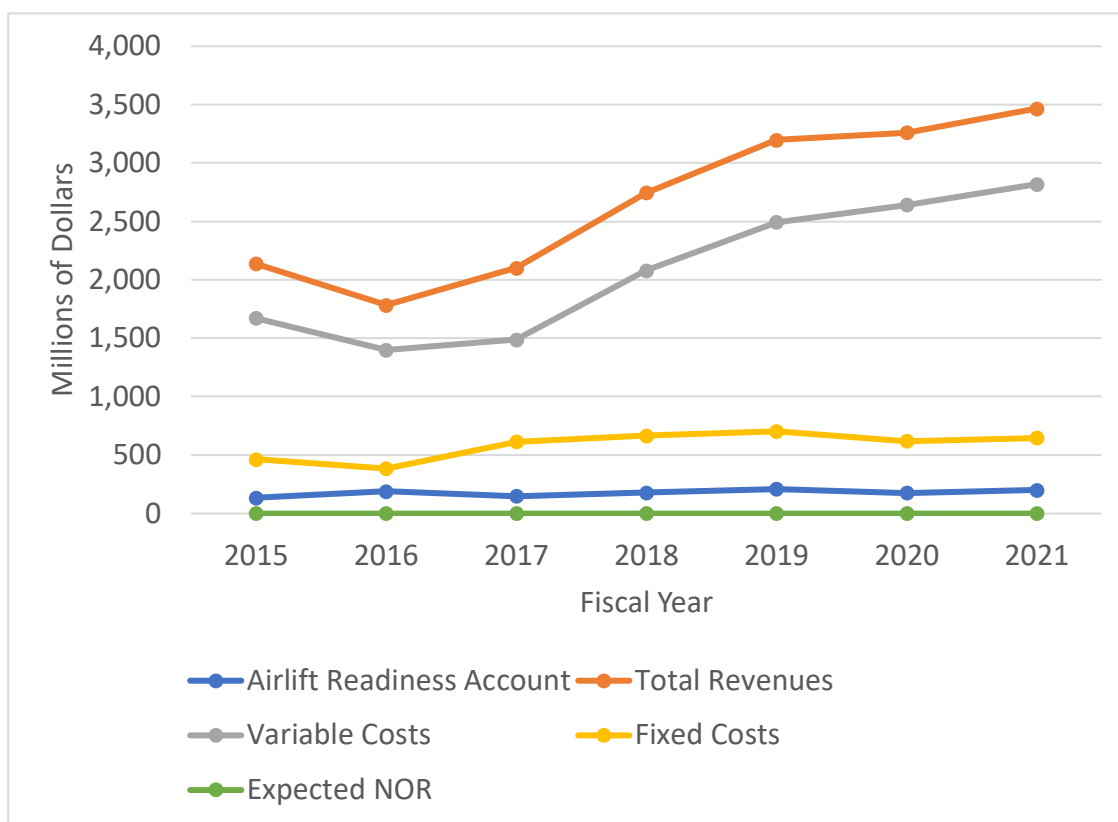
Figures A.2 and A.3 show budgeted financial data for SAAM and JETP over the period from FY 2015 through FY 2021. The top (orange) lines show budgeted total revenues, which are equivalent to budgeted total costs because the ARA covers any additional costs above customer rates. As a result, the expected NOR for each line of business, shown in the bottom (green) lines,

⁶⁸ These business lines use the same aircraft for generally the same services but differ based on customer and purpose. SAAMs serve a variety of customers and are frequently used for contingency operations, while the JETP business line exists solely to execute Joint Staff-organized training exercises.

is zero. Budgeted revenues averaged \$2,671 million per year for SAAM and \$108 million for JETP during this period, and 6–7 percent of total costs were covered by the ARA. Customer rates were more variable than for Channel Passenger, ranging from a 9-percent reduction in FY 2017 to a 17-percent increase in FY 2020.⁶⁹ Estimated variable costs (gray lines) account for 78 percent of SAAM total costs and 83 percent of JETP total costs during the period.

Approximately 32 percent of variable costs are associated with commercial augmentation costs for SAAM, and approximately 46 percent for JETP. Fixed costs (yellow lines) were fairly stable; there was an average value of \$586 million for SAAM and \$19 million for JETP during the period.

Figure A.2. Budgeted Financial Data for Special Assignment Airlift Mission/Contingency



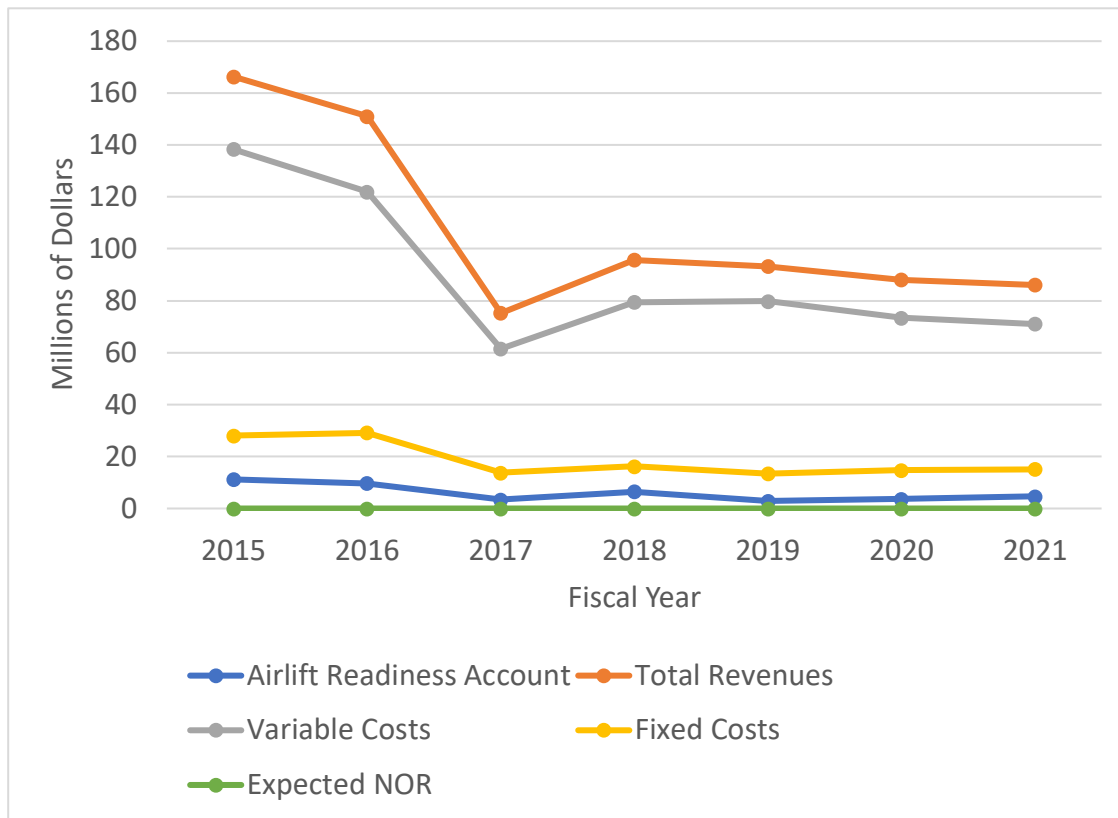
SOURCE: AMC IF-12 exhibits provided by USTRANSCOM.

Following the methodology for our COA assessment, these lines of business do not meet the criteria for recommending that costs be funded by appropriation; thus, they should remain in the TWCF. Workload cannot be easily predicted two to three years in advance, because it depends on customer priorities and the global security environment. Customer demand has a strong

⁶⁹ Because customer rates are calculated in a similar way for SAAM/Contingency and JETP, the TWCF budget reports combined composite rate changes for the two lines of business.

influence on workload and the costs incurred for movements; thus, paying a price for movements provides cost-control incentives.

Figure A.3. Budgeted Financial Data for Joint Exercise Transportation Program



SOURCE: AMC IF-12 exhibits provided by USTRANSCOM.

USTRANSCOM views the SAAM/Contingency and JETP workload as contributing to readiness and seeks to keep it within the DTS. The remaining question is whether Variable Cost Pricing would provide incentives for customers to make decisions to use the DTS for these movements. We recommend Variable Cost Pricing for rates, unless this would lead rates to exceed the costs of non-DTS options. The data in Table 3.2 and Figures A.2 and A.3 indicate that, on average, variable costs are lower than current rates and other customer-reimbursable costs for both SAAM/Contingency and JETP. Thus, this cost-recovery approach should provide incentives that are even stronger than those provided by current rates, to keep readiness workload within the DTS. We also recommend a change to recovery of fixed costs. We recommend that fixed costs be recovered through appropriation to USTRANSCOM or the services, rather than through the ARA, to increase visibility and scrutiny of these costs and to provide cost-control incentives. As noted earlier, this appropriation would differ from the current ARA in that it

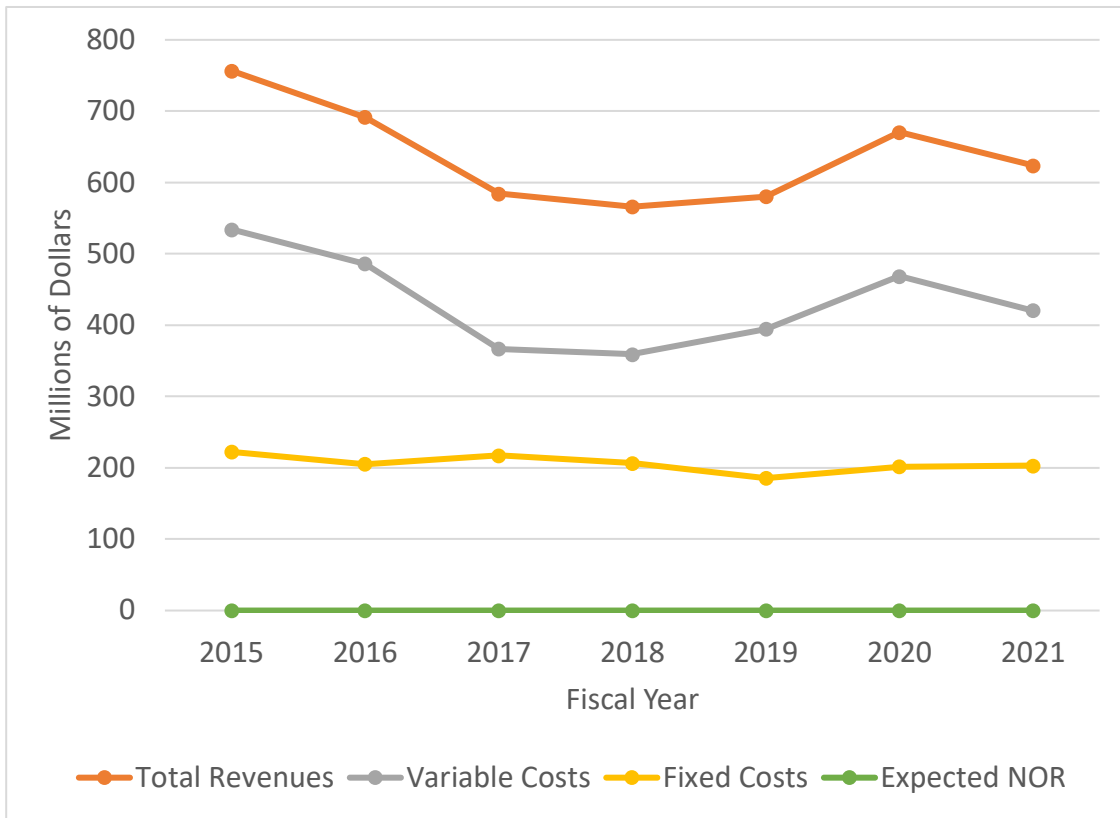
would be established in advance based on projections of fixed costs and would not be adjusted in the year of execution.

Training

AMC also conducts training activities that are paid for directly by the Air Force through the WCF structure. This business line had an average of \$639 million in revenues, almost entirely paid through customer rates, with a small SLB for command and control programs. The rate is tied to the cost per flying hour, and there is an additional fee to cover overhead costs. Because the training requirement is known and can be planned for in advance, we recommend funding this business line through appropriation to the Air Force. We see no efficiency or effectiveness benefit of keeping it within the TWCF structure. We note that USTRANSCOM representatives indicated that the same aircraft used for Training are also used for AMC's other business lines, so taking Training out of the TWCF could complicate recovery of operating costs for these aircraft. Additional analysis would be needed to identify whether the benefits to be gained from removing this business line from the TWCF outweigh the additional complications.

Figure A.4 shows budgeted financial data for Training over the period from FY 2015 through FY 2021. The top (orange) line shows budgeted total revenues, which are equivalent to budgeted total costs. As a result, the expected NOR, shown in the bottom (green) line, is zero. Customer rate changes ranged from -15 percent in FY 2019 to +19 percent in FY 2020. The variable costs of Training (gray line) track closely with the slope of total costs and represent about 68 percent of total costs during the period. All costs were organic, because this business line does not involve commercial aircraft. Fixed costs (yellow line) were fairly stable and had an average value of \$206 million during the period.

Figure A.4. Budgeted Financial Data for Training



SOURCE: AMC IF-12 exhibits provided by USTRANSCOM.

Military Sealift Command

MSC operates five business lines: Cargo (Charter/Activation), POL, Army Prepositioned Ships, Air Force Prepositioned Ships, and the Surge/ROS fleet. In this section, we provide a brief description of each line of business and its current cost-recovery approach and then assess the alternative COAs, following the methodology described in Chapter 3.

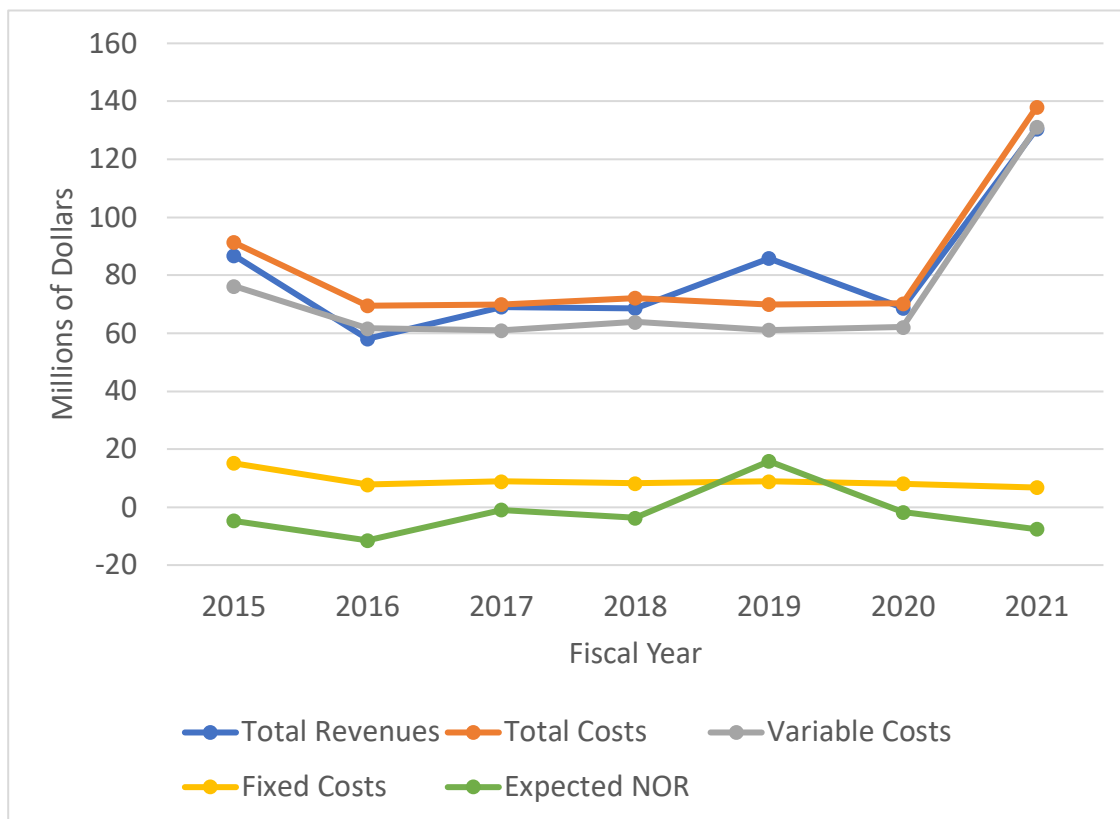
Cargo (Charter/Activation)

The Cargo business line recovers the costs of surface movements that require an entire ship rather than a partial shipload, which would be covered by the SDDC Liner Operations business line. This determination can be based on the amount of cargo shipped or the operational or security needs of a particular movement. Costs in this business line are currently recovered on a Cost Plus basis. Customers are charged a rate based on the cost per day of having a ship underway plus an additional percentage that goes to MSC as an administrative fee. The movements conducted in this business line contribute to the readiness of the U.S.-flagged commercial shipping fleet and help maintain a pool of U.S. citizen merchant mariners that will be needed to operate the ROS fleet in the event of a surge.

Figure A.5 shows budgeted financial data for the Cargo business line over the period from FY 2015 through FY 2021. The top two lines show budgeted total revenues (blue) and total costs (orange), and the bottom (green) line shows the expected NOR. Budgeted revenues averaged \$81 million per year during this period, but there is a large increase anticipated in FY 2021, primarily based on an increase in budgeted ship charters. Customer rates were relatively stable in FY 2015 through FY 2017 but have been volatile in recent years, ranging from a 10-percent increase in FY 2019 to a 73-percent reduction in FY 2021. The variable costs of Cargo (gray line) track closely with the slope of total costs and represent 88 percent of total costs during the period. Approximately 76 percent of variable costs are associated with commercial ship charters. Fixed costs (yellow line) were fairly stable and had an average value of \$10 million during the period.

We find that this business line is not appropriate for full appropriation. Workload is not predictable in this business line; even if the overall total surface shipping workload could be predicted, the operational needs that sometimes drive workload into a full-ship charter instead of SDDC Liner Operations are more difficult to assess years in advance. Furthermore, most of this business line’s costs vary with customer demand, indicating that customers do impose costs upon the system with their decisionmaking.

Figure A.5. Budgeted Financial Data for Cargo (Charter/Activation)



SOURCE: MSC IF-12 exhibits provided by USTRANSCOM.

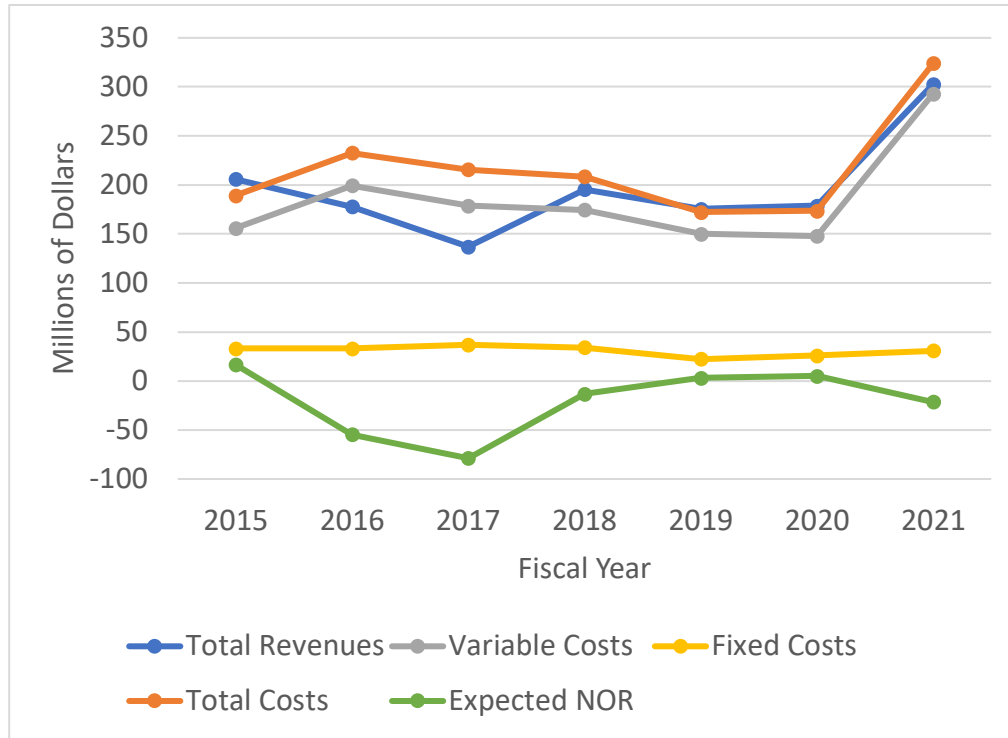
Turning to WCF-based cost-recovery approaches, we find no reason to recommend against Variable Cost Pricing. In this business line, the primary source of variable costs, which customers already pay, is associated with hiring commercial ships. Switching to Variable Cost Pricing, in which customers would not pay the administrative fee to MSC, should not lead to any movements that are required to generate readiness leaving the DTS because customers would be paying lower prices for the same service. Other costs, primarily the portions of MSC and USTRANSCOM overhead funded through this business line, should be recovered through an appropriation, either directly to USTRANSCOM (i.e., MSC) or to the services.

Petroleum, Oil, and Lubricants

The POL business line represents movements that are associated with obtaining and positioning supplies of POL in overseas locations. This business line has one primary customer, DLA Energy, and primarily uses commercial ships. Costs are currently recovered on a Cost Plus basis. Customers are charged a daily rate based on the cost of the commercial ship plus an additional percentage that goes to MSC as an administrative fee. Workload in this business line supports the U.S.-flagged commercial shipping fleet and the pool of U.S. citizen merchant mariners.

Figure A.6 shows budgeted financial data for the POL business line over the period from FY 2015 through FY 2021. The top two lines show budgeted total revenues (blue) and total costs (orange), and the bottom (green) line shows the expected NOR. Budgeted revenues averaged \$196 million per year during this period, but, similarly to Cargo, there is a large increase anticipated in FY 2021, primarily based on an increase in budgeted ship charters. Customer rates have fluctuated throughout this period, ranging from a 29-percent increase in FY 2015 to a 34-percent reduction in FY 2021, in part because of a policy of attempting to return the AOR to zero each fiscal year. The variable costs of POL (gray line) track closely with the slope of total costs and represent 86 percent of total costs during the period. Approximately 76 percent of variable costs are associated with commercial ship charters. Fixed costs (yellow line) were fairly stable and had an average value of \$48 million during the period.

Figure A.6. Budgeted Financial Data for Petroleum, Oil, and Lubricants



SOURCE: MSC IF-12 exhibits provided by USTRANSCOM.

We assess that, similarly to MSC Cargo, POL should not be funded using appropriations and should remain within the TWCF. Workload varies year to year in line with customer priorities and operational needs, and customer decisions about how much, where, and how quickly POL must be moved directly affect costs. As with Cargo, for this business line, we recommend Variable Cost Pricing, in which the administrative fee that customers currently pay directly to MSC is instead recovered through an appropriation, either directly to USTRANSCOM or to the military services.

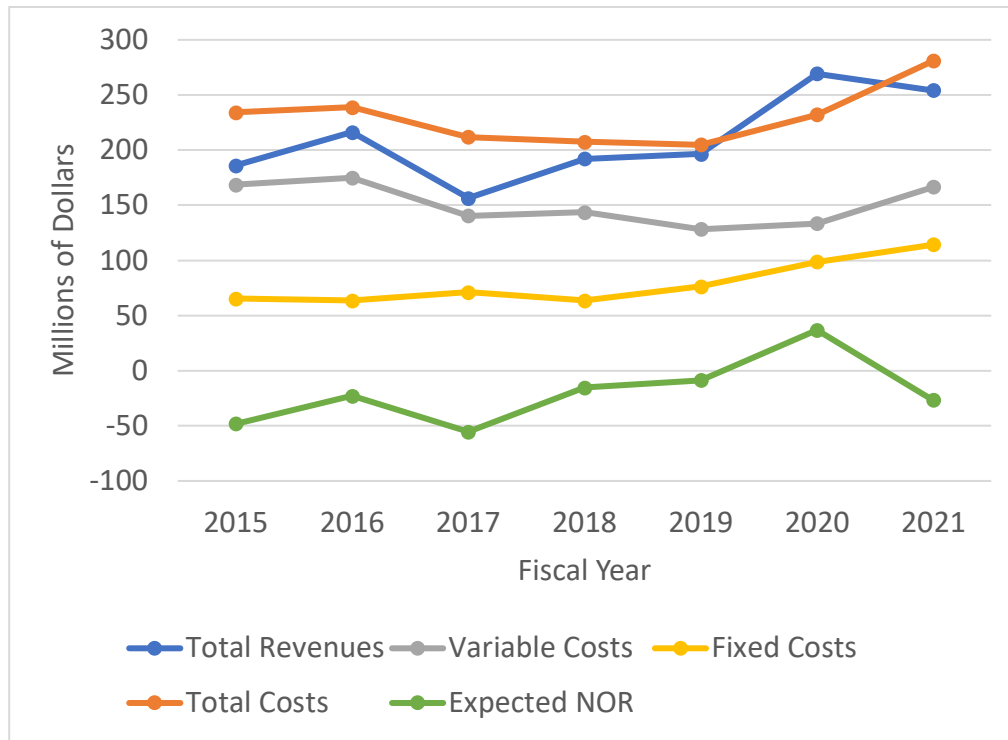
Army and Air Force Prepositioned Ships

These business lines fund the costs of operating ships loaded with prepositioned stocks for potential use during surge operations by the Army or the Air Force, respectively. Costs are presently recovered using a daily rate based on the costs of operating and maintaining the ships (because each ship is underway 365 days a year, this rate is total yearly costs divided by 365) plus an additional percentage that goes to MSC as an administrative fee. We infer, based on cost data, that Army stocks are placed on a mix of commercial and organic ships, whereas Air Force stocks are placed on commercial ships. Both of these business lines are integral to readiness because prepositioned stock levels, types, and locations are driven by operational plans.

Figures A.7 and A.8 show budgeted financial data for Army and Air Force Prepositioned Ships over the period from FY 2015 through FY 2021. The top two lines show budgeted total revenues (blue) and total costs (orange), and the bottom (green) lines show expected NOR for each line of business. Budgeted revenues averaged \$210 million per year for Army Prepositioned Ships and \$29 million per year for Air Force Prepositioned Ships during this period. Customer rates varied widely during this period, ranging from a 33-percent reduction in FY 2015 to a 28-percent increase in FY 2020 for the Army and from a 47-percent reduction in FY 2015 to a 31-percent increase in FY 2016 for the Air Force. Again, these fluctuations are at least partly caused by a policy of attempting to return the AOR of each business line to zero in most fiscal years. Estimated variable costs (gray lines) account for 66 percent of Army Prepositioned Ships total costs and 85 percent of Air Force Prepositioned Ships total costs during the period. Approximately 55 percent of variable costs are associated with commercial contracts for Army Prepositioned Ships and 64 percent for Air Force Prepositioned Ships. Fixed costs (yellow line) had an average value of \$79 million for Army Prepositioned Ships and appeared to increase in recent years, primarily because of increases in maintenance and repair costs. Fixed costs were fairly stable, at an average of \$5 million, for Air Force Prepositioned Ships during the period.

As with other MSC business lines, we assess that Army and Air Force Prepositioned Ships should not be funded through appropriation. In these cases, workload is somewhat predictable—neither the Army nor the Air Force dramatically changes the number of ships used for prepositioned stocks from year to year, but customer demand remains a concern because it affects costs. Because customers are directly deciding how much stock to preposition, they are responsible for many of the costs in these business lines. With a direct appropriation to USTRANSCOM, customers would lack an incentive to control costs, requiring the establishment of some alternative system to decide how much cargo would be prepositioned. Consequently, we recommend keeping these business lines within the TWCF.

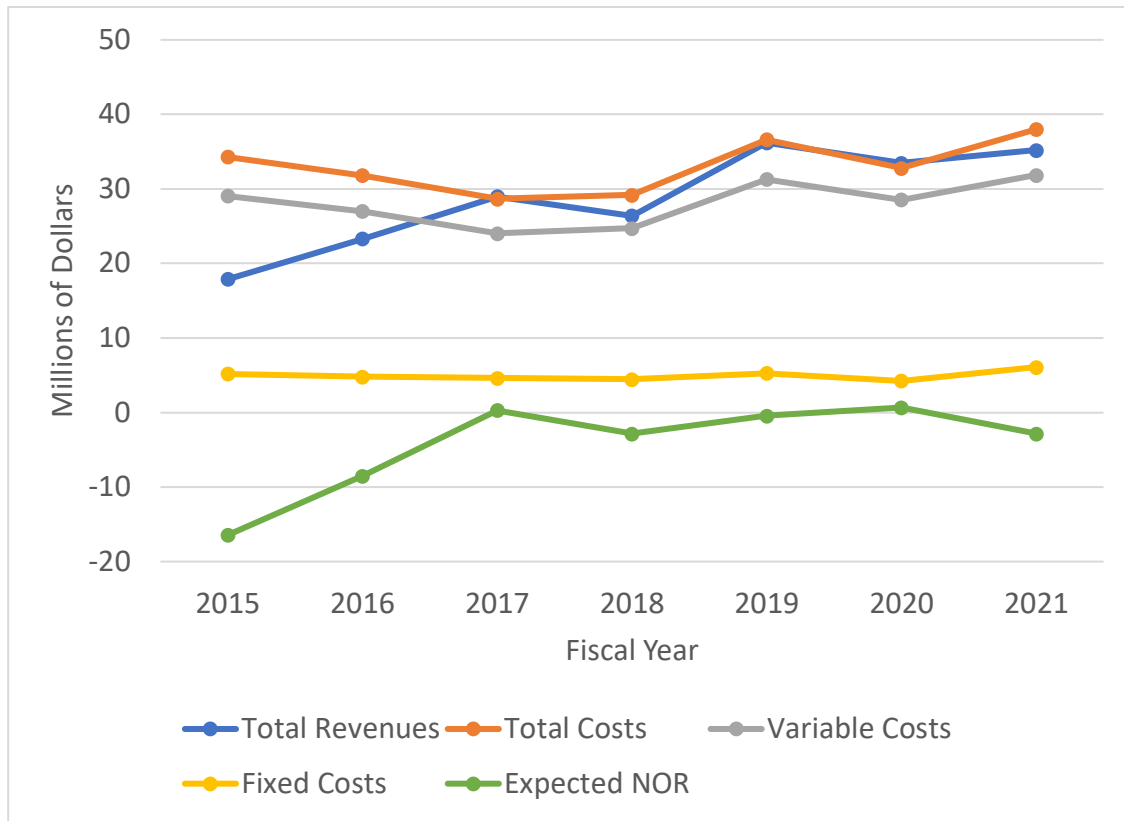
Figure A.7. Budgeted Financial Data for Army Prepositioned Ships



SOURCE: MSC IF-12 exhibits provided by USTRANSCOM.

Our assessments indicate no concerns with switching these business lines to Variable Cost Pricing. As with other business lines in MSC, removing the administrative fee from what customers pay directly would lower prices, indicating no danger of losing readiness-generating activities. These additional overhead costs should be recovered separately, either through direct appropriation to USTRANSCOM or through appropriation to the services, with a negotiated process to provide scrutiny of the overhead costs associated with each business line.

Figure A.8. Budgeted Financial Data for Air Force Prepositioned Ships



SOURCE: MSC IF-12 exhibits provided by USTRANSCOM.

Surge/Reduced Operating Status

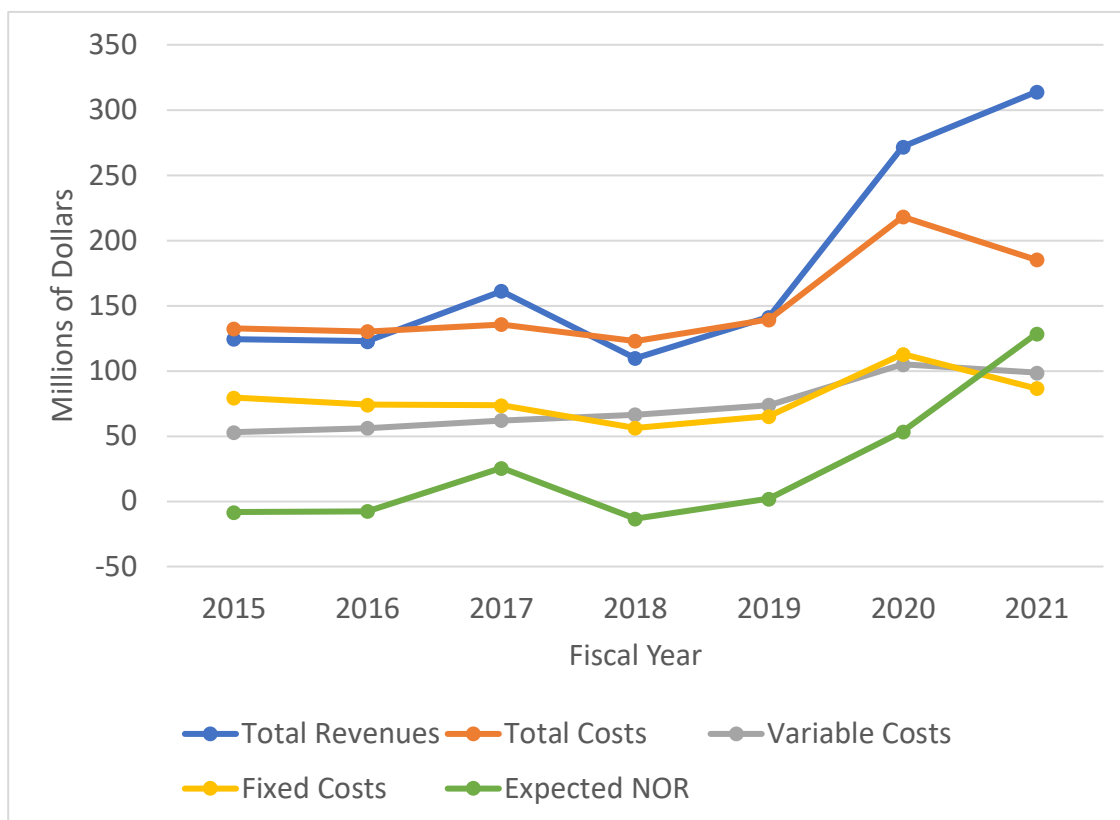
This business line covers the costs of maintaining the Ready Reserve Force in inactive status, as well as the costs of occasionally activating these ships to transport customer cargo.

USTRANSCOM has the ability to determine whether, to maintain fleet readiness, some customer movements should be diverted from commercial alternatives and placed onto organic ships from the ROS fleet. These ships are crewed by contracted U.S. merchant mariners but are organic ships kept for use during surge operations. When these ships are not used in operations, their costs are paid for by the Navy. When these ships are underway, any costs in excess of those incurred in inactive status are paid entirely by the customer in the form of a rate per day of use.

Figure A.9 shows budgeted financial data for the Surge/ROS business line over the period from FY 2015 through FY 2021. The top two lines show budgeted total revenues (blue) and total costs (orange), and the bottom (green) line shows the expected NOR. Budgeted revenues averaged \$178 million per year during this period, but there were large increases in FY 2020 and FY 2021, primarily because of increased maintenance and repair costs and to recover large negative AORs. Customer rates fell by 32 percent in FY 2018 but increased by 83 percent in FY 2020, and there was a further 19-percent increase in FY 2021. For this business line, our SME

definitions of variable and fixed costs do not generate the usual pattern of variable costs closely tracking the slope of fixed costs, because maintenance and repair costs (included in fixed costs) appear to be a strong driver of total costs. The variable costs of Surge/ROS (gray line) represent 48 percent of total costs during the period. Approximately 55 percent of variable costs are associated with commercial contracts. Fixed costs (yellow line) had an average value of \$78 million during the period.

Figure A.9. Budgeted Financial Data for Surge/Reduced Operating Status



SOURCE: MSC IF-12 exhibits provided by USTRANSCOM.

We assess that the Surge/ROS business line should not be funded through appropriation. Workload required for steady-state operations and readiness exercises each year might be predictable, but, as with prepositioned stocks, removing customer payments from this business line would mean that movements on organic ships would be “free” to customers and could introduce cost-control incentive issues. Thus, we recommend that this business line remain within the TWCF.

Our assessment of the other COAs for this business line suggests that employing Variable Cost Pricing could lead to readiness concerns. If the variable costs of operating an organic ship are higher than those of operating a commercial analogue, which requires additional analysis to

verify, customers would pay a higher price based not on their demands upon the system but on the readiness needs of USTRANSCOM. In this case, movements that contribute to readiness overall might leave the DTS, potentially eroding readiness. To avoid this, we recommend an alternative WCF cost-recovery approach that uses a Commercial Benchmark approach. In this specific case, we recommend that, rather than paying the variable costs, customers should pay the estimated costs that they would have paid for a commercial movement of their cargo over the same route. In effect, customers should pay what they would have paid if USTRANSCOM did not make the decision to activate an organic ship. The remainder of the costs, assuming that organic variable costs exceed commercial costs, should be recovered through a direct appropriation to USTRANSCOM. These funds should go directly to USTRANSCOM, because USTRANSCOM is the entity that makes the decision to use organic rather than commercial ships, which could lead to increased costs, and because it is in the best position to argue for a budget level that provides sufficient readiness capabilities for the ROS fleet. Under this COA, steady-state costs of maintaining these ships are funded through this appropriation to USTRANSCOM.

Military Surface Deployment and Distribution Command

SDDC operates four lines of business: Liner Operations, Port Operations, Traffic Management, and Global POV/DP3. In this section, we provide a brief description of each line of business and its current cost-recovery approach and then assess the alternative COAs, following the methodology described in Chapter 3.

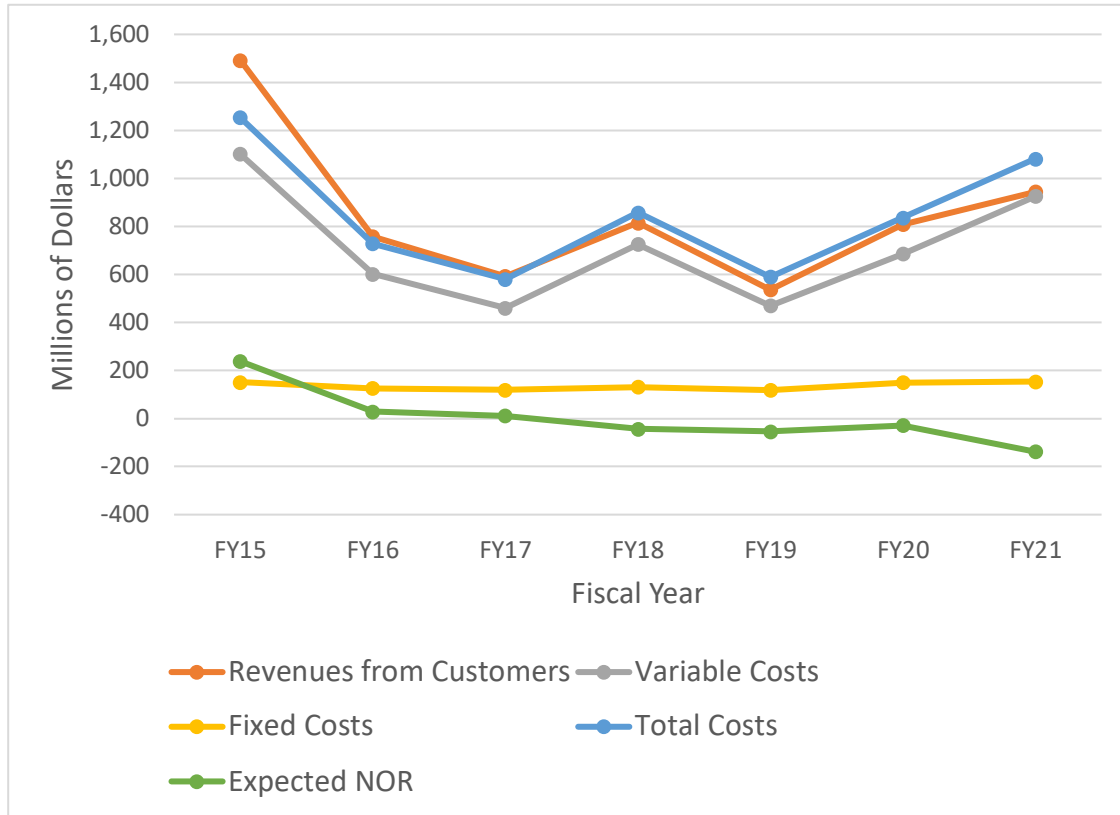
Liner Operations

Liner Operations is SDDC's largest line of business, with average budgeted revenues of \$850 million for the period from FY 2015 through FY 2021. It maintains a Universal Services Contract with commercial shippers for less than full-shipload movements of break-bulk, dry bulk, and containerized cargo. All of its revenues are obtained from customers, through stabilized rates based on traffic area pairs and type of cargo, actual costs plus overhead recovery for multimodal and one-time-only shipments, or reimbursement of costs associated with container demurrage or direct booking of shipments by some customers, such as AAFES, DeCA, and DLA.

Figure A.10 shows budgeted financial data for Liner Operations over the period from FY 2015 through FY 2021. The top two lines show budgeted revenues (orange) and total costs (blue), while the bottom (green) line shows the expected NOR. Liner Operations started FY 2015 with an AOR of -\$239 million, so composite rates were increased by 15.2 percent to recover past losses. Customer rates remained relatively stable from FY 2016 through FY 2019 but were increased by 17 percent in FY 2020 to cover an anticipated increase in contract costs of commercial shipping. However, rates were then slated to be reduced by 20.6 percent in FY 2021

to offset an expected increase in the AOR as of the end of FY 2020. The variable costs of Liner Operations (gray line) track closely with the slope of total costs and represent about 84 percent of total costs during the period. Approximately 98 percent of these costs are associated with commercial shipping contracts. Fixed costs (yellow line) were fairly stable and had an average value of \$137 million during the period.

Figure A.10. Budgeted Financial Data for Liner Operations



SOURCE: SDDC IF-12 exhibits provided by USTRANSCOM.

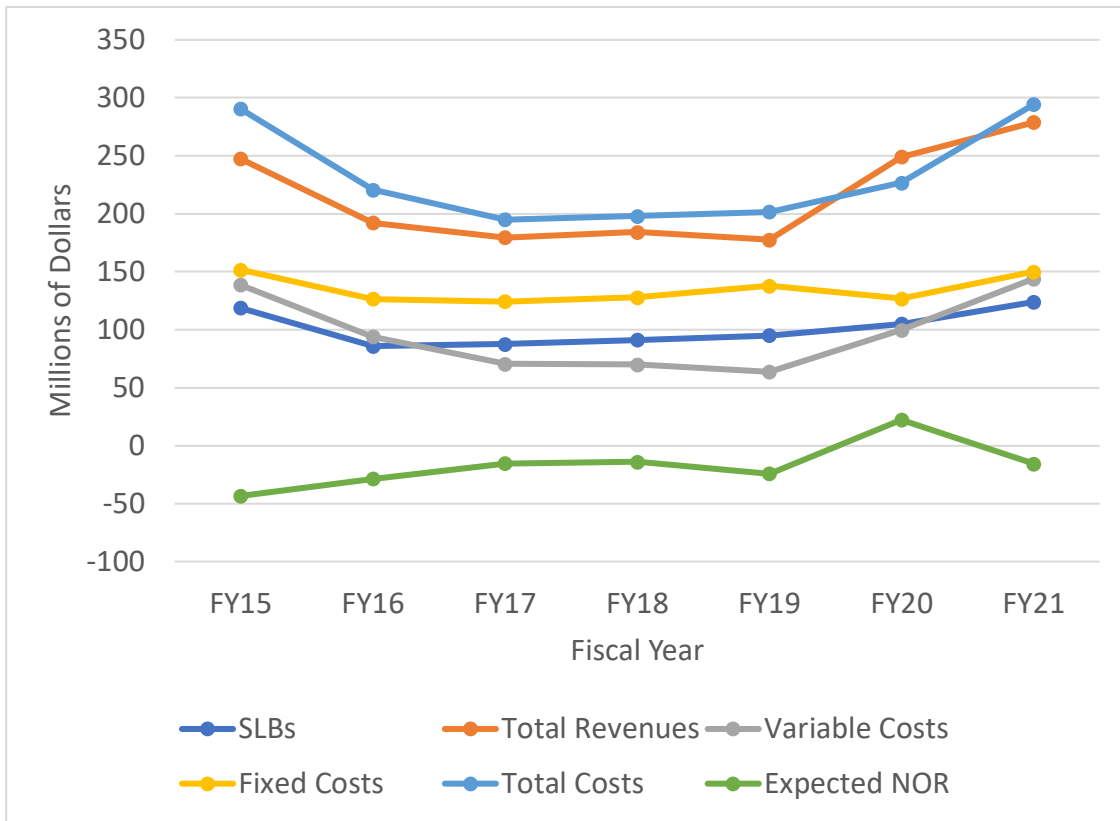
We do not recommend that this line of business be funded by appropriations. To the extent that customer priorities change or unforeseen contingency operations arise, workload is not easily predictable for this line of business. In addition, customer demands are a significant driver of workload and costs for this line of business, and keeping this workload within the DTS contributes to the readiness and financial stability of the U.S.-flagged commercial shipping fleet. Because variable costs are largely based on commercial shipping costs, setting prices at variable costs and recovering fixed costs through SLBs or appropriations should not drive workload outside the DTS. Therefore, we recommend the Variable Cost Pricing COA for this line of business.

Port Operations

Under the Port Operations line of business, SDDC contracts with U.S. ports to provide such local services as stevedoring and also has military battalions located at certain ports to assist with loading and unloading ships. Over the period from FY 2015 through FY 2021, this line of business had average budgeted revenues of \$216 million. Approximately 51 percent of budgeted revenues were collected from customers, mostly based on customer rates for stevedoring services. The remainder of revenues were collected as port readiness SLBs to recover the costs of personnel and facilities at U.S. ports, including the ammunition ports managed by the Army at Sunny Point, North Carolina, and Concord, California.

Figure A.11 shows budgeted financial data for Port Operations over the period from FY 2015 through FY 2021. The top two lines show budgeted total costs (light blue) and total revenues (orange), and the bottom (green) line shows the budgeted NOR. The Port Operations line of business started the period with an AOR of \$86 million, so revenues were set to return past gains to customers. There were some relatively wide swings in composite customer rates, including a reduction of 22 percent in FY 2015 and an increase of 39 percent in FY 2016, a stable period from FY 2017 through FY 2019, an increase of 38 percent in FY 2020, and a reduction of 27 percent planned for FY 2021. Variable costs (gray line) averaged about 42 percent of total costs. Eighty percent of variable costs were associated with commercial contracts. Fixed costs (yellow line) averaged \$135 million per year. Port readiness SLBs (dark blue line) averaged \$95 million per year.

Figure A.11. Budgeted Financial Data for Port Operations



SOURCE: SDDC IF-12 exhibits provided by USTRANSCOM.

Our assessment of the cost-recovery COAs suggests that funding this line of business entirely through appropriation would not be appropriate. Although the Port Operations line of business has a relatively large share of fixed costs (58 percent), workload for stevedoring services is less predictable, because it depends on customer priorities and the magnitude of contingency operations. Customers also have the option to include stevedoring services in multimodal shipping contracts, thus bypassing the Port Operations line of business. Variable Cost Pricing would give customers the appropriate incentives to contract for stevedoring services when doing so is the lowest-cost option for DoD. As a result, we recommend the Variable Cost Pricing COA for Port Operations. The remaining fixed costs should either be funded through appropriations to USTRANSCOM or SDDC or continue to be funded through SLBs paid by the services, whichever approach provides greater oversight and scrutiny of fixed costs.

Traffic Management

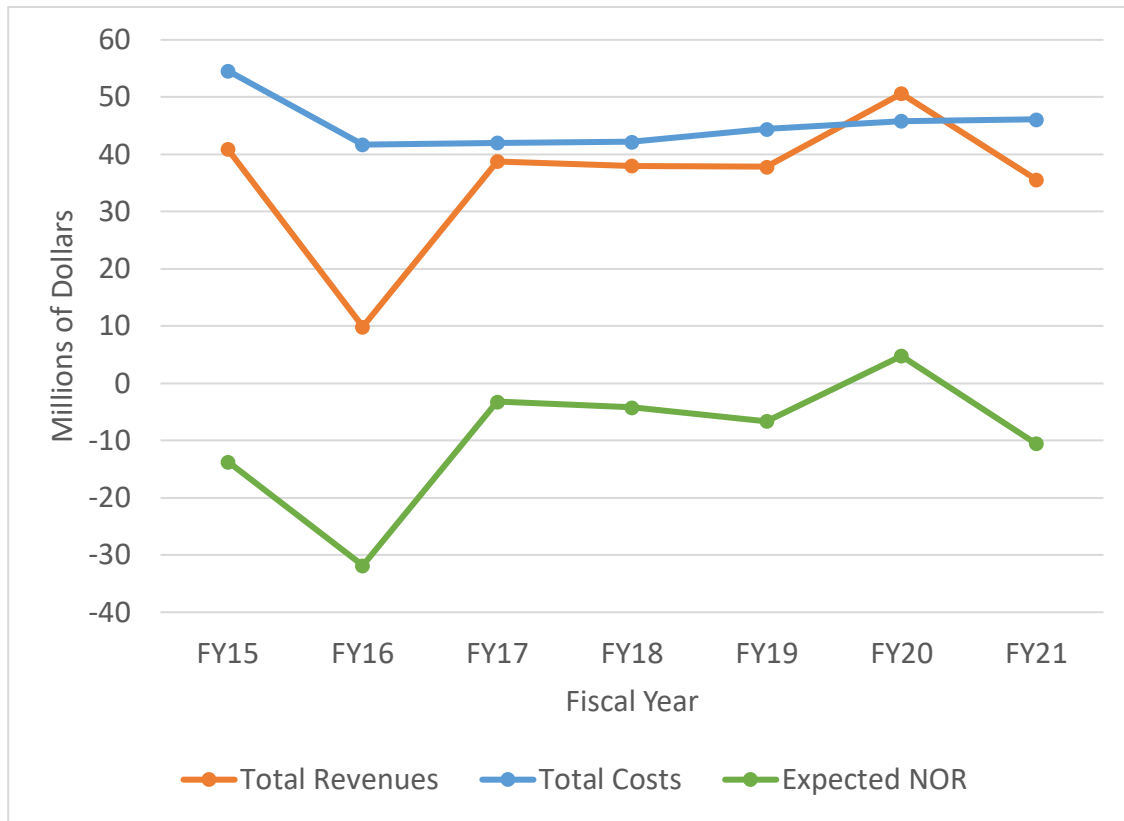
The Traffic Management line of business covers the costs of services provided by SDDC to maintain contracts and oversee road and rail shipments of sensitive cargo within the United States, procure and manage RFID tags, and conduct studies of installation and port outloading

capabilities and deployment feasibility assessments through the Transportation Engineering Agency. Average budgeted revenues over the period from FY 2015 through FY 2021 were \$36 million. All revenues are collected through SLBs, because the customer workload associated with road and rail movements in the continental United States is not funded through the TWCF. Contracted shipments are paid directly by customers.

Figure A.12 shows budgeted financial data for Traffic Management from FY 2015 through FY 2021. The top two lines show budgeted total costs (light blue) and total revenues (orange), and the bottom (green) line shows the budgeted NOR. Although fixed costs (equivalent to total costs for this line of business) remained fairly steady, at about \$45 million per year, SLBs (equivalent to total revenues) have varied widely to return prior-year gains or to recover losses from customers. For example, SLBs were reduced from \$41 million in FY 2015 to \$10 million in FY 2016 to return an AOR of \$34 million and were then increased back to \$39 million in FY 2017. Thus, under the current cost-recovery methodology, costs have been fairly stable, but SLBs charged to the services have not.

Because costs are entirely fixed, relatively predictable, and not affected by customer workload, the Traffic Management line of business potentially could be removed from the TWCF and funded through appropriations. The current cost-recovery methodology is equivalent to the Variable Cost Pricing COA, because fixed costs are recovered through SLBs. If this line of business remains in the TWCF, it could benefit from stabilizing SLBs by using the full two years allowed under the FMR to return prior-year gains or to recover prior-year losses from customers.

Figure A.12. Budgeted Financial Data for Traffic Management



SOURCE: SDDC IF-12 exhibits provided by USTRANSCOM.

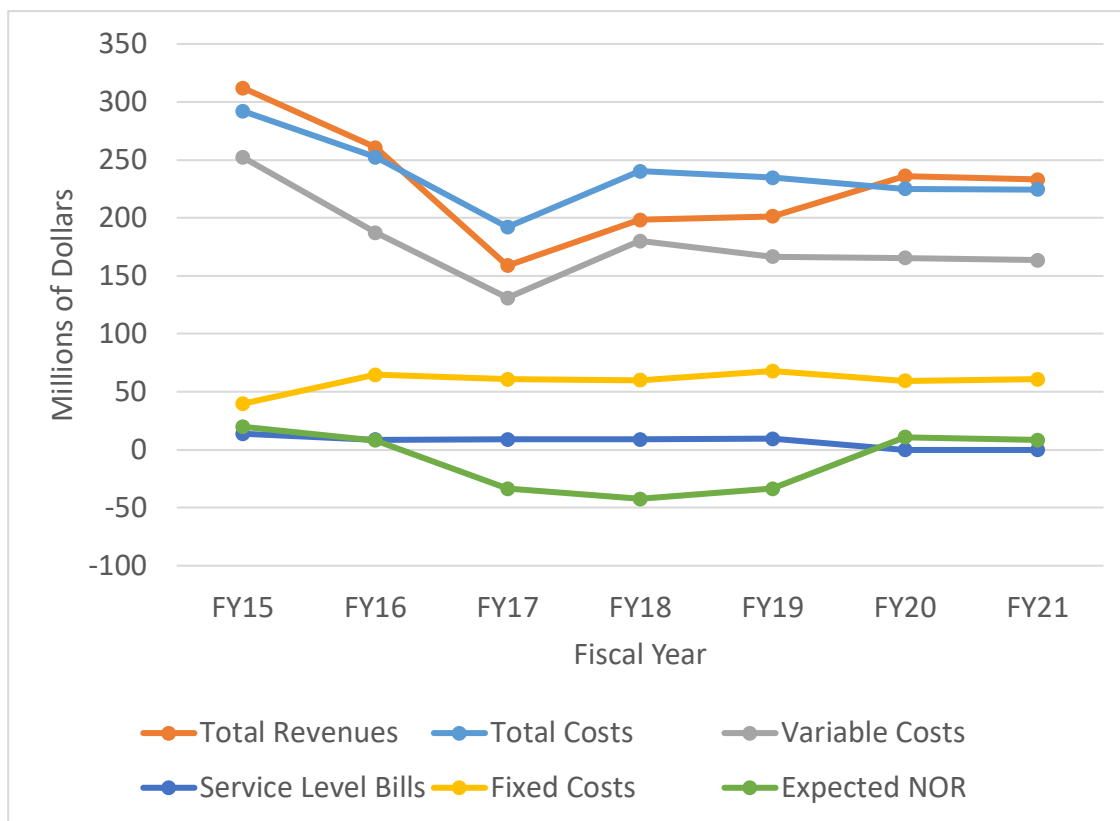
Global Privately Owned Vehicle/Defense Personal Property Program

The Global POV/DP3 line of business recovers the costs of storing and moving service members' personally owned vehicles to and from overseas assignments as part of PCS moves. It averaged \$229 million in budgeted revenues during the period from FY 2015 through FY 2021. An average of 97 percent of budgeted costs are recovered through customer rates and reimbursements, and 3 percent through SLBs, but budgeted SLBs fell to zero in FYs 2020 and 2021.

Figure A.13 shows budgeted financial data for Global POV/DP3 over the period from FY 2015 through FY 2021. The top two lines show budgeted total costs (light blue) and total revenues (orange), and the bottom (green) line shows the budgeted NOR. Global POV/DP3 had a small, negative AOR in FY 2015 and FY 2016 but accumulated a positive AOR of \$67 million in FY 2017, so customer rates were reduced by 16 percent. Composite customer rates were later increased by 36 percent, in FY 2020, after the previous gains had been returned to customers. Variable costs (gray line) averaged 75 percent of total costs. About 98 percent of variable costs were associated with commercial contracts for vehicle storage and shipment. Fixed costs (yellow line) averaged \$59 million per year. The current cost-recovery methodology has led to somewhat

unstable customer rates because of difficulties with forecasting workload and costs and the need to return prior-year gains or recover prior-year losses from customers.

Figure A.13. Budgeted Financial Data for Global Privately Owned Vehicle/Defense Personal Property Program



SOURCE: SDDC IF-12 exhibits provided by USTRANSCOM.

If the number of overseas PCS moves remains relatively constant from year to year, Global POV/DP3 workload should be fairly predictable, but changes in force stationing or policy on the frequency of overseas PCS moves could affect customer demand. This line of business does not affect the readiness of the DTS, because it is primarily related to service member personnel benefits. Therefore, we recommend the Variable Cost Pricing COA for this line of business. However, USTRANSCOM has proposed removing this line of business from the TWCF and funding it through direct reimbursement from the services, as is currently done for the costs of moving service members' household goods. Our analysis does not indicate any strong reason not to make this change.

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U.S. Transportation Command (USTRANSCOM) manages the Defense Transportation System, which provides peacetime transport for U.S. Department of Defense customers and maintains surge capacity required for wartime needs to project and sustain military power. Most of USTRANSCOM's operations are funded by the Transportation Working Capital Fund (TWCF). The National Defense Authorization Act for Fiscal Year 2020 created a requirement for an independent review of the TWCF, with the purpose of assessing the TWCF's current structure and offering recommendations to improve the fund's effectiveness and efficiency through changes to its cost-recovery structure. This report describes that review.

The authors found that improvements to the TWCF are possible. Specific recommendations vary by USTRANSCOM line of business, but, overall, the authors recommend adopting a Variable Cost Pricing model. This model, preferred in the business and economics literature as the best way to guide customer decisionmaking to support enterprise objectives, suggests that customers should pay for the costs that they impose on the system (*variable costs*) and that other costs should be recovered separately from rates for movements. For most business lines, this model preserves the workload that USTRANSCOM relies on to generate readiness while improving cost-control incentives for both USTRANSCOM and its customers. However, a more detailed analysis of USTRANSCOM business processes, information systems, and personnel requirements is needed to inform implementation decisions.

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