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Rethinking The Buy vs. Lease Decision

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The Center for Public Policy and Private Enterprise at the University of Maryland's School of Public Policy provides the strategic linkage between the public and private sector to develop and improve solutions to increasingly complex problems associated with the delivery of public services—a responsibility increasingly shared by both sectors. Operating at the nexus of public and private interests, the Center researches, develops, and promotes best practices; develops policy recommendations; and strives to influence senior decision-makers toward improved government and industry results.

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Executive Summary

In decades past, the Department of Defense (DoD) would lease major equipment from defense firms, including noncombat ships, aircraft, and vehicles in order to acquire needed capabilities quickly and without the upfront expense. Today, however, leasing is seldom used to meet long-term requirements. Over the course of the intervening years, a number of laws and regulations have been implemented that effectively constrain the use of long-term leasing, most notably the 1984 National Defense Authorization Act and, in 1991, Appendix B of Office of Management and Budget (OMB) Circular A-11.

As the largest government entity, the DoD must prioritize short-term affordability with an eye on long-term financial stability. Returning to the long-term lease of capital assets, though by no means a magic bullet, would allow the DoD to access needed capabilities more quickly and affordably, by spreading outlays over the life of the lease, thereby avoiding single-year funding spikes that compromise other programs.

Traditionally, leasing has been more expensive than purchasing, but this need not be the case. Today, innovative lease agreements (often structured as public-private partnerships) can capture private-sector efficiencies in financing, construction, and operation which translate to lower program costs (relative to traditional procurement), allowing the DoD to partially or fully offset the additional expenses that leasing entails (i.e. higher borrowing costs and profit allowance), all while gaining the benefit of faster delivery with less risk. Given today's shrinking budgetary environment, the DoD should keep all procurement options on the table. We believe that a more innovative approach to the buy vs. lease decision is necessary.

Generally, leases are divided into two categories: capital and operating: a capital lease as "a lease that transfers substantially all the benefits and risks of ownership to the lessee" whereas an operating lease is an agreement "conveying the right to use property for a limited time in exchange for periodic rental payments." In common parlance, the phrase

"rent to own" has come to describe capital leasing while "right to use" aptly describes the operating lease. There are four generally accepted criteria for a capital lease:

- **Ownership**. The lease transfers ownership of the property to the lessee by the end of the lease term.
- **Bargain Price Option**. The lease contains an option to purchase the leased property at a bargain price.
- **Estimated Economic Life**. The lease term is equal to or greater than 75 percent of the estimated economic life of the leased property.
- **Fair Value**. The present value of rental and other minimum lease payments, excluding that portion of the payments representing executory costs, equals or exceeds 90 percent of the fair value of the leased property.

The OMB provides a slightly different approach to defining the types of leases in Circular A-11 (direction to federal agencies on how to prepare and submit their budgets for Presidential review), and OMB defines an operating lease using the converse of the four capital lease criteria and adding two additional criteria: the asset must be a general purpose asset rather than being for a special purpose of the Government and is not built to the unique specifications of the Government lessee. In effect, the OMB's approach to lease classification makes the lease of capital assets less attractive to the DoD than might be the case under the other, more widely subscribed, classification schemes.

For large government entities such as the DoD, a lease's classification has an impact that goes beyond how the incurred liability is portrayed on the balance sheet; the Defense Finance Management Regulation requires that capital leases draw from procurement funds and that operating leases draw from DoD agencies and services' Operations and Maintenance (O&M) funds. These funding requirements are reinforced by Congress, which grants funding for specific major acquisitions through the appropriation of procurement funds – capital leases and lease-purchases rely on procurement funds.

In the examples that follow, we describe how DoD programs have shaped leasing legislation and regulations and how the resulting constraints have impacted other programs. First, we consider

the Navy's Maritime Prepositioned Ship program. The Navy initiated long-term leases for ships that prepositioned U.S. Marine Corps vehicles, equipment, and ammunition throughout the world. What is sometimes lost in analysis of the MPS program is that the outright purchase of the ships was considered unaffordable by Navy officials. Nevertheless, critics contended that the leases circumvented Congressional authorization processes by obligating the government to 25 years of lease payment or termination penalties (San Miguel, Shank, & Summers, 2005, pp. 12-13).

Ultimately, Congress passed measures under the Defense Authorization Act of 1984 to ensure that future programs could no longer rely on long-term leases that "hid" the true cost of large multi-year programs:

1. All DoD long-term leases (> five years) must be specially authorized by law;
2. A notice of intent to solicit such leases must be given to the appropriate committees in both houses of Congress;
3. A detailed justification for lease versus purchase must be submitted to, and that justification must be approved by, the OMB and Treasury; and
4. The OMB and Treasury must jointly issue guidelines as to when leasing may be appropriate.

Later, in 1991 the OMB modified Circular A-11 requiring that government agencies score long term (>5 years) capital leases and lease purchases in the year of initiation. In other words, for the purposes of budgeting, government agencies must allocate funding to cover the full cost of the multi-year lease. Together, the 1984 NDAA and OMB restrictions effectively bar the use of long-term capital leasing.

It has been argued that the DoD has also used operating leases in instances where a long-term lease-purchases would be more appropriate. For instance in the 1990s, the Navy initiated and renewed short-term leases of foreign-built cargo ships to support the MPS program. The Navy used 59 month (4.92 years) leases to comply with law, renewing some of these leases for close to 10 years, effectively circumventing the long-term lease prohibition and upfront funding requirement. The American Shipbuilding Association has asserted that the renewals amount to

the “de facto purchase of the ships” (CRS, 2001). These concerns led to short-term leasing restrictions on vessels. Section 1011 of the FY2008 defense authorization act amended 10 U.S.C. §2401 to permit the secretary of a military department to lease a vessel for a period of greater than two years, but less than five years, only if the Secretary provides a notification of the lease to the House and Senate that demonstrates that 1) leasing is the more cost-effective option, and 2) a plan for meeting the requirement upon the lease’s termination. These restrictions effectively promote the purchase (as opposed to lease) of new “purpose-built” (as opposed to commercially-acceptable) American-made ships.

In 2002 the Air Force identified replacement of the aging fleet of KC-135s as a priority—citing significant corrosion that had become increasingly expensive to remediate—despite having failed to indicate the need for replacement on an “unfunded priorities” list supplied to Congress the previous year. According to an Air Force report to Congress, net present value analysis suggested that purchasing the 100 aircraft would cost a mere $150 million less than leasing them, or about one percent of the total cost (Curtin, 2003). After much debate an agreement was reached whereby the Air Force would lease 20 of the KC-737 aircraft, and purchase 80 (Hrivnak, 2006). However, when it was discovered that former Boeing and service officials had committed personal ethics violations, the tanker deal was cancelled.

Lease agreements are also criticized for reasons that have little to do with their cost-effectiveness. In April 2013, the Pentagon acknowledged that it had leased a Chinese satellite to provide urgently needed communications capabilities for its Africa Command. The DoD has stated that the Chinese satellite provides “unique bandwidth and geographic requirements” that other satellites do not (Congressional China Caucus, 2013).

We suggest that leasing is most effective when used in conjunction with carefully-structured PPPs that properly align government and private-sector incentives. A public-private partnership is a contractual agreement between a public agency (federal, state or local) and a private sector entity.

We provide two examples: In the United Kingdom, the Ministry of Defense’s lease of aerial refueling tankers, and (back at home), the DoD’s use of multiple PPPs to acquire military

housing. We describe the potential cost savings associated with these newer, innovative agreements in addition to the risks and challenges.

In 2004 the UK Ministry of Defense (MoD) authorized the long-term lease of French Airbus A330 Multi-Role Tanker Transport (MRTT) through the use of a private finance initiative (PFI) with AirTanker, the owner of the aircraft. A PFI creates public-private partnerships by funding infrastructure and other capital-intensive projects with private capital.

Initiated in 1996, the DoD's Military Housing Privatization Initiative (MHPI) was also structured as a public-private partnership. With the MHPI, the private sector owns, operates, maintains, improves, and assumes responsibility for military family housing (ODUSD, 2001). Leasing figures prominently in many of the arrangements. Typically, for instance, a military service leases land to a developer for a term of 50 years. In addition, the service generally conveys existing homes that are located on the leased land to the developer for the duration of the lease. Once the newly-constructed or renovated housing project is completed, the service may lease the properties from the developer, either directly or through individual service members' base housing allowance. In either case, the effect is the same: The continuous income stream from these lease payments supports access to private capital, allowing the developer to expand, maintain, and recapitalize the initial investment.

The DoD considers family housing privatization its most important and cost-effective effort to improve Service members' quality of life. Approximately 260,000 housing units were ultimately privatized across the DoD through MHPI (for the sake of comparison, there were 53,000 government-owned units in 2012 [Cino, 2014]). The program has been universally lauded as both a success and a critical quality-of-life program for military families (Hayes & Scribner, 2013). According to Cino (2014), the program is "a sterling example of a successful public-private partnership" (p. 1).

We posit that in order to fully leverage the benefits that leasing can offer, the DoD should consider increasing its reliance on lease-based public-private partnerships, which capture private-sector efficiencies in financing, construction, and operation, and which can translate to lower program costs (relative to traditional procurement), allowing the DoD to partially offset the

higher cost of typical lease agreements (relative to outright purchase) while gaining the benefit of faster delivery at reduced risk, with less up-front dollars.

Below, we outline our specific recommendations.

1. Modify existing leasing restrictions.

- The OMB should reconsider the upfront scoring requirement for long-term capital leases and lease-purchases.

  Given continuing budgetary pressure, government agencies should have recourse to diverse funding options that allow them to meet mission requirements, recognizing that the relative importance of short-term affordability and long-term cost effectiveness may vary from program to program. Eliminating or relaxing the upfront scoring requirement will also serve to reduce the incidence of capital leases "disguised as operating leases," which is an inefficient practice.

- Congress should lift restrictions on short-term vessel leasing.

  Doing so allows the services to take advantage of private-sector equipment and systems to meet operational requirements of indeterminate duration.

2. Pursue innovative leasing agreements.

- The DoD should pursue agreements that leverage the relative strengths of the public and private sectors.

  The DoD may wish to draw from the U.K.'s approach and consider innovative leasing agreements that, for example, allow for the sale of spare capacity to U.S. allies.

- Future lease agreements must be structured with appropriate "off-ramps."

  Providing off ramps will help eliminate the perception that long-term lease agreements "tie the hands" of future Congresses. As it stands, Congress is already reluctant to engage in multi-year procurements, let alone long-term leases.

3. Focus on performance and value.

- The DoD should continue to rely on the global defense industry (via lease or purchase).

  The DoD must continue to rely on competition whenever possible, including competition among domestic and foreign suppliers. It is abundantly clear that reliance on foreign sources for production has allowed the DoD to achieve higher performance, while reducing costs and improving deployment times. In particular, the lease of dual-use technologies has the potential to reduce both upfront and long-term costs.

Given the current budgetary environment, the DoD must reconsider how it acquires needed capabilities quickly, effectively, and affordably. Current leasing restrictions needlessly constrain program-specific evaluation of these three elements. Of course, the DoD must work to strike a balance between short-term affordability and long-term financial sustainability. This means "value for money"—not just "off balance sheet" considerations—must guide the initiation of long-term lease agreements. At the same time, the definition of value for money must be expanded to take into account asset obsolescence, the growing costs of maintaining ageing assets, and the potential for mission failure, all of which are more likely to occur in an environment where the practice of leasing cannot be pursued.

I. Introduction

In decades past, the Department of Defense (DoD) would lease major equipment from defense firms, including noncombat ships, aircraft, and vehicles in order to acquire needed capabilities quickly and without the upfront expense. Today, however, leasing is seldom used to meet long-term requirements. Over the course of the intervening years, a number of laws and regulations have been implemented that effectively constrain the use of long-term leasing; most notably: the 1984 National Defense Authorization Act; and, in 1991, Appendix B of Office of Management and Budget (OMB) Circular A-11.

Twenty-five years ago, when the economy was strong and military spending less constrained, these restrictions may have been less problematic; some might even say appropriate. But times have changed. Given current economic conditions, the military is under significant pressure to reduce its costs, and this pressure is unlikely to subside in the near term. At the same time, after two long wars, the need to repair and replace ageing assets and infrastructure has never been greater. Additionally, new threats (e.g. cyber-espionage, a rising China, and a chaotic Middle East) demand new tactics, better technology, and more resources.

It is projected that the Department of Defense (DoD) will see a funding reduction of $487 billion over the next 10 years as mandated by the Budget Control Act of 2011 (OMB, 2013). In order to stay within budget, the DoD plans to implement targeted reductions in force structure, reprioritize key missions and the requirements that support them, promote efficiency improvements in acquisition, and continue to reform in other business practices. However, these efforts, at least in their current form, will likely prove insufficient.

The Congressional Budget Office (CBO) found that the DoD's 2013 Future Years Defense Program (FYDP), a five year spending plan provided to Congress, fails to bring down spending to a sustainable level. In fact, the CBO asserted that the DoD's costs will soon outstrip its budget, as expenditures for manpower, maintenance, and health care continue to increase, thereby eliminating the funds necessary for the planned recapitalization, modernization, and transformation of the military (CBO, 2012).

The fact that total defense spending (in real terms) was higher in 2010 than at any point since the end of World War II suggests, to critics, that the military could further decrease the number of troops and reduce the scope of acquisitions. At present, however, with the projected cuts, the active military force structure will be at near post-Cold War lows (see Figure 1), and existing equipment inventories are becoming older, smaller, and less effective against emerging technologies. And, while these force size reductions should allow for base closures (to free up some acquisition dollars) Congress is dead set against base closures.

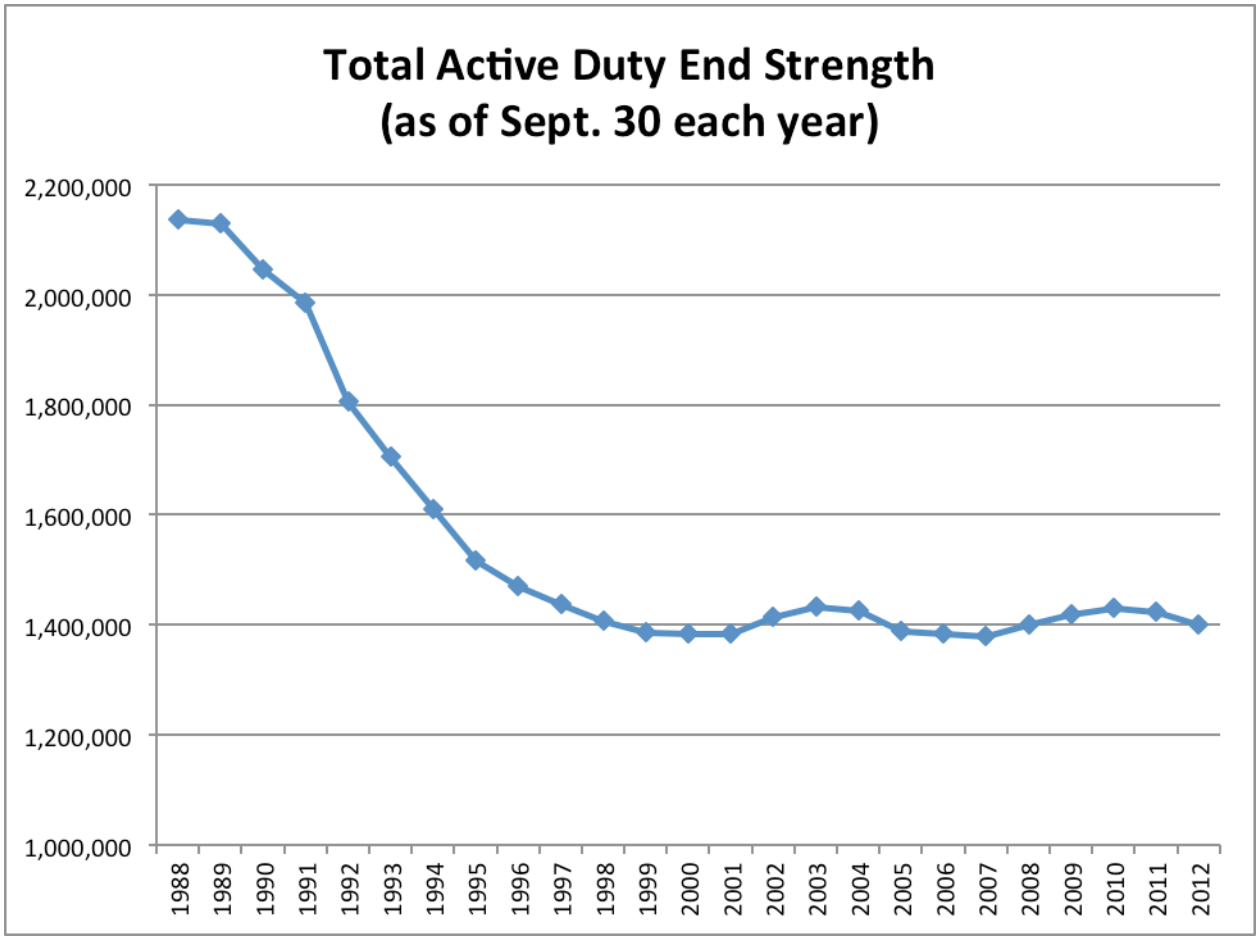

Figure 1. Total Active Duty Military End Strength (1988-2012)

In her recent article describing the Air Force's budgetary outlook, Mackenzie Eaglen (2014) of the American Enterprise Institute describes a dire situation. She writes that "America's Air Force is quickly shrinking before the nation's eyes" (p. 1). In fact, the Air Force's fleet of aircraft is the smallest and oldest since its inception in 1947. Eaglen points out that of its roughly 5,000

aircraft, the average age is twenty-five years. The bottom line, according to Eaglen, is that "the historically most innovative service is now left to incrementally upgrade existing capabilities while abandoning transformational and leap-ahead investments" (p. 1).

Meanwhile, the average total cost for operations and maintenance per troop nearly doubled to $115,000 in 2012, compared with $58,000 in 2001 (Korb, Rothman, & Hoffman, 2012). This dramatic increase reflects rising, across-the-board, costs in such areas as health care and retirement, in addition to the significant increases in active-duty compensation passed into law during a decade of war in Iraq and Afghanistan. At the current rate, the U.S. deficit is projected to exceed the nation's GDP by the early 2020s (Congressional Budget Office [CBO], 2010). In fact, it is projected that mandatory federal spending (on healthcare, social security, income security programs, federal and military retirement benefits, and veterans' benefits) and interest payments will exhaust the entire federal budget by 2036 if current trends in spending and demographics continue (CSIS, 2012).

It is within this challenging environment that the DoD must consider non-traditional acquisition strategies, including a return to long-term leasing, in order to strike a sustainable balance among short-term affordability, mission readiness, long-term strategy, and financial stability.

This is not to say that the logic underlying current leasing restrictions is without merit. All else being equal, it is more expensive for the federal government to rely on private sector financing (via leasing) than to purchase an asset directly because even the best private interest rates exceed the rate at which the U.S. Treasury can borrow. However, all else is not equal. Unrelenting budget pressure is preventing the DoD and government agencies from funding large capital purchases in a single year—a challenge even in good economic times.

Politically, it is always difficult to justify a budget that is inconsistent with those of years past; this is especially true when mounting federal deficits invite a high level of scrutiny from both Congress and the public. Thus, lawmakers are reluctant to increase agencies' single-year budgets in order to accommodate a needed capital expenditure. What some deficit hawks fail to realize, however, is that postponing capital expenditures invariably leads to higher long-term costs:

dilapidated buildings and worn-out aircraft cost more to operate; and over the years, these costs add up.

It is no wonder that the Government Accountability Office (GAO) includes federal real property management on its "high risk" list (Robyn, 2013). Government agencies simply do not have the funds available to pay for major renovations or new buildings in a single year, nor do they have the flexibility to spread the costs out over time.

Few agencies, no matter how large, can forego their regular annual expenses in order to fund the replacement of a new headquarters or a fleet of aircraft. Even the DoD, the largest enterprise in the world, struggles to fund capital-intensive programs; often, funding a new mission-critical priority means cutting elsewhere. In this budget environment, it is becoming increasingly difficult to make cuts without sacrificing important capabilities. In some instances, agencies can contract for multi-year procurements; however, these require congressional approval and typically allow agencies to pay for an asset over a period of no more than five years.

Of course, there is a case to be made for keeping agencies' yearly budgets reasonably consistent from year to year. The health of our national economy relies on some level of regularity when it comes to national spending. Moreover, funding a large expenditure upfront with taxpayer dollars carries risk, especially in the current economy.

As the largest government entity, the DoD must prioritize short-term affordability with an eye on long-term financial stability. Returning to the long-term lease of capital assets, though by no means a magic bullet, would allow the DoD to access needed capabilities more quickly and affordably, by spreading outlays over the life of the lease, thereby avoiding single-year funding spikes that compromise other programs.

Traditionally, leasing has been more expensive than purchasing, but this need not be the case. Today, innovative lease agreements (often structured as public-private partnerships) can capture private-sector efficiencies in financing, construction, and operation, which translate to lower program costs (relative to traditional procurement), allowing the DoD to partially or fully offset

the additional expenses that leasing entails (i.e. higher borrowing costs and profit allowance), all while gaining the benefit of faster delivery with less risk.

Report Roadmap

Given today's shrinking budgetary environment, the DoD should keep all procurement options on the table. We believe that a more innovative approach to the buy vs. lease decision is necessary. This research examines the costs, benefits, risks, and rewards of leasing military equipment.

In Part II, we discuss the role that leasing plays in the private sector as well as in the DoD, both from a historic and a current perspective. We also examine different types of leases, how these leases are defined by different standards-setting bodies, and the role these definitions play in promoting or reducing the use of leasing by the federal government.

In Part III, we examine instances in which the DoD has relied on long-term and short-term leasing. We describe the Navy's Maritime Prepositioned Ship program, begun in the 1970s, which informed long-term leasing regulations and legislation still in force today. We then examine the Navy's use of multiple short-term leases of foreign-built tanker ships; these agreements, first signed in the 1990s, allowed the Navy to acquire essential capabilities. However, it has been argued that the Navy's reliance on options and renewals to extend short-term leases violated the spirit of the aforementioned legal restrictions. In this section, we also examine the DoD's recent lease of a Chinese satellite.

In Part IV, we describe leasing within the context of innovative public-private partnerships (PPPs). We suggest that leasing is most effective when used in conjunction with carefully-structured PPPs, that properly align government and private-sector incentives. We provide two examples: In the United Kingdom, the Ministry of Defense's lease of aerial refueling tankers and back at home, the DoD's lease of military housing. We describe the potential cost savings associated with these newer, innovative agreements, in addition to the risks and challenges.

Finally, in Part V, we provide recommendations in two categories. First, we discuss needed changes to laws and regulations that, at present, act as barriers to the use of innovative leasing agreements. Then, we provide recommendations that will help inform the lease-vs.-buy decision.

II. Background

A lease is defined as "a contract by which one conveys real estate, equipment, or facilities for a specified term and for a specified rent" (Merriam-Webster). Leasing is a common practice in the commercial world for both economic and contingency reasons.

Leasing is a recognized business strategy, and a common practice in the private sector, where eight out of ten corporations lease *something* (Harvey, 2010). In fact, compared to bank loans, leasing is an even larger source of equipment financing: in the U.S., about one-third of equipment acquisitions are leased (Harvey, 2010). Whether the equipment lease appears on the books as a capitalized loan, or as a rental, the lessee gains access to the capital needed to promote growth without diluting company finances.

Increasingly, leasing arrangements provide opportunities to bundle equipment, allowing the lessee to take advantage of additional savings that result from economies of scale. Take, for instance, a large Vermont hospital that needed to replace both aging medical diagnostic equipment and administrative equipment—a new CAT SCAN and new copiers. Provident Leasing executed a $1.2 million single lease that consolidated multiple vendor disbursements, reducing the hospital's costs, while simultaneously increasing the quality of specialized equipment (Provident Leasing, 2007).

Vehicle fleet leasing, popular in the private sector, and showing recent gains in the public sector, involves bundling equipment and services. The services typically include management of maintenance and repairs, fuel cards, traffic violation processing, and registration renewals. The lessee benefits from the more timely replacement of aging vehicles and increased cash flow in the short term, combined with decreased operating costs in the long-term. The lessor benefits from ongoing fleet management services that minimize long-term risk and maximize long-term profits (Christensen, 2010).

Local government has paved the way for the increasing use of leases where more than 25 percent of municipality services are supported with private sector lease contracts. These services include

street light maintenance, waste collection, street repairs, hospital management, mental health facilities, day care programs, ambulance services, correctional facilities, bus operations, public utilities, and drug and alcohol treatment programs. Moreover, local governments also take on the role of lessor. In Washington, D.C., for example, the transit authority leases land to private entities and development rights for commercial and office space along the Metrorail System. The lease revenue, sales taxes, and corporate taxes are then reinvested in the extension and maintenance of Metrorail infrastructure (Rondinell, 2003).

Why Do Organizations Lease?

Certainly, the total cost of the lease (i.e. the sum of annualized payments to the lessor) is essential to the lease vs. buy decision. However, this is not the only consideration that firms take into account when deciding between lease and purchase. For instance, a firm may not have the funds available to cover the outright purchase of the equipment, in which case leasing may be preferred; even if, over time, the combined lease payments exceed the purchase price.

Additionally, there are risks associated with outright purchase that a firm may wish to avoid. For example, the potential obsolescence of the equipment can make leasing the more attractive option, in that competitive firms may need to rely on the best equipment available in order to maximize profit. Likewise, a firm may need only temporary access to equipment, or may not know for certain how long it will require use of the equipment. In such cases, outright purchase is only preferred if the equipment in question will be used beyond the point in time when cumulative leasing costs exceed the purchase costs. Often, a firm will err on the side of caution, choosing to lease rather than purchase, especially when the total cost of the lease and the purchase price are reasonably close.

The broad advantages and disadvantages of leasing equipment are summarized below in Figure 2.

Buying		Leasing	
Advantages	Disadvantages	Advantages	Disadvantages
Outright asset ownership	**Major capital outlay up-front.**	**Cash-flow effective method for gaining access to assets as no major capital outlay up-front.**	**No asset ownership.**
Assets can be modified at any stage to suit changing business requirements.	**Entity incurs maintenance and repairs costs which typically increase as assets age.**	**Entity may not incur repair and maintenance costs as assets may fall under the warranty of the lessor over the term of the lease.**	**Assets may not be able to be modified to suit changing business requirements without lessor approval and attracting fees.**
Asset can be replaced or disposed of at any time.	**Entity incurs costs for the replacement or disposal of assets at the end of their useful lives.**	**The entity may not incur costs associated with disposal and replacement of assets at the end of their useful lives.**	**Lease terms are generally fixed so asset replacements and early terminations at the request of the entity may attract penalties and fees.**
		Assets may be replaced more frequently, allowing the entity access to latest technology for no additional cost.	
		Possible access to knowledge, purchasing power and discounts offered by the lessor.	**Potential capital outlay at the end of the lease term if purchasing the asset at the end of the lease.**

Figure 2. Advantages and disadvantages of buying and leasing options (anoa.gov, 2014).

The Rationale for Leasing in the DoD

In the past, the DoD has leased mission-critical equipment when funds were unavailable, allowing the military services to gain immediate access to assets, while spreading outlays over the life of the lease, avoiding single-year funding spikes that compromise other programs. The DoD has also chosen to lease in order to bridge capability gaps, especially if the need for an asset is short-term or indeterminate, which may be the case during periods of changing requirements. And, when an urgent need arises, leasing commercial equipment to bolster military capability may be preferable to a lengthy acquisition.

Categories of Lease

Generally, leases are divided into two categories: capital and operating. The Financial Accounting Standards Board (FASB)[1] describes a capital lease as "a lease that transfers substantially all the benefits and risks of ownership to the lessee" whereas an operating lease is an agreement "conveying the right to use property for a limited time in exchange for periodic rental payments." In common parlance, the phrase "rent to own" has come to describe capital leasing while "right to use" aptly describes the operating lease. However, the FASB and other standard-setting bodies use specific criteria in order to determine whether a lease should be classified as an operating lease or a capital lease.

These two classifications, and the criteria upon which they are based, are not only a convenient way to discuss the attributes of a lease. Rather, they dictate how a firm represents the resultant liability on their statement of financial position, or balance sheet: The FASB requires that firms record the present value of capital lease expenses (i.e. scheduled payments and termination costs) as debt. On the other hand, firms may treat operating lease expenses as operating costs (i.e. costs associated with administering a business on a day-to-day basis) which are not included on a firm's balance sheet.

As mentioned, standard-setting bodies have established criteria in order to determine a lease's classification. These criteria are designed to be strict and unambiguous so as to prevent a firm from "disguising" capital leases as operating leases, and misleading investors, customers, and competitors with regard to its financial standing.

The FASB, Government Accounting Standards Board (GASB)[2], and the Federal Accounting Standards Advisory Board (FASAB)[3] define four capital lease criteria. If the terms of the lease

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[1] The mission of the FASB is to establish and improve standards of financial accounting and reporting that foster financial reporting by nongovernmental entities that provides decision-useful information to investors and other users of financial reports.

[2] The Governmental Accounting Standards Board (GASB) is the independent organization that establishes and improves standards of accounting and financial reporting for U.S. state and local governments.

meet any one of these criteria at its inception, it is considered a capital lease for accounting purposes.

- **Ownership**. The lease transfers ownership of the property to the lessee by the end of the lease term.
- **Bargain Price Option**. The lease contains an option to purchase the leased property at a bargain price.
- **Estimated Economic Life**. The lease term is equal to or greater than 75 percent of the estimated economic life of the leased property.
- **Fair Value**. The present value of rental and other minimum lease payments, excluding that portion of the payments representing executory costs, equals or exceeds 90 percent of the fair value of the leased property.

According to these boards, a lease that does not meet any of the four criteria is considered an operating lease.

- Risk of ownership remains with the lessor
- Commonly used to acquire equipment on a relatively short-term basis
- Protects the lessee from the risk of asset obsolescence
- Allows for systematic technology replacement

The Office of Management and Budget (OMB), in Circular A-11, provides direction to federal agencies how to prepare and submit their budgets for Presidential review. Because leases, depending on their type, receive different treatment in agencies' budgets, the OMB provides definitions that are slightly different. The OMB defines an operating lease using the converse of the four capital lease criteria and adding two additional criteria.

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[3] The FASAB serves the public interest by improving federal financial reporting through issuing federal financial accounting standards and providing guidance after considering the needs of external and internal users of federal financial information. In 1999, the American Institute of Certified Public Accountants' (AICPA) Council designated the FASAB as the accounting standards-setting body for Federal Government entities

- Ownership remains with lessor during lease term and is not transferred to the Government at, or shortly after, the end of the lease term.
- Lease does not contain a bargain-price purchase option.
- The lease term does not exceed 75% of the estimated economic life of the asset.
- The present value of the minimum lease payments over the life of the lease does not exceed 90% of the fair market value of the asset at the beginning of the lease term.
- Asset is a general purpose asset rather than being for a special purpose of the Government and is not built to the unique specifications of the Government lessee.
- There is a private sector market for the asset.

In order to be considered an operating lease for federal budgeting purposes, all six criteria must be met. It should also be noted that the OMB draws a distinction between leases in which the lessee gains ownership and leases that heretofore have been described as capital leases. According to the OMB, the term "lease-purchase" refers to any lease that results in the transfer of ownership to the lessee (the government) at the end of the lease term, while capital lease is reserved for any lease that is neither a lease-purchase, nor an operating lease. By definition, then, a capital lease meets the following criteria.

- Ownership is not transferred to the government, and
- The duration of the lease exceeds 75% of the useful life of the asset and/or
- The present value of lease payments is greater than 90% of the asset's market value, and/or
- Asset is not general use/does not have a private market.

In effect, the OMB's approach to lease classification makes the lease of capital assets less attractive to the DoD than might be the case under the other, more widely subscribed, classification schemes. For instance, according to OMB criteria, a lease for an asset for which there is no private sector market is automatically classified as a capital lease and is subject to capital lease accounting practices (described in more detail in the following sections) regardless as to ownership, fair value, or economic life considerations. Under FASB or GSB criteria, such an asset might fall into the operating lease category.

Impacts of Leasing on Budgets

To execute any acquisition program, Congress must provide budget authority permitting the DoD to incur obligations and make payments. Such authority is typically provided by an appropriations act, in which Congress specifies the amount and purpose for which each particular appropriation may be used. The DoD receives appropriations, most of which can be grouped into five major categories: Research, Development, Test and Evaluation (RDT&E); Procurement; Operation and Maintenance (O&M); Military Personnel (MILPERS); and Military Construction (MILCON).

For large government entities such as the DoD, a lease's classification has an impact that goes beyond how the incurred liability is portrayed on the balance sheet; the Defense Finance Management Regulation requires that capital leases draw from procurement funds and that operating leases draw from DoD agencies and services' O&M funds. These funding requirements are reinforced by Congress, which grants funding for major acquisitions through the appropriation of procurement funds – capital leases and lease-purchases rely on procurement funds.

It is important to note that an organization's O&M budget is easier to repurpose; moreover, DoD services and agencies often find it easier to obtain additional O&M funding (versus additional procurement funding). Obtaining procurement funding for a program can be a multi-year process; moreover; the funding is far less flexible. Hrivnak (2006) describes the process for obtaining procurement funds:

> *Typically, a military service identifies a requirement for a new military system by addressing its current systems against the demands of the national military strategy. Service proposals to develop new systems or purchase additional units are then validated by a body within the Joint Chiefs of Staff and subsequently submitted to DoD's civilian leadership for approval. The services then build programs into their budgets to address these requirements within the top-level budget limits set by the department's leadership. Because the top line never permits the services to buy everything they want, they devote those funds to those programs they consider priorities. (p. 10)*

As noted, leasing is an attractive means of obtaining funding to meet urgent, emerging needs in that it allows the DoD to gain immediate access to an asset without compromising funding for other programs. However, the lengthy process described above negates this advantage, steering the DoD services and agencies to the use of operating leases (and O&M funding) to fund capital assets. This effect is heightened by the process's initial phase, "requirements identification," which often leads the DoD to identify military-specific requirements, thereby excluding consideration of commercially-available alternatives that are typically more affordable.

The Impact of Regulations

However, reliance on operating leases grew even stronger beginning in 1991, when the OMB modified Circular A-11 requiring that government agencies fully fund long-term (>5 years) capital leases and lease-purchases in the year of initiation, placing capital leasing on a par with purchasing in terms of their accounting and financing. As a result, the widespread use of lease purchases and capital leases came to an abrupt halt as managers in many federal agencies chose to rely on series of operating leases to obtain access to assets for which they had a long-term need—a strategy that is less cost-effective than a capital lease or lease-purchase.

The OMB Circular states that a capital lease will be "scored against the legislation in the year in which the budget authority is first made available in the amount of the *estimated net present value* of the Government's *total estimated legal obligations over the life of the contract*" (OMB Circular No. A–11 (2013)). The National Defense Authorization Act of 1984 and these OMB restrictions erect significant barriers to the use of long-term capital leasing.

III. Leasing in the DoD

The DoD has relied on both long-term and short-term leasing. In the examples that follow, we describe how DoD programs have shaped leasing legislation and regulations and how the resulting constraints have impacted other programs. First, we consider the Navy's Maritime Prepositioned Ship program, begun in the 1970s, which informed long-term leasing regulations and legislation still in force today. We then examine the Navy's use of multiple short-term leases of foreign-built tanker ships; these agreements, first signed in the 1990s, allowed the Navy to acquire essential capabilities. We also examine that Air Force's failed attempt to lease aerial refueling tankers as well as the DoD's recent lease of a Chinese satellite.

Maritime Prepositioned Ships

In 1979, the secretary of defense approved the creation of a Maritime Prepositioning Ship Program to support the U.S. Marine Corps (Bailey & Escoe, 2004), and to increase rapid response capabilities. Ensuring future success, military or otherwise, depends on preparing for all

eventualities. During his State of the Union Address in 1958, President Eisenhower, on the subject of deterrence, noted that "Our real problem, then, is not our strength today; it is rather the vital necessity of action today to ensure our strength tomorrow."

In order to ensure preparedness for various eventualities, the Navy initiated long-term leases for ships that prepositioned U.S. Marine Corps vehicles, equipment, and ammunition throughout the world. The Navy used these leases, known as "charter and build arrangements" to acquire sealift tankers and replacement tankers (Bailey & Escoe, 2004). Given the lack of available funds owing to President Reagan's defense build-up, which prioritized combat programs, leasing seemed the only plausible strategy for acquiring the ships. Indeed, what is sometimes lost in analysis of the MPS program is that the outright purchase of the ships was considered unaffordable by Navy officials. As San Miguel, Shank, and Summers (2005) point out, the Navy did not face a "lease vs. buy decision" so much as a "lease vs. do without" decision. The MPS program was the first peace-time attempt to fund a multi-billion dollar military program via leasing.

In 1982, the Navy entered 13 long-term lease contracts for 13 MPS vessels (Bailey & Escoe, 2004). This allowed the Navy to meet immediate support requirements through Operations and Maintenance appropriations over the 20 to 25 year contract terms rather than through large, up-front capital obligations. Within four years, the Navy received all 13 vessels. The immediate availability of these ships allowed rapid deployment to support Operation Desert Storm, Operation Iraqi Freedom, combined forces exercises, and international exercises such as NATO's bi-annual Dynamic Mix (Bailey & Escoe, 2004).

Each contract had 5 participants – the lessor, the shipyard, the contractor, the operator, and the lessee— the Navy (Haslam, Koenig, & Mitchell, 2004). The lessee uses the vessel. The lessor (bank or finance company) owns the vessel, investing 20-50 percent of the capital cost. The lender provides the loans for the remaining capital cost. The Navy paid two types of rent: capital and operating. Capital rent, or capital hire, covers the equity and debt financing, paying the lessor and lender. Operating rent, or operating hire, covers the operating services (Bailey & Escoe, 2004). According to the lease agreements, the Navy held the option to purchase the ships.

Owner	Operator	Hull	Months between award date & keel/conversion start date	Months between conversion start date & delivery date OR between keel laid date & delivery/commission date	Total Months	Average Total Months
Navy	Navy	SSBN 732	61	34	95	65
Navy	Navy	SSBN 733	30	36	66	
Navy	Navy	DD 991	38	26	64	
Navy	Navy	DD 992	39	27	66	
Navy	Navy	CVN 71	13	60	73	
Navy	Navy	CVN 72	23	60	83	
Navy	Navy	SSN 721	16	44	60	
Navy	Navy	SSN 722	23	50	73	
Navy	Navy	CG 50	18	33	51	
Navy	Navy	CG 51	27	36	63	
Navy	Navy	FEG 57	20	28	48	
Navy	Navy	FEG 58	26	23	49	
Navy	Navy	LSD 43	5	49	54	
Navy	Navy	LSD 44	30	35	65	
Navy	Navy	DDG 51	32	31	63	
Navy	Navy	DDG 52	33	34	67	
Navy	MSC	T-AO 187	21	28	49	50
Navy	MSC	T-AO 188	23	28	51	
Private	Private	T-AK	4	20	24	32
Private	Private	T-AK	4	21	25	
Private	Private	T-AK	13	17	30	
Private	Private	T-AK	16	20	36	
Private	Private	T-AK	19	17	36	
Private	Private	T-AK	6	19	25	
Private	Private	T-AK	2	26	28	
Private	Private	T-AK	6	24	30	
Private	Private	T-AK	12	17	29	
Private	Private	T-AK	12	21	33	
Private	Private	T-AK	18	20	38	
Private	Private	T-AK	21	21	42	
Private	Private	T-AK	26	18	44	

Figure 3: Months between Award Date and Delivery or Commission Date (Bailey & Escoe, 2004)

Three different awardees were named: General Dynamics for five ships, Maersk Line for five, and Waterman Steamship for three. Figure 3 shows the timelines of award dates, keel laid dates, and start of conversion dates for the 13 leased MPS T-AK ships, as well as purchased vessels. Construction of these vessels began during the same time period. Each of these awardees relied on different shipyards for the construction of the ships, thereby alleviating potential delays and

bottlenecks, allowing for the quicker and more efficient delivery of a relatively large number of ships (Haslam, Koenig, & Mitchell, 2004). The Navy also awarded Ocean Products a contract to lease five T-5 petroleum tankers for the MPS program (not listed in the Figure).

In the years following its initial authorization in 1979, the MPS program drew little attention, progressing rather unremarkably. In fact, a study commissioned by the Navy concluded that leasing the ships was "substantially cheaper for the government than purchasing the ships, when considering the net present value of all payments over the term of the lease" (San Miguel, Shank, & Summers, 2005, p. 10).

In 1982, However, Congressional interest in the program began to grow, and was focused on whether legal standards had been followed properly. Congressional leaders insisted that the lease agreements be delayed until Congress could confirm that leasing was preferable to purchasing. This review began on August 17, 1982, and was conducted by the Senate Armed Forces Committee and the House Appropriations Committee (San Miguel, Shank, & Summers, 2005).

The review confirmed the cost benefits of leasing over purchasing "for any applicable discount rate up to 19%." Figure 4 provides analysis of costs at varying discount rates. However, the review also raised concerns over the program's impact on the Navy Industrial Fund; although the leases assumed that only annual lease payments would be charged to the fund, the report stated that, under law, all future payments and "potential termination penalties would need to be encumbered" against the fund, which was problematic as this amounted to $2.6 billion, and only $2.2 billion was in the fund at the time (San Miguel, Shank, & Summers, 2005, p. 12). However, despite this concern, both Congressional committees notified the Navy on September 16 that it could proceed with the contracts.

But as the program progressed, it began to draw significant criticism. During a September, 1982 congressional hearing, House Subcommittee on Readiness Chairman Dan Daniel "expressed serious dissatisfaction with the leases," which he believed circumvented Congressional authorization processes by obligating the government to 25 years of lease payment or termination penalties (San Miguel, Shank, & Summers, 2005, pp. 12-13). Although he accepted

that the contracts had already been awarded, he promised to stop this "side-stepping" of Congressional authority from occurring in the future. Meanwhile, the Washington Post issued an editorial describing the lease as "an evasion of budgetary limits"(Rent-a-Navy, 1983).

Present Value Cost Comparison			**Breakeven**				
Discount Rate	5%	6%	7%	8%	10%	12%	14%
Purchase Cost	-184.01	-184.01	-184.01	-184.01	-184.01	-184.01	-184.01
Navy Charter Cost	-225.44	-203.05	-184.01	-167.32	-140.56	-120.12	-104.23
Navy Savings	-41.43	-43.45	0	16.69	43.45	63.89	79.78

Figure 4: Analysis performed at varying discount rates (Bailey & Escoe, 2004)

This Congressional criticism of the MPS program continued for months, and was centered largely on the tax implications of the program. Lease-vs-buy analysis performed by the Navy's outside consultant considered the present value of the tax payments by the lessor on the interest component of the capital hire payments, as revenue to the government; reducing the cost of the lease relative to the purchase price. However, critics asked, perhaps rightly, if these same investors had earned taxable interest by investing in other similar projects.

Ultimately, Congress passed measures under the Defense Authorization Act of 1984 to ensure that future programs could no longer rely on long-term leases that "hid" the true cost of large multi-year programs. The Defense Authorization Act of 1984 mandated the following:

5. All DoD long-term leases (> five years) must be specially authorized by law;
6. A notice of intent to solicit such leases must be given to the appropriate committees in both houses of Congress;
7. A detailed justification for lease versus purchase must be submitted to, and that justification must be approved by, the OMB and Treasury; and
8. The OMB and Treasury must jointly issue guidelines as to when leasing may be appropriate.

Later, in 1991 the OMB modified Circular A-11 requiring that government agencies fully fund long term (>5 years) capital leases and lease purchases in the year of initiation. In other words, for the purposes of budgeting, government agencies must fund leases upfront, and the lease is scored identically to an outright purchase. Together, the 1984 NDAA and OMB restrictions effectively bar the use of long-term capital leasing.

These laws and restrictions have led to some unintended consequences. For instance, "a cottage industry has emerged in search of ways to get around the [OMB] A-11 rules" (Robyn, 2013). Given limits on capital leasing, agencies pursue long-term operating leases. For example, the Department of Transportation (DoT) plans to spend $675 million in the coming years for a new headquarters via a 15 year operating lease (Robyn, 2013). While this may solve an immediate need for the DoT, the agency must forego the benefits of ownership that come with long-term lease-purchases. For example, once the lease expires, ownership will revert to the private sector, with the DoT having no equity in the property.

Foreign-Built Tankers

It has been argued that the DoD has also used operating leases to acquire capabilities that might be better served through the use of long-term lease-purchases. For instance in the 1990s, the Navy initiated and renewed short-term leases of foreign-built cargo ships to support the MPS

program. The Navy used 59 month (4.92 years) leases to comply with law, renewing some of these leases for close to 10 years, effectively circumventing the long-term lease prohibition and upfront funding requirement (CRS, 2001. The American Shipbuilding Association has asserted that the renewals amount to the "de facto purchase of the ships" (CRS, 2001) and that the Navy is circumventing an existing law that U.S. military ships be built in American shipyards. Meanwhile critics, including members of Congress, are worried about "dependence" on foreign-built ships, which, they suggest, might weaken the domestic industrial base.

These concerns led to short-term leasing restrictions on vessels. Section 1011 of the FY2008 defense authorization act amended 10 U.S.C. §2401 to permit the secretary of a military department to lease a vessel for a period of greater than two years, but less than five years, only if the Secretary provides a notification of the lease to the House and Senate that demonstrates that 1) leasing is the more cost-effective option, and 2) a plan for meeting the requirement upon the lease's termination. These restrictions effectively promote the purchase (as opposed to lease) of new "purpose-built" (as opposed to commercially-acceptable) American-made ships.

It should be noted, however, that the Navy began leasing foreign ships because there were "very few commercial ships built in the U.S. with high military utility." As a result of the new restrictions, the Navy may find it increasingly difficult to respond to changes in the operational environment. Indeed, the foreign-built ships were leased precisely because the required "cost-effectiveness" of lease vs. purchasing and "plan for meeting the future requirement" could not be determined. As mentioned in Part II, leasing is ideal to meet needs of indeterminate duration. And although a long-term lease-purchase may have been more suitable in this instance, current law renders such consideration a moot point.

In addition to short-term leasing restrictions for vessels, OMB A-11 was later amended to deter agencies from "disguising" capital leases and operating leases. These restrictions are reflected in the definition of operating lease presented in Part II, namely that in order to be considered an operating lease, the asset 1) must be general purpose rather than being for a special purpose of the government, and 2) there must be a private sector market for the asset. However, these restrictions have not prevented the DoD from attempting to lease major assets in an effort to gain

access to needed equipment while avoiding upfront costs. Rather, the DoD, and other agencies, attempt to work within the confines of the laws and restrictions, such was the case with the Air Force's attempted lease of the KC-767 tanker.

The KC-767 Tanker

The attempted lease of the KC-737 tanker is another example in which the DoD has been accused of having inappropriately sought the use of an operating lease. In 2002, the Air Force developed a plan to replace some of its fleet of KC-135E aerial refueling tanker aircraft by leasing 100 new Boeing KC-767 tankers instead. Of course, refueling aircraft are critical to the Air Force's mission and to American national security; they allow "other aircraft to fly further, stay airborne longer, and carry more weapons, equipment, and supplies" (GAO, 2003, p. 2). In short, they are essential to the successful completion of the mission of the Air Force.

In 2002, the Air Force identified replacement of the aging fleet of KC-135s as a priority—citing significant corrosion that had become increasingly difficult and expensive to remediate—despite having failed to indicate the need for replacement on an "unfunded priorities" list supplied to Congress the previous year. It should also be noted that the tanker program did not develop through the traditional, and often lengthy, requirements identification process. According to critics, the tanker lease program was "slipped" into the acquisition process in order to take

advantage of "flexible" and "adaptive" business practices that then-Defense Secretary Rumsfeld had introduced to meet wartime requirements (Hrivnak, 2006). Indeed, the Air Force failed to conduct a so-called "analysis of alternatives" and did not conduct a formal study demonstrating the need to replace aircraft once intended to remain operational for an additional forty years (Hrivnak, 2006). This is not to say that the Air Force's pursuit of a tanker replacement was completely unjustified. The Air Force saw it as a "significant risk [to have] 90 percent of its aerial-refueling capability in a single, aging airframe;" indeed, any event that required "fleet grounding" would paralyze American military operations worldwide (GAO, 2003, p. 4).

In addition to several members of Congress, the CBO director at the time was reluctant to endorse the Air Force's plan, writing that that "[operating] leases have a greater potential to be cost-effective if the government does not have a long-term requirement for the asset…Cost-effective leases also require the existence of a substantial market (by scoring rules, a private market) into which to sell assets as the end of the lease" (Crippen, 2002). He went on to suggest that "while there is no private market for tankers, even the public, government market is not likely to absorb more than a few of the 100 tankers" (Crippen, 2002).

According to an Air Force report to Congress, net present value analysis suggested that purchasing the aircraft would cost a mere $150 million less than leasing them, or about one percent of the total cost (Hrivnak, 2006). However, analysts were quick to note that the analysis used a number of variables and assumptions favoring the Air Force's position. For instance, if the DoD were to pursue a congressionally-approved multi-year procurement of the aircraft, the cost to purchase would be reduced relative to the cost of the lease. In effect, a multi-year procurement would assure the contractor that all 100 aircraft would be purchased over a period of years. As a result, the contractor could streamline the purchase of materials and construct the aircraft more cost-effectively. Air Force officials used single-year procurement estimates in their buy-vs.-lease analysis, based on Congress's reluctance, historically, to authorize the use of multi-year procurements. However, it is difficult to argue that Congress is any less reluctant to authorize the use of operating leases for tankers.

Total cost considerations notwithstanding, the Air Force continued arguing that leasing was the best mechanism for acquiring the tanker aircraft, noting that "the Air Force [could] acquire 100 tanker aircraft with relatively little money spent up front" (Knight & Bolkcom, 2008)

After much debate among the CBO, Air Force and DoD officials, and Congress (notably Senator John McCain, who vehemently opposed the lease agreement), a compromise was reached whereby the Air Force would purchase 80 of the KC-737 aircraft and lease the remaining twenty (Pope, 2003), allowing the Air Force to rapidly acquire the 20 leased tankers (Hrivnak, 2006).

However, this agreement was nullified amidst allegations of improper dealings between Boeing and Air Force officials. It was later discovered that former Boeing and service officials had committed ethics violations (Hrivnak, 2006). In particular, there were seemingly inappropriate recruitment conversations that took place between the "architect" of the original tanker deal and a Boeing executive.

In 2011, after a series of missteps by Air force acquisition personnel, which resulted in a protest and canceled award, the Air Force finally decided to purchase the aircraft outright from Boeing. But, then they decided to also introduce competition from EADS (AIRBUS).

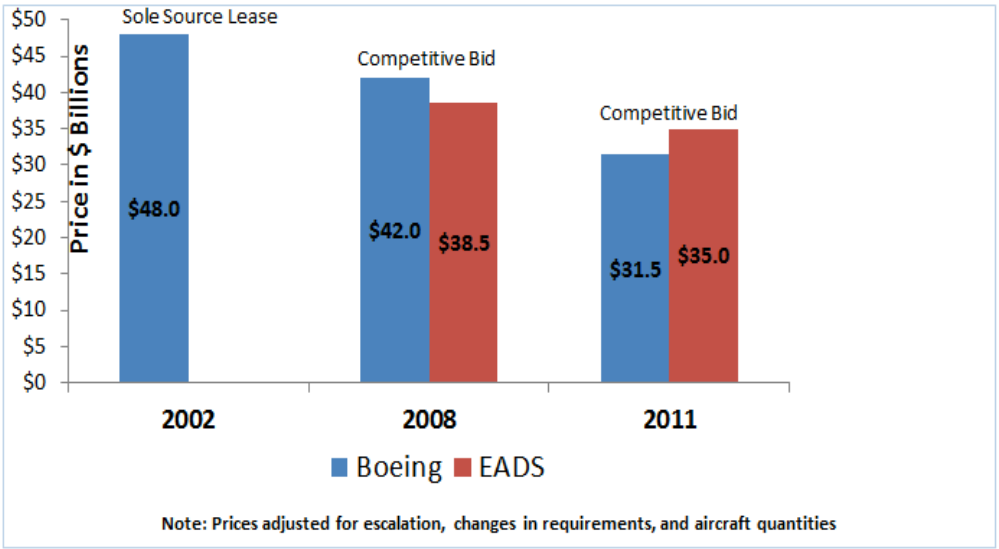
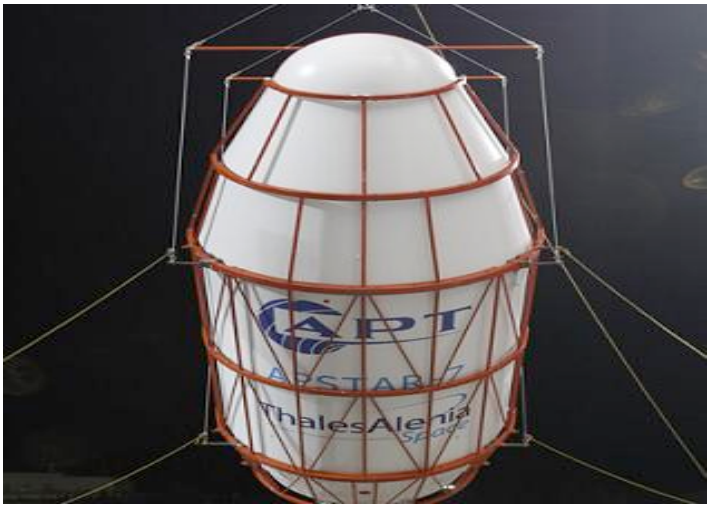


Figure 5. KC-X Bid History

The cancellation of the original, sole-source lease proved fortuitous, as did the subsequent cancellation of a contract with EADS. As Figure 5 illustrates, each cancellation effectively spurred a new round of competitive bidding. It has been argued that the transaction costs of managing the relationship between government buyers and contractors can be significant. It is clear that arranging the bidding process, initiating requests for proposals, negotiating with potential bidders, selecting potential contractors, and enforcing the terms of the contract all incur transaction costs. But these costs pale in comparison to the savings that can be achieved through competition. In the case of the KC-767, competitive bidding saved the Air Force over $16 billion.

Unfortunately, the corruption (among industry and Air Force officials) on the original award for the tanker, combined with the Air Force's (perhaps unwise) pursuit of an operating lease—recall, however, that capital leasing, in the traditional sense, is generally unavailable to government agencies— has further tarnished the prospect of leasing major systems.

Apstar 7 Satellite



In April 2013, the Pentagon acknowledged that it had leased a Chinese satellite to provide urgently needed communications capabilities for its Africa Command. The satellite's services were leased under a one-year, $10.6 million contract through the government solutions unit of a U.S. company, Harris CapRock Communications. The Fairfax, Virginia-based unit is one of 18 companies under an established contract the Defense Information Systems Agency uses for specialized commercial satellite services (Capaccio, 2013).

The DoD has stated that the Chinese satellite provides "unique bandwidth and geographic requirements" that other satellites do not (Congressional China Caucus, 2013). China is Africa's

largest trading partner, and Chinese companies (Huawei and ZTE, in particular) have invested significantly in the continent's infrastructure; the construction of an advanced communications satellite is but one investment among many. From an economic standpoint, the arguments in favor of the United States leasing the Chinese satellite are clear: It provides superior performance that cannot be easily obtained from other providers, and it was readily available in a time of urgent need.

However, many within Congress are worried, and perhaps rightly so, that the Chinese might be able to decode encrypted U.S. communications. Indeed, the DoD issued the following statement: the continued Apstar-7 lease "highlights the growing concern" within the Defense Department to improve its capability to provide commercial satellite communications. But this was not their only concern. Representative Mike Rogers of Alabama wrote that the move "sends a terrible message to our industrial base at a time when it is under extreme stress" from recent military budget cuts (Capaccio, 2013, p. 1).

Objections of this nature are voiced repeatedly within American defense circles, wasting valuable time and resources. And, they are bound to continue because current U.S defense industrial policy does not address today's technology and industrial globalization, or its implications. Because there is no agreed-upon point of reference, Congress, industry, and the public regularly scrutinize DoD decisions to buy or lease foreign systems, collaborate on projects with oversees partners, or share technology with allies, regardless of the details. However, globalization of the defense industry is already well underway and largely irreversible. Some might be surprised to learn that every U.S. weapons system contains foreign parts. To be sure, there are risks associated with globalization, especially within the context of national defense, which is precisely why the United States must pursue a defense industrial policy that anticipates, rather than reacts to, the expansion of global trade and technological innovation.

IV. Public-Private Partnerships (PPPs) in Defense

In light of declining budgets on one hand, and new and evolving security threats on the other, the DoD should keep all procurement options on the table. Therefore, in spite of the negative perceptions and uncertainty regarding its cost-effectiveness, an innovative approach to leasing—one that allows the government to capture leasing's traditional benefits, while improving value to the taxpayer—must be pursued.

We suggest that leasing is most effective when used in conjunction with carefully-structured PPPs that properly align government and private-sector incentives. A public-private partnership is a contractual agreement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use or benefit of the public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility.

Within the context of PPPs, leasing is reconceptualized. Traditional notions like "right-to-use" (operating lease) and "rent-to-own" (capital lease) need to be redefined, because PPPs offer additional advantages to the lessee; including the use of privately-owned infrastructure, technology, and financing. Often, one entity is responsible for design, construction, and operation, which can result in efficiencies (and, thus, savings) that are not possible with traditional "design-bid-build" methods.

We provide two examples: In the United Kingdom, the Ministry of Defense's lease of aerial refueling tankers and, back at home, the DoD's use of multiple PPPs to acquire military housing. We describe the potential cost savings associated with these newer, innovative agreements in addition to the risks and challenges.

MoD Air Tanker Lease

The private sector provides a compelling rational for the lease, as opposed to purchase, of commercial aircraft. In the airline industry, aircraft leasing is common. For instance, GE Capital Aviation Services (GECAS) purchases aircraft and equipment from manufacturers such as Airbus and Boeing, then leases the aircraft to airlines across the globe (e.g. Solaseed Air Japan and Aegean Airlines). GECAS is the largest aircraft lessor (by fleet size) with over 1,800 aircraft used by 245 airlines. Other aircraft lessor companies include International Lease Finance Corporation (ILFC) and AerCap.

In the airline industry, there are three types of leases—a dry lease, a wet lease, and a damp lease. With a dry lease, the lessor (e.g. GECAS) provides the aircraft only, and the lessee (e.g. Solaseed Air Japan) provides its own commercial air operator's certificate and aircraft registration. The lessee, in turn, contracts with a regional operator to provide flight crews, maintenance, and operations. Dry leases reduce costs to airlines by eliminating costs related to training and daily operation.

With a so-called wet lease, the lessor provides aircraft, complete crew, maintenance, and insurance to the airline. The lessee pays for fuel, airport fees, duties, and taxes. These are typically shorter-term leases ranging from one month to two years. A wet lease allows airlines to increase capacity quickly for short periods to meet market demand without having to maintain surplus aircraft, crew, operational support, and infrastructure.

A damp lease can increase efficiency and decrease costs by reducing some of the training, personnel, and operations costs. With a damp lease, the carrier leases the aircraft from a company fleet and provides some or all of the crew. In the United States and Canada, FedEx operates FedEx Feeder on a damp lease program; the contractor leases the aircraft from FedEx fleet and provides a crew to operate the aircraft. Sometimes, the contract carrier will operate the aircraft for multiple companies simultaneously. For instance, Air Contractors (Ireland) Limited (ACL) is a contract carrier that operates scheduled freight services on behalf of both FedEx Feeder and DHL Express in Europe. In this case, ACL is permitted to carry more than one company's cargo in its aircraft (DHL and FedEx packages), increasing efficiency.

Aircraft leasing also occurs between private airlines. Southwest leased 88 Boeing 717 aircraft to Delta after acquiring the 717s when it bought AirTran Airlines in 2011. Southwest's fleet consists of 737s. Southwest recognized that maintaining and operating two different aircraft increased its costs and recognized that complexity and cost of maintaining the Rolls-Royce BR715 engines in the 717s. For Delta, leasing used planes helped to replace aging planes (DC9s) without incurring the much larger costs of purchasing new planes outright, as well as it freed up capital for increased pilot salaries. The 717s also replace 50-seat regional jets that incur higher fuel prices per passenger, resulting in a lower cost of ownership.

The private sector experience demonstrates that leasing is a preferred strategy from a cost-efficiency perspective with regard to aircraft operation and maintenance. Like the commercial airline and carrier industry, the DoD, the MoD, and other countries' defense agencies are not always able to predict the number of aircraft required to meet their requirements, which makes leasing an attractive option that should continue to be explored.

The MoD attempted to use these commercial models to address Europe's aerial refueling tanker shortage, as well as to generate revenue. By the early 2000s, The U.K. was seeking to replace its aging refueling fleet of 1970s Vickers VC-10 and 1960s Lockheed L-1011 TriStar modified commercial tankers. Accordingly, in 2004 the UK Ministry of Defense (MoD) authorized the long-term lease of French Airbus A330 Multi-Role Tanker Transport (MRTT) through the use of a private finance initiative (PFI) with AirTanker, the owner of the aircraft. A PFI creates public-private partnerships by funding infrastructure and other capital-intensive projects with private capital. In

this case, reliance on a PFI allowed the MoD to avoid the large capital costs of replacing the TriStar and VC-10 tankers.

With PFIs, the private sector is typically responsible for designing and building the asset, raising the necessary finance, and then operating a service that uses the asset. Given the magnitude of these projects and the domains of expertise required, contracts are often awarded to a consortium of companies with experience in different fields.

In this case, a modified Airbus A330 aircraft, named the Voyager, was designed and produced by the Air Tanker Ltd. consortium of U.K. and French firms. The delivery of the product fell under the AirTanker Aircraft Supply division headed by EADS. Each Voyager is 197 feet long, carries 100,000 liters of fuel, and passes the fuel to other planes at 5,000 liters per minute (Cripps, 2012).

On March 27th, 2008, the U.K. signed the Future Strategic Tanker Aircraft (FSTA) service. This 27 year operating lease included 14 refueling aircraft at £750 million [over $1.24 billion USD] each for a total cost of over £10 billion [over $16.6 billion USD] (Lynam 2012; Military Factory 2013). The contract would provide the MoD with permanent access to nine aircraft—and up to 14 during times of crisis—as well as the necessary infrastructure, fuel, maintenance, ground services, and training through the year 2035.

The agreement also includes the provision of 14 sponsored reserve pilots and 48 qualified cabin crew. Moreover, the agreement stipulates that the MoD may sell any of its spare capacity to European partners. The contract also includes a provision whereby AirTanker can lease the five unused aircraft (for which there is significant commercial demand) to mutually-approved airlines and nations, which has served to reduce MoD costs. AirTanker CEO Phil Blundell summarizes the benefits of the agreement as follows: “the Defense Ministry has the benefit of these aircraft without having to pay for them to sit on the tarmac.” They can be brought in to support operations at any time, if additional capacity beyond that of the core fleet is required, so it is capability without the fixed cost.” According to AirTanker, the downtime required to remove or reinstall military fittings is less than one month (Pocock, 2013).

As of February 2014, the UK Royal Air Force (RAF) had already received seven aircraft, trained 18 aircrews, and begun operational flying (Air Force Technology, 2014a). The first flight was April 8, 2012 out of RAF's Brize Norton base (Global Gateway, 2012). Today, the Voyager has clearance to refuel Tornado and Typhoon fighters. In March 2014, the U.K. Royal Air Force (RAF) retired its L-1011 TriStar medium-to-long-range tanker/transports fleet, marking the official takeover of the Voyager as the UK's air-to-air refueling service (Air Force Technology, 2014a).

Although the PFI alleviates the burden of up-front capital costs and transfers the risk of ownership from the public sector to the private supplier, critics have asserted that an outright purchase of the Voyager would have cost £50 million per plane (outfitted for military use) for a total of £700 million. Note that this figure refers to the actual purchase price of the planes, and excludes the cost of the additional services included in the PFI agreement, nor does it include the resale value of the aircraft, which could serve to reduce costs to the MoD.

In March 2010, the U.K.'s National Audit Office (NAO; 2010), reported that "Shortcomings in the early stages of the project put the MOD in a position where the operational pressures of an aging fleet and the need to maintain the vital air bridge restricted its ability to deliver a solution which achieved value for money." According to the NAO, competition was limited, requirements never stabilized, and there was limited cost visibility. Moreover, there was no sound evaluation of other procurement approaches. Note that none of these criticisms impugns the procurement mechanism (PFI) so much as the process by which the procurement decision was reached. The DoD's attempt to lease tankers, discussed in Part III, demonstrates that competition can markedly reduce costs. It is reasonable to conclude that had the U.K. pursued a competitive strategy, the cost of the lease may have been reduced.

In any case, orders by other nations have begun to reduce costs. Multi-national purchasing and leasing spreads the fixed costs across nations, minimizes the operating and maintenance costs for all the participating nations, while increasing defense cooperation, thereby reducing the costs of other programs while bolstering capabilities—which is of increasing importance in an era of constrained defense spending in many western countries.

As of April 2014, 34 A330 MRTTs had been ordered by five different countries: Australia, Singapore, the UAE, the UK, and Saudi Arabia. Saudi Arabia has placed a second order as well. In April 2014, Qatar Emiri Air Force (QEAF) awarded Airbus a contract for two A330 MRTTs, and India is negotiating a contract for six aircraft. South Korea announced plans to purchase four aircraft and has begun the competitive bidding process to choose between the Boeing 767-level KC-46 Pegasus and the Airbus A330 multi-role tanker transport (MRTT; Air Force Technology 2014b).

Military Housing Privatization Act (MHPI)

On February 10, 1996, Congress enacted the Military Housing Privatization Initiative (MHPI) through the annual National Defense Authorization Act. MHPI is a PPP in which the private sector owns, operates, maintains, improves, and assumes responsibility for military family housing (ODUSD, 2001). Leasing figures prominently in many of the arrangements. Typically, for instance, a military service leases land to a developer for a term of 50 years. In addition, the service generally conveys existing homes that are located on the leased land to the developer for the duration of the lease. Once the newly-constructed or renovated housing project is completed, the service may lease the properties from the developer, either directly or through individual service members' base housing allowance. In either case, the effect is the same: The continuous income stream from these lease payments supports access to private capital, allowing the developer to expand, maintain, and recapitalize the initial investment.

The individual military services are responsible for executing the projects on their respective installations, and have been granted twelve separate authorities by the OMB, permitting them the flexibility needed to take advantage of local real estate market conditions (CRS, 2001).

MHPI Authorizations granted by OMB

1. Conveyance of real property: The Government may transfer title of Federal property to private ownership.
2. Relaxation of Federal specifications for housing construction: Builders are allowed to construct housing in accordance with local building codes.
3. Inclusion of ancillary support facilities: Bids for contracts may incorporate additional amenities, such as child care centers and dining facilities, to enhance the attractiveness of the basic housing.
4. Payment of rent by allotment: Landlords may receive payment of rents through automatic electronic fund transfer from the appropriate Federal disbursing facility, guaranteeing cash flow.
5. Loan guarantee: The Government may guarantee up to 80% of the private sector loans arranged by the property developer.
6. Direct loan: The Government may make a loan directly to a contractor.
7. Differential Lease Payment (DLP): The Government may agree to pay a differential between the BAH paid to Service members and local market rents.
8. Investment (Joint Venture): The Government may take an equity stake in a housing construction enterprise.
9. Interim leases: The Government may lease private housing units while awaiting the completion of a project.
10. Assignment of Service members: Service personnel may be assigned to housing in a particular project that they may otherwise not choose to occupy (tenant guarantee).
11. Build to lease: The Government may contract for the private construction of a housing project, and then lease its units.
12. Rental guarantee: The Government may guarantee a minimal occupancy rate or rental income for a housing project.

As discussed in Part IV, The Office of Management and Budget's (OMB) scoring guidelines require that government entities designate funds up-front to pay for capital leases and lease purchases; that is, the budget authority must be granted in the first year of the project to cover all years of the project. However, OMB scores projects, such as MHPI, on a case-by-case basis that takes into account the potential long-term liability. For example, in determining the budgetary implications of the housing project at Elmendorf Air Force Base, OMB guidelines were applied such that the venture's rentals of units to service members were viewed as "transactions among private parties, with minimal budgetary impact (CRS, 2003). According to CRS (2003), "the end result was that the Air Force obtained a $100 million construction project for an up-front budgetary cost of $23 million" (p. 42). According to the DoD and the OMB, the MHPI Authorizations comply with the Budget Enforcement Act of 1990 (which requires upfront scoring of leases) because, according to CRS, the MHPI authorizations and guidelines "do not consider the possibility that interactions among the different agreements between DoD and a housing venture might create a commitment that is more than the sum of its parts" (p. 39).

This interpretation relies, in part, on the assumption that the military will need to house service members for the foreseeable future and that base housing allowances and other means of payment will continue to be made available through congressional appropriation, and that the sum of these payments will remain more or less constant. Though this may seem reasonable enough, the Congressional Budget Office has publicly criticized the OMB, asserting that in some instances, the projects "achieved the practical effect of government ownership of the properties," and that "they should be recorded in the budget as lease-purchases with substantial risk for the government (CRS, 2003, p. 43). Of course, this would require that the ventures be scored up-front, rendering the MHPI unaffordable.

Nevertheless, it is difficult to impugn the CBO's interpretation because, taken as a whole, the OMB guidelines have allowed the DoD to acquire military housing without recording large upfront budgetary obligations (CRS, 2003; see Figure 6). The question, however, is whether similar guidelines or exemptions should be extended in the future for similar projects. Perhaps it is even fair to ask if the requirement to score upfront capital leases and lease-purchases should be relaxed or modified. The answer to the question should be based, at least in part, on the outcome of the MHPI program.

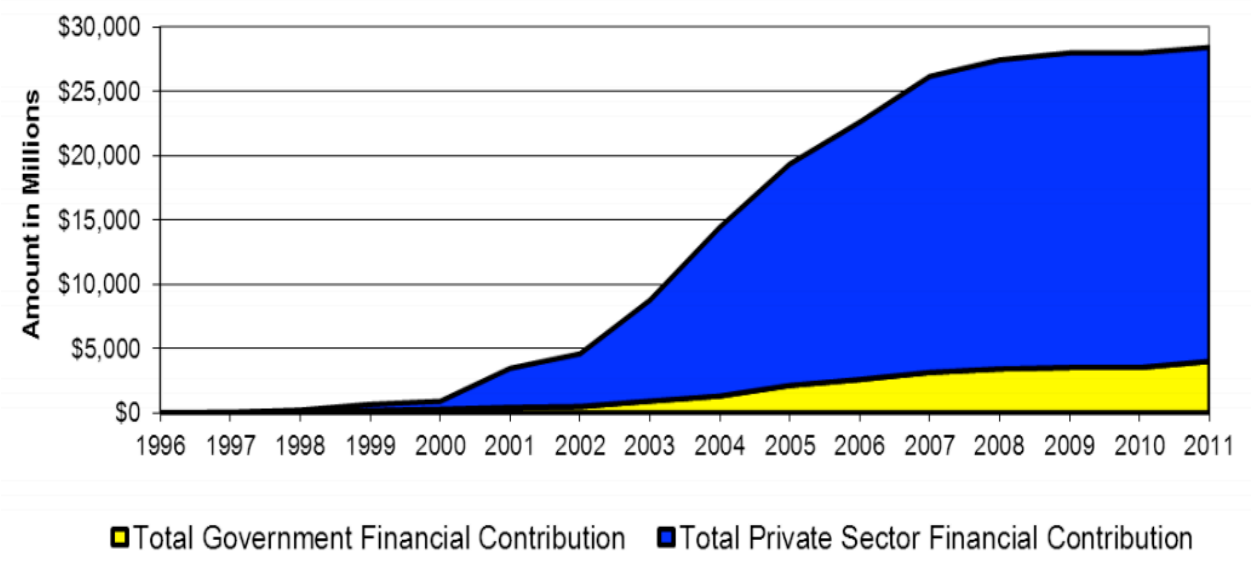


Figure 6. Government and private-sector contributions to MHPI

The DoD considers family housing privatization its most important and cost-effective effort to improve Service members' quality of life. Approximately 260,000 housing units were ultimately privatized across the DoD through MHPI (for sake of comparison, there were 53,000 government-owned units in 2012 [Cino, 2014]). The program has been universally lauded as both a success and a critical quality-of-life program for military families (Hayes & Scribner, 2013). According to Cino (2014), the program is "a sterling example of a successful public-private partnership" (p. 1).

This PPP enabled the government to provide affordable, quality housing to military families, resolving two longstanding problems. First, military housing owned by the DoD was in poor condition, and over 50 percent of units needed to be renovated or replaced following more than 30 years of insufficient maintenance (ODUSD, 2002). Second, quality, affordable private housing was in short supply. Military families housing allowances were often insufficient to rent or buy privately-owned housing, despite the DoD having spent over $20 billion on housing allowances in 2012 alone (Cino, 2014). Needless to say, both of these problems have negatively impacted military recruitment and retention.

Dollars in millions

			Estimated savings	
	Military construction option	Privatization option	Dollars	Percentage
Services' estimate				
Total cost	$3,128	$2,755	$373	11.9
Average project cost	$261	$230	$31	11.9
Our estimate				
Total cost	$3,297	$2,937	$360	10.9
Average project cost	$275	$245	$30	10.9

Note: Includes the awarded projects at Fort Carson and Lackland and the 10 remaining projects approved for solicitation that had a life-cycle cost analysis prepared by the services.

Figure 7. Estimated savings estimates produced by the services and the GAO.

The DoD estimated that it would have cost over $20 billion and 40 years for military construction to resolve the military housing crisis (GAO, 2009). By leveraging private market

competition, the MHPI quickly provided market-grade housing, at market prices. DoD and GAO life cycle cost estimates reveal that privatization has led to savings of at least 10.9 percent (see Figure 7). Moreover, opening the military housing construction market to the private sector has stimulated the economy while providing investors with a long-term return on investment (ODUSD).

V. Recommendations and Conclusion

It is difficult to draw firm conclusions regarding the efficacy of leasing in the DoD as much depends on what is meant by "efficacy." As mentioned previously, leasing is often more expensive over the life of a program, but in certain instances (e.g. the MPS lease), the program could not have been launched without resort to leasing, rendering lease-vs.-buy analysis a post hoc rationalization that critics have used to impugn leasing as a practice. Even within the seemingly narrow definition of cost-effectiveness, there is room for doubt, improper assumptions, and political posturing. Indeed, one of the benefits of leasing is quick delivery, yet rarely is the impact of this benefit considered beyond the program in question. However, failure to replace an ageing asset in a timely manner increases the costs to maintain deficient equipment, but typically fails to offset the cost of the replacement program within the context of lease-vs.-buy analysis.

In this report, we have sought to demonstrate that leasing, particularly long-term leasing of capital assets is appropriate when the DoD requires near-term capabilities, short-term affordability, and long-term stability; allowing the DoD to avoid upfront costs, and thus preserving funds for other needed programs. Moreover, we posit that in order to fully leverage the benefits that leasing can offer, the DoD should consider increasing its reliance on lease-based public-private partnerships; which capture private-sector efficiencies in financing, construction, and operation; and which can translate to lower program costs (relative to traditional procurement), allowing the DoD to partially offset the slightly higher cost of typical lease agreements (relative to outright purchase) while gaining the benefit of faster delivery at reduced risk.

Recommendations

1. Modify existing leasing restrictions.

- The OMB should reconsider the upfront scoring requirement for long-term capital leases and lease-purchases.

  Given continuing budgetary pressure, government agencies should have recourse to diverse funding options that allow them to meet mission requirements; recognizing that the relative importance of short-term affordability and long-term cost effectiveness may vary from program to program. Eliminating or relaxing the upfront scoring requirement will also serve to reduce the incidence of capital leases "disguised as operating leases," which is an inefficient practice.

- Congress should lift restrictions on short-term vessel leasing.

  Doing so allows the services to take advantage of private-sector equipment and systems to meet operational requirements of indeterminate duration.

2. Pursue innovative leasing agreements.

- The DoD should pursue agreements that leverage the relative strengths of the public and private sectors.

  The DoD may wish to draw from the U.K.'s approach and consider innovative leasing agreements that, for example, allow for the sale of spare capacity to U.S. allies.

- Future lease agreements must be structured with appropriate "off-ramps."

  Providing off ramps will help eliminate the perception that long-term lease agreements "tie the hands" of future Congresses. As it stands, Congress is already reluctant to engage in multi-year procurements, let alone long-term leases.

3. Focus on performance and value.

- The DoD should continue to rely on the global defense industry (via lease or purchase).

  The DoD must continue to rely on competition whenever possible, including competition among domestic and foreign suppliers. It is abundantly clear that reliance on foreign sources for production has allowed the DoD to achieve higher performance, while reducing costs and improving deployment times. In particular, the lease of dual-use technologies has the potential to reduce both upfront and long-term costs.

Conclusion

Given the current budgetary environment, the DoD must reconsider how it acquires needed capabilities quickly, effectively, and affordably. Current leasing restrictions needlessly constrain program-specific evaluation of these three elements. Of course, the DoD must work to strike a balance between short-term affordability and long-term financial sustainability. This means "value for money"—not just "off balance sheet" considerations—must guide the initiation of long-term lease agreements. At the same time, the definition of value for money must be expanded to take into account asset obsolescence, the growing costs of maintaining ageing assets, and the potential for mission failure, all of which are more likely to occur in an environment where the practice of leasing cannot be pursued.

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