



**AN EVALUATION OF PUBLIC AND PRIVATE SECTOR
HOUSING ALTERNATIVES FOR MILITARY FAMILIES**

THESIS

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Abstract This study explored the three primary housing alternatives along with their associated benefits and costs for military members at Robins Air Force Baswe. Using a case study methodology, qualitative and quantitative data were collected from contract documents, cost records, statements and testimonies to Congress, literature, census data, and interviews with civil engineering, contracting, financial management and legal professionals. This data was analyzed to determine which housing alternative seems to provide the best benefits at the lowest costs for military members and the government. The results of the study indicated that private sector alternatives are less expensive than government provided housing. In addition, it appears that the MHPI is reaching its goals of providing housing faster and at a lower cost to the American taxpayer than traditional on base housing.		

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ALTERNATIVES FOR MILITARY FAMILIES

THESIS

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Lawrence P. Kokocha, Jr.

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Abstract

Ever since this country's origins, housing military members and their families has provided challenges to the Department of Defense (DoD) and the United States government. With today's all-volunteer force, the military continually competes with the private sector for skilled personnel by relying on quality-of-life issues such as quality shelter. At the same time, limited resources present constraints as defense budgets decline while the costs associated with housing escalate. Further problems include aging and inadequate DoD domestic housing units. Today, the military relies on three primary alternatives in the public and private sector to house its military families: government-owned on-base housing, private sector local community civilian housing, and a new initiative called the Military Housing Privatization Initiative (MHPI) designed to cost effectively correct the military's aging housing inventory.

This study explored the three primary different housing alternatives along with their associated benefits and costs for military members at Robins Air Force Base. Using a case study methodology, qualitative and quantitative data were collected from contract documents, cost records, statements and testimonies to Congress, literature, census data, and interviews with civil engineering, contracting, financial management and legal professionals. This data was analyzed to determine which housing alternative seems to provide the best benefits at the lowest costs for military members and the government.

The data indicated that private sector alternatives are less expensive than government provided housing. In addition, it appears that the MHPI is reaching its goals of providing housing faster and at a lower cost to the American taxpayer than traditional on base housing.

AN EVALUATION OF PUBLIC AND PRIVATE SECTOR HOUSING ALTERNATIVES FOR MILITARY FAMILIES

I. Introduction

“No soldier shall, in time of peace be quartered in any house, without the consent of the owner, nor in time of war, but in a manner to be prescribed by law.”

-- U. S. Constitution. Amend. III

This chapter introduces the framework on the evaluation of the three primary housing alternatives via the public and private sector for military families. These three housing alternatives consist of the following:

- Public provided on base, military family housing constructed by contractors using military construction (MILCON) funding. After construction, these houses are operated and maintained via military engineering and housing offices.
- A new private sector program titled Military Housing Privatization Initiative (MHPI) where contractors build and operate housing primarily designated for military member occupation over a period of 20 to 50 years. Privatized housing units are constructed via statutory authorities such as direct loans and loan guarantees; leasing of housing to be constructed; investments in nongovernmental entities, and conveyance or lease of existing government property and facilities. Once developed, the houses are also operated and maintained by contractors with funding provided through military member monthly housing allowances.
- Providing military members housing allowances known as basic allowance for housing (BAH) to live in local private sector housing in local communities surrounding military installations

Background

The Third Amendment was placed into the Constitution due to the colonists' opposition to the quartering of British soldiers in their private homes during the Revolutionary War (Baldwin, 1993:1). Implicated by this law, the military has perceived an obligation to provide quarters for its personnel and their families (Baldwin, 1993:1; Twiss and Martin, 1998:1). In 1782, Congress authorized the Army to furnish one covered four-horse wagon and one two-horse wagon to a Major General -- this was the first provision for military housing (Defense Science Board, 1995:60). Today, housing military families is big business. In 2002, the military family housing budget for the DoD provides \$3.0 billion for operating and maintaining almost 300,000 family housing units and \$1.1 billion for constructing and improving family housing units (Defense LINK, July 3, 2001). In addition, the military provides approximately \$8 billion in housing allowances to military members living in the local communities near their duty stations (Folkes, 2002). The Air Force houses over 285,000 thousand families via an inventory of 106,000 houses with the remaining sheltered in community housing mostly near Air Force installations (Gaffney, March 2001).

According to the Under Secretary of Defense, Industrial Affairs and Installations (DUSD(I)), approximately 200,000 or two-thirds of the Department of Defense (DoD) domestic housing units are inadequate (Goodman, 12 March 1998). Further, fixing this problem using traditional military construction alone would cost as much as \$20 billion and take over 30 years (Goodman, 12 March 1998). Other sources claim that 180,000 of DoD's housing units require renovation or replacement that would cost taxpayers \$30

billion and up to 30-40 years to solve using traditional military construction (CS&P, 2001).

Designed to solve the military's family housing infrastructure, the National Defense Authorization Act for Fiscal Year 1996 provided legislation that initiated the housing privatization program. Under the Act, Public Law 104-106 110 Stat 186 Section 2801 provides authorities which allow the DoD to work with the private sector to build and renovate military housing (CS&P, 2001).

Problem Statement

The Department of Defense (DoD) Budget Authority in fiscal year 2000 constant dollars has declined from a peak in 1985 of \$424B to a projected amount of \$280B in 2005 (Kosiak and Heeter, 1999). Declining DoD budgets, declining DoD procurement funds, and a declining DoD workforce have added additional challenges to satisfying housing needs of military families. In order to meet these challenges, much dependence has been placed upon privatization to reduce costs and the number of personnel required to support housing operations. However, there seems to be a lack of empirical evidence to support this assumption.

Research Objectives

Two primary research objectives were used to guide the thesis effort.

- 1) Compare and contrast the three different housing methods using the case study methodology at two Air Force bases.
- 2) Develop lessons learned and provide feedback on the procedures used to house military families.

Research Questions

This study explores the different housing options along with their associated funding activity costs for military members at two Air Force bases. Housing privatization advocates claim that privatization provides housing for military members faster and at a lower cost to the American taxpayer (CS&P, 2001). The following research questions set the basis for this study:

- 1) Are there any initial indications that housing privatization provides housing faster and less costly to the government and the American taxpayer?
- 2) What costs are associated with housing military families via on-base MILCON family housing, housing privatization, and local community housing?
- 3) Which military family housing system is the most favorable in terms of benefits to military members and the Air Force as well as cost to the government and American tax payer?

Methodology

This research employed the case study methodology using qualitative and quantitative methods. The study made use of various sources of evidence including documentation such as contract documents and cost records; archival records such as statements and testimonies to Congress, literature, and census data; interviews with civil engineering, contracting, financial management and legal professionals representing different Air Force and Department of Defense (DoD) command levels. Data collection was centered upon the research questions and objectives of this study. Data was then analyzed to draw attention to and assemble comparisons on the different housing methods employed at the two different bases.

Scope of Research

The three primary housing options available to military families today were studied at purposely chosen Robins AFB Georgia. This Air Force installation was selected since it uses Military Construction (MILCON), privatized, and local community housing to accommodate military families. The Robins AFB project requiring the renovation of 300 existing military family housing units as well as the constructing of 370 new units, was awarded two years later in September 2000.

Assumptions/Limitations

Due to the use of a case study methodology, generalizations drawn from the study may not apply to the population of military family housing methods at all Air Force bases or other DoD installations. The analysis and results of this study apply to the housing alternatives used to accommodate military families at Robins AFB. Nevertheless, even single cases may be used to confirm or challenge a theory, or represent a unique or extreme case (Yin, 1994). Conclusions from this study can provide lessons learned and improvement recommendations that can assist future housing decisions for military families.

Review of Chapters

The literature review provided in Chapter 2 explores the evolutionary history of housing military families and housing preferences of military members. Chapter 2 also investigates economic theories of utility maximization and the lump sum principal in its application to transfer policy on housing subsidies. Further, Chapter 2 explores the expenditures as well as funding instruments employed on the different housing

alternatives. A detailed explanation of the methodology used for this study is provided in Chapter 3. In Chapter 4, Results and Analysis, the case study results along with individual case study analysis and cross-sectional analysis are provided to select the most beneficial housing alternative in terms of qualitative benefits for military members and the government as well as quantitative costs to the government and taxpayer. Finally, Chapter 5 provides the conclusions that were drawn from the results of the case study as well as suggested alternatives on the procedures used to house military families assigned to domestic Air Force installations.

II. Literature Review

This chapter provides background and outlines the problem area studied by this research effort. It investigates literature on the subject and evolutionary history of military family housing, basic allowance for housing (BAH), and housing privatization. This history is critical to understanding the current military family housing and compensation systems. The chapter also explores literature discussing housing preferences of military families. In addition, it examines two fundamental economic theories explaining the differences in costs associated with public and private sector housing alternatives for military families: utility maximization and the lump-sum principle in its application to transfer policy. These theories claim that providing a direct cash subsidy such as BAH is better than providing a government provided house such as military family housing on base. Finally, the chapter examines the expenditures in addition to the funding accounts employed to house military families via the three primary housing alternatives.

First, on-base military family housing, including background, history, definitions, and current policy is outlined. Second the background, history, definitions, and current policy on housing allowances is discussed. Third, the newest method associated with housing military families, housing privatization, including its background, history, definitions, and current policy is outlined. Fourth, the economic theory of utility maximization and lump-sum principle in its application to transfer policy concerning costs associated with housing subsidies is explained. Finally, a summary of expenditures and funding mechanisms for military family housing is provided.

History of On-Base Military Family Housing

Soon after the American Revolution, many colonists felt the Constitution should contain a special guarantee of those rights for which they had fought in the Revolutionary War. The third amendment states “No soldier shall, in time of peace be quartered in any house, without the consent of the owner, nor in time of war, but in a manner to be prescribed by law.” This regulation against the quartering of soldiers in people’s homes without the consent of the householder is based on the ancient principal of English law: “a man’s house is his castle.” (Bragdon, McCutchen and Cole, 1973:139). The amendment also reflects grievances against the British government before the Revolution. The British had quartered redcoats in private houses (Bradgon, McCutchen, and Cole, 1973:139).

Historically, by implication of the Third Amendment, the military services have perceived an obligation in peacetime to provide housing for its soldiers (Baldwin, 1993:1). This is the basis for the entitlement to military housing and related court decisions upholding the government’s responsibility to provide housing for its military (Twiss and Martin, 1998:1; House Subcommittee on Military Construction Appropriations, 1980, pp 570-571). The Third Amendment concludes that in wartime soldiers will be quartered “...in a manner to be prescribed by law” (Baldwin, 1993:1). “Whether by law or necessity, the United States has housed its military in temporary and rudimentary facilities, ranging from tent camps to wooden barracks” (Baldwin, 1993:1).

Prior to the twentieth century, the U.S. had a relatively small standing military force, with the bulk of this force comprised of single unaccompanied males in the enlisted ranks (Baldwin, 1993; CBO 1993; OASDP&R, 1993). These men were

expected to be, and treated as if they were, universally single. They lived in barracks or aboard ship (Defense Science Board, 1995). Still a number of enlisted men not eligible for military family housing always had family responsibilities (Albano, 1994).

Throughout the nineteenth century, wives and loved ones known as “camp followers” followed troops and gathered in port cities and near frontier posts (Baldwin, 1993:1).

The history of peacetime military housing is essentially a history of the birth and defense of the United States (Twiss and Martin, 1998:3). Army fortresses emerged to meet the needs of a country that first had to protect its vulnerable coastline and later defend its rapidly expanding western frontiers and the settlers moving there (Baldwin, 1993). “In a sparsely populated, developing Nation, the establishment of a fortress necessitated building shelter” (Twiss and Martin, 1998:3). Coastal fortification construction began in 1794, mainly consisting of earthen and wooden structures (Baldwin, 1993:2). Gradually, construction of permanent masonry structures such as Fort McHenry and Fort Mifflin evolved due to the growing threat of war (Baldwin, 1993:2). The War of 1812 along with the British burning of our Nation’s Capital enforced the need for coastal fortifications to protect America from overseas invasion (Baldwin, 1993:2). Following the War of 1812, expanded construction of coastal forts occurred such as Fort Monroe, which provides Quarters One, the oldest military housing existing today (Baldwin, 1993:2). While protection of ports and harbors required coastal forts, as the nation expanded westward after the Louisiana Purchase, protection against Indian attacks, the Mexican War, invasions from the north, and the Civil War required frontier forts and arsenals (Baldwin, 1993:2).

Although these new permanent forts required provisions for housing troops, there was no requirement for other than basic housing (Baldwin, 1993:2). Minimal congressional appropriations could not keep up with the need to construct adequate quarters for officers and barracks for troops (Baldwin, 1993:2). Much like the problems facing military family housing today, “inadequate money for maintenance and repair meant that over the years facilities deteriorated” (Baldwin, 1993:2). “Assignment to a permanent fortification on the coast did not guarantee good living conditions for officers, soldiers, or their families” (Baldwin, 1993:2). According to Baldwin, living conditions on the Western frontier were even worse.

The soldiers provided the labor for building the defenses and their living quarters. Often these frontier posts were primitive, unsanitary, and prone to rapid deterioration. If living facilities for officers and soldiers were rudimentary, those for the soldier’s families were wretched. Abandoned barracks, old stables, or shanties often served as family housing. Poor housing in the West and along the coast led an 1870 Surgeon General’s report to assert that the United States had the best-fed and worst-housed Army in the world. (Baldwin, 1993: 2-3)

Between 1890 and World War I, the Army experienced its first major peacetime building campaign as appropriations for construction steadily increased (Baldwin, 1993:3). This military housing buildup coincided with international empire building, continued rapid industrialization and worker unrest, urbanization and expanded civilian housing production, as well as efforts to reform factories and communities (Twiss and Martin, 1998:3). At the turn of the century, the boom in military construction focused not just on the production of housing, but of military communities (Twiss and Martin, 1998: 3; Baldwin, 1993:3). These communities provided amenities comparable to small towns: post exchanges (stores), schools, libraries, and gyms (Baldwin, 1993:3). A greater

emphasis on permanent, livable, even modern housing occurred while the country's strategic obligations changed (Baldwin, 1993:3). Improved living conditions coincided with a decline in the rate of desertion (Baldwin, 1993:3). The desertion rate did decline at the end of the century, perhaps reinforcing General William T. Sherman's contention in 1883 that it was time that the country treated "...the soldier as a fellow man" (Baldwin, 1993:3).

During World War I, the construction of temporary mobilization housing to support the war became the highest priority (Baldwin, 1993:4). The housing needs of military officer families were recognized for the first time in 1918 by a temporary war measure (Twiss and Martin, 1998: 5; Segal, 1989; OASDP&R, 1993). However, the housing needs of families of enlisted members were still not recognized. Access to military family housing was merited or deserved only by those who have paid their dues through a demonstrated commitment to a military career—and the sacrifices and responsibilities associated with this career commitment (Hartman & Drayer, 1990). "Two themes—"rank has its privilege (RHIP)" and "reward as a form of social control"—are also enduring and can be traced through the development of subsequent efforts to enhance the quality of life of military members (Twiss & Martin, 1998).

Due to isolationism, declining military budgets, and declining military personnel strength following World War I, the Secretary of War authorized necessary repairs and temporary construction only and prohibited new construction (Baldwin, 1993:5). Without enough permanent housing, the Army relied on temporary facilities constructed during the war, which rapidly deteriorated due to inadequate maintenance while the private sector was experiencing a major postwar housing construction boom (Baldwin,

1993:5). In 1927, the Chief of Staff of the Army publicly embarrassed the Coolidge administration stating that Army housing was a disgrace (Baldwin, 1993:5). In response, leading national magazines published “Our Homeless Army” and “Army Housing: A National Disgrace” (Baldwin, 1993:5). This negative publicity caused Congress and the administration to approve more money for housing, which led to the second major boom in peacetime housing construction (Baldwin, 1993:5). In addition to housing construction, architects and city planners produced several standardized plans adaptable to various regions of the country (Baldwin, 1993:6).

During the Great Depression, the government supported civilian and military housing projects to boost a dwindling construction industry. President Hoover directed federal agencies to speed public works projects, providing a boost to peacetime military housing construction (Baldwin, 1993). President Roosevelt’s New Deal furthered this development (Baldwin, 1993). “The primary objectives of U.S. military housing policies would be to create jobs through public works and spur the economy by encouraging private financiers to pump money into the market” (Twiss and Martin, 1998:7). According to a Congressional Budget Office study in 1993, almost 3% of the current military family housing inventory as built prior to 1940 (CBO, 1993:2; Twiss and Martin, 1998:7).

World War II and its demands once again brought increased attention to policies that would ease the burdens of military life and retain career personnel. At the end of World War II, as a matter of policy, the 1949 Career Compensation System made public quarters available to career enlisted members (Twiss and Martin, 1998:10). Personnel in grades E-1 through E-4s with less than seven years of service were still required to live in

barracks or aboard ship. These military members continued to be treated as though they did not, and should not, have family members (Twiss and Martin, 1998:10).

In support of World War II and the Cold War, the sheer size and nature of the U.S. Armed Forces presented the military services with a “housing crisis” of dramatic proportions (Baldwin, 1996). The Army was at least seven times larger than the peacetime Army of the thirties, even after demobilizing millions of soldiers following V-J Day in 1945 (Baldwin, 1996:1). In addition, the percentage of married members rose from 35 percent to 45 percent in the 1950s, with about one third of the enlisted force consisting of married households in 1953 (Twiss and Martin, 1998: 11). Much like military housing, the civilian housing sector in the United States following World War II experienced a housing crisis (Twiss and Martin, 1998:11). A massive suburban housing boom, renewal of the national public housing program, and the launching of the most productive period of military family housing occurred during the late 1940s, 1950s, and early 1960s. The new military family housing expansion took place under two privatization initiatives: the Wherry housing program and its subsequent replacement the Capehart housing program. During the 1950s and 1960s, these programs produced approximately 200,000 housing units, which is about two-thirds of the current military family housing inventory nationwide (Twiss and Martin, 1998:15; CBO, 1993:3). These efforts, which were added to the National Housing Act of 1949, are discussed later in this paper under the Housing Privatization section in this chapter.

The Capehart privatization program ended in 1962 under the Kennedy administration (Twiss and Martin, 1998:16). “Military family housing was no longer included as a title under the National Housing Act and no longer under the purview of the

Banking and Currency Committees of the House and Senate—which have traditionally, and continue to have oversight responsibilities for civilian housing policies. The construction of all base military family housing was once again handled exclusively through military appropriations” (Twiss and Martin, 1998:17). The Kennedy administration pursued a moderate military family housing construction program. This policy continued under the Johnson administration as well as the Nixon administration until the end of the Vietnam War. The DoD constructed approximately 8,000 new family units per year during the 1960s and early 1970s (Twiss and Martin, 1998:18). This production declined to approximately 1,000 units per year by the close of the 1970s (Twiss and Martin, 1998:18; Defense Science Board, 1995:62).

In lieu of military family housing construction, the government relied upon the private sector to accommodate most military families via housing allowances combined with newly created Department of Housing and Urban Development (DHUD) programs (Twiss and Martin, 1998:18-19). Two of the primary programs used under DHUD include FHA mortgage guarantees and interest subsidies for low- and moderate-income family rental housing (Twiss and Martin, 1998:18-19). These DHUD programs are discussed later in this paper under the Basic Allowance for Housing (BAH) for local community housing section in this chapter. As the Vietnam War was ending and the services prepared for a significant force draw down and the inception of the new All-Volunteer Force, President Nixon announced a moratorium on subsidized housing programs under DHUD jurisdiction in the early 1970s decrying its structure and results (Twiss and Martin, 1998:19, 22).

The formation of an all-volunteer force, which began on 1 July 1973, required more services and benefits to soldiers and their families (Baldwin, 1993:12). The reduction in military personnel strength after the Vietnam War reduced pressure on military family housing; however, the condition of military family housing was not enough to induce enlistment or reenlistment (Baldwin, 1993:12). Further, the proportion of married military members increased, reaching 60 percent in 1977 (Baldwin, 1993:12). Responding to the need of better family housing, Congress authorized construction of more than 12,000 units a year from 1973 to 1975 (Baldwin, 1993:12). This presented the fourth period of dramatic increase in quality and inventory of military family housing (Baldwin, 1993:12). However, soaring fuel costs, rapid inflation, and new budget priorities of the Carter presidency resulted in less dollars for new construction during the later 1970s (Twiss and Martin, 1998: 26; Baldwin, 1993:13). Since DoD pays the utility bills for military quarters, more operation and maintenance dollars paid for rising utility costs, which resulted in fewer funds available for repair and upkeep of existing military housing (Twiss and Martin, 1998:26). In addition, dollars appropriated for new construction were insufficient in the context of rapid inflation causing cost overruns to become a significant problem (Twiss and Martin, 1998:26).

By the earlier 1980s, 80 percent of the officers and enlisted career force, and 28 percent of first-term enlisted members were married (Baldwin, 1993:14). The DoD began including junior enlisted members in its calculation of military family housing requirements even though their access to military housing units remained limited (Baldwin, 1993:14). During the 1980s, base closure and realignment discussions carried over from the 1970s (Twiss and Martin, 1998:41). “Members of Congress cautioned use

of military construction funds, particularly where policy changes might lead to the future abandonment of projects” (Twiss and Martin, 1998:41; Towell, June 5, 1982,1343).

However, Congressional members focused money on domestic bases, especially home districts, and Reserve and National Guard projects (Twiss and Martin, 1998:42). During this period, most of the new construction focused on junior career members in grades E-4 through E-6 (Twiss and Martin, 1998:46; House Subcommittee on Military Construction Appropriations, 1980:537). Using the defense spending increases of the Reagan era, DoD continued pursuing new construction of family housing for career force members who desired on-base housing where the private sector was not meeting demand (Baldwin, 1993: 15; Twiss and Martin, 1998:47). This presented the fifth period of housing growth in the history of the military (Baldwin, 1993:15). However, it was noted that many career personnel had no desire to live on base (Twiss and Martin; 1998: 47; House Subcommittee on Military Construction Appropriations, 1980, p. 569). According to figures from the Department of Commerce, funding for military family housing increased from \$2.6 billion to \$2.9 billion between 1985 and 1987, a 12% increase (Twiss and Martin, 1998:47). In 1988, funding increased to \$3.1 billion and in 1989 it reached \$3.3 billion (Twiss and Martin, 1998: Department of Commerce, 1995). In 1989, a Military Construction Appropriation fund was established to finance base closures and consolidations recommended by the Secretary of Defense’s Commission on Base Realignment and Closure known as the BRAC Commission (Twiss and Martin, 1998:42). Although increases in construction of adequate housing occurred, the 1980s housing program was expensive and began to decline with defense budgets during the latter part of the decade (Baldwin, 1993:16).

Quality of life initiatives during the 1990s enabled access to on-base military family housing for more junior enlisted members (Twiss and Martin, 1998:61-62). Unfortunately, much of the existing stock of military family housing continued to be quite old; two-thirds of the current stock was acquired during the 1950s and 1960s (Twiss and Martin, 1998:64; CBO, 1993:3). Many units required repair or replacement. The Marsh Report issued in 1995 by the Defense Science Board Task Force on Quality of Life, commissioned under Secretary of Defense William Perry, featured a section on the poor state of DoD's military family housing assets (Twiss and Martin, 1998:64; Defense Science Board, 1995:19). This report recommended the creation of a Defense-wide non-profit Military Housing Authority; however, the housing authority was not put into service (Twiss and Martin, 1998:64-65). Projected budgets for maintenance and repair would not allow the military to prevent the steady deterioration of its aging family housing inventory. In response to this problem, Congress authorized the Military Housing Privatization Initiative (MHPI) under the National Defense Authorization Act in 1996, which includes a series of authorities enabling the DoD to work with the private sector to build and renovate military housing.

Monetary Allowances for Housing

The Joint Service Pay Act of 1922 set the essential framework for the current system of base pay plus allowances and represented a beginning in the shift away from purely in-kind provision of assistance (Baldwin, 1993:5). When not provided with government quarters, officers and warrant officers would receive an allowance for quarters, based upon grade and dependent status (Baldwin, 1993:5). This allowance was

based upon national monthly costs associated with renting one room; larger families were authorized more rooms (Twiss and Martin, 1998:6). This act addressed low pay and poor living conditions cited as causes of actual increased desertion rates, lower reenlistment rates, and new recruiting difficulties during the nations prosperous years in the 1920s (Baldwin, 1993:5).

Although officers received housing benefits, enlisted personnel were treated as if no one else depended upon their wages for sustenance or shelter (Twiss and Martin, 1998:6). The Pay Act of 1922 actually reduced the pay of enlisted members as “the Army assumed that these personnel were single and therefore not entitled to allowances for dependents” (Baldwin, 1993:5). As living conditions of married enlisted men declined, the Army responded by discharging enlisted men who married without permission as late as the summer of 1939 (Baldwin, 1993:5).

In 1940, if no quarters were available, senior enlisted members with dependents were authorized cash substitutes (Twiss and Martin, 1998:10). The rental allowances first developed in the 1920’s for officers and warrant officers were fixed as a monthly sum based on an officer’s pay grade and dependency status by 1942 (Twiss and Martin, 1998:10). Following the end of World War II, the 1949 Career Compensation Act offered “career soldiers” with at least seven years of service basic allowance for quarters (BAQ) when public quarters were not available (Baldwin, 1993:7). Continuing the tradition of assuming enlisted personnel were single, military members below grades E-4 with less than seven years of service were considered to be without dependents (Baldwin, 1993:7).

In 1950, Congress enacted the Dependents Assistance Act (DAA), which temporarily suspended “permanent” BAQ for all enlisted personnel (Baldwin, 1993:7). Intended to relieve the financial burden associated with obtaining private sector housing, DAA granted a housing allowance for members with dependents; however, the allowance was different than that given to officers (Baldwin, 1993:7). Under DAA, the allowance for enlisted personnel increased with the number of dependents up to three; however, the member had to establish a monthly “Class Q” allotment from pay (Baldwin, 1993:7).

The Kennedy administration shifted its attention to private sector development of housing for military families by focusing its attention on offsetting the costs of private sector housing for families through housing allowances, attracting private investment and seeking public subsidies to develop needed family housing (Twiss and Martin, 1998:17). This included attempts “to use newly created Department of Housing and Urban Development (DHUD) programs, particularly FHA mortgage guarantees and interest subsidies for low- and moderate-income family rental housing” (Twiss and Martin, 1998:17). In 1962, Secretary of Defense Robert S. McNamara “acknowledged as official DoD policy what had been the de facto situation, reliance upon the private sector to accommodate most military families” (Baldwin, 1993:10; Twiss and Martin, 1998:10). In addition, McNamara centralized the management and funding of family housing across the services in the Office of the Secretary of Defense (Twiss and Martin, 1998:18). He pursued enhanced allowances by increasing BAQ for the first time in ten years to support military families living on the economy.

McNamara also pursued another policy change concerning off-base housing for African American military personnel (Baldwin, 1993:11). During the 1960s, the DoD

pursued social ends with its housing policies that affected civilian and military communities (Twiss and Martin, 1998:18). To defend against bigotry, Secretary McNamara launched a series of measures that forbid all service members from renting or leasing housing from landlords who discriminated (Baldwin, 1993:11). According to a study on the impact of these anti-discrimination policies on civilian housing, the military was quite successful in desegregating housing (Twiss and Martin, 1998:18; Hershfield, 1985:23). “The importance of the military to the local economy” was a key factor in explaining the extent of this success (Twiss and Martin, 1998:18; Hershfield, 1985:23).

The newly organized DHUD frequently made available a subsidized apartment for junior enlisted personnel with families, excluded from military family housing (Twiss and Martin, 1998:18-19). “In the context of its orientation to housing families in the private sector, the DoD counted on the low- and moderate-income subsidized federal housing programs sponsored by DHUD to solve the problems of junior enlisted and mid-grade members with families” (Twiss and Martin, 1998:19; House Subcommittee on Military Construction Appropriations, 1973:125-126). For example, in the early 1970s, the DoD focused on a program to subsidize the private construction of low-income rental units: the Section 236 program (Twiss and Martin, 1998:19). Although unsuccessful in its efforts, the DoD also pursued Federal Housing Authority (FHA) insurance guarantees for construction projects in areas in which there were large military bases as DHUD considered these areas high risk (Twiss and Martin, 1998:19). According to Twiss and Martin, George O. Hipps, Jr., a DHUD official, explained why DHUD programs might not be helpful to defense-affected areas during a testimony. Hipps stated that FHA

insurance is not a direct subsidy. It only assists in the production of market-rate rentals where private developers actively pursue projects (Twiss and Martin, 1998:34).

The 1970s brought unparalleled inflation combined with slow growth and high rates of unemployment. “The term stagflation was coined to describe the slow growth and high inflation rates of the seventies” (Twiss and Martin, 1998:25). A fuel crisis and soaring utility costs resulted from developments in the Mideast (Twiss and Martin, 1998:26). Military members living on the economy were the most adversely affected as those living in government provided housing do not pay for their utilities (Twiss and Martin, 1998:25). In the 1970s, housing affordability and availability were issues for both military personnel and civilians (Twiss and Martin, 1998:31). Due to the depressed housing industry, the number of apartments available for rent decreased (Twiss and Martin, 1998:31). Studies began on variable housing allowance to help offset the cost discrepancies suffered by families living off base in different parts of the country (Twiss and Martin, 1998:34). In addition, a fair market rental strategy for unaccompanied and accompanied military members surfaced (Twiss and Martin, 1998:34).

Housing allowances were a growing concern during the 1980s. Production of low- and moderate-income housing decreased during the 1981-1982 recession years and remained relatively sluggish throughout the decade (Twiss and Martin, 1998:48-49). DoD representatives repeatedly noted two common housing problems: access to reasonably priced housing in high-cost localities dwindled and private industry was not producing affordable housing for junior enlisted members in the high-cost areas (Twiss and Martin, 1998:49). The services attempted to resolve these problems on the compensation side via enhanced allowances to subsidize existing civilian housing while

simultaneously attacking the supply side through privatization initiatives under Section 801 and 802 discussed later in this chapter (Twiss & Martin, 1998:49).

The 1980 Military Personnel and Compensation Amendments signed by President Carter established the Variable Housing Allowance (VHA) (Twiss and Martin, 1998:50). Designed to limit housing costs paid out-of-pocket by members within the same grades when they were living in high-cost housing areas, VHA was initially used whenever military housing costs exceeded 115% of the BAQ (Twiss and Martin, 1998:50). At the time, by pay grade, the BAQ covered approximately 65% of the median military cost of housing on the economy (Twiss and Martin, 1998:50). “The original goal of the VHA was to limit out-of-pocket cost absorption to no more than 15% of the median military housing costs” (Twiss and Martin, p 50).

VHA rates were based on the median monthly costs of housing actually experienced by military members of comparable rank and dependency status, by location, rather than the median monthly costs of housing, by location. In high-cost areas, basing allowances on military member costs leads to insufficient allowances because military members tend to both “rent down” – taking housing of insufficient size and of poorer quality-to maximize their allowances on the economy, and to get less housing at a greater cost relative to civilians in the same area. Alternatively, in low cost areas, military members may “rent up” – taking housing of greater size and quality than they might otherwise be able to afford. This may produce inflated military housing costs in low-cost areas (Twiss and Martin, 1998:50).

The percentage of housing costs not covered by combined BAQ/VHA allowances rose from 10% to 20% between 1981 and the early 1990s as the value of BAQ did not keep pace with housing costs (Twiss and Martin, 1998:50). However, waiting lists for on-base housing decreased in the early 1980s, which may have been attributable to the

inception of VHA (Twiss and Martin, 1998:51). Therefore, the increased lump-sum payment via VHA may have improved the quality of life of military members.

During the 1990s, DoD housing policy continued to dictate that military families primarily seek housing in the local civilian community. “Approximately 70% of military families stationed on domestic installations, were living in private, off-base housing in the mid-nineties” (Twiss and Martin, 1998:63). The 1997 National Defense Authorization Act contained a provision tasking the DoD and the Services to reform and streamline the flat rate BAQ and VHA into a single allowance based on rental costs by location. The Office of the Secretary of Defense (OSD) and the Services agreed the new allowance would contain a “save pay” provision to retain existing housing allowances until members relocated due to permanent change of station (PCS). On 18 November 1997, President Clinton signed the 1998 National Defense Authorization Act (Garamone, Army News Service, 18 Dec 1997). This legislation created the single basic allowance for housing (BAH), revising the BAQ and VHA. As a quality of life enhancement, BAH offered several improvements over BAQ and VHA to service members. BAQ was paid at a flat rate worldwide for all members of the same grade and dependency status. Even though VHA rates were tied to housing costs based on annual surveys of members, BAQ rates were adjusted annually equal to the increase in basic pay. For many years, pay raises, in percentage terms, lagged behind housing cost growth, so housing allowances did not keep pace with costs (DTIC, 2001). Congress intended BAQ to pay for 65 percent of the national average housing cost for each grade, with VHA paying 20 percent, and the member paying 15 percent out-of-pocket. However, by 1997, BAQ only paid about 60 percent of the average member’s housing costs and VHA paid 20 percent.

Therefore, members were paying about 20 percent of the housing costs out of pocket, rather than the intended 15 percent. Table 1 provides a comparison of BAH to VHA/BAQ.

Table 1. Basic Allowance for Housing (BAH) Compared to VHA/BAQ

Problem: VHA/BAQ	Remedy: BAH
Member gets less money when new published rates are lower	Rate Protection -- When new rates are published, no individual will see a decrease in the BAH they are receiving.
Creeping growth in out-of-pocket costs	De-linked growth in housing allowances from the pay raise, which historically lagged behind housing inflation. Instead BAH is linked to housing cost growth, putting an end to out-of-pocket creep.
The so-called Death Spiral: When low allowances force members into inadequate housing, and they report low costs on the VHA survey, which, in turn, drives the allowances further down	Fairer, more accurate measurement of housing costs, based on housing costs in each area--not what the member is spending.
VHA OFFSET	BAH is a flat rate. Members spending less than their housing allowance no longer have their allowance reduced.
Geographic/ pay grade inequity	Same dollar amount out-of-pocket for a pay grade at all geographic locations. Same percent* out-of-pocket for every grade *relative to the nation-wide (NOT local) median cost of housing by pay grade
Burdensome annual recertification of actual housing cost	No need to furnish copies of leases or mortgage documents
Pay grade rate inversions	Published BAH rates will not decrease with pay grade (after transition)
Burdensome annual member survey of housing costs	No VHA survey
Drastic changes in any year	Multi-year transition
Slow response to housing cost inflation	BAH based entirely on current housing market data

(Source: DTIC, 2001)

Legislation under the National Defense Act of 1998 established the current housing allowance system policy for military members living in off-base housing in the private sector. A member with permanent duty within the 50 United States, who is not furnished government housing, is eligible for BAH, based on the member's dependency status at the permanent duty ZIP code (DTIC, 2001). BAH is based on current market rental data, average utilities, and renters insurance; therefore, it reflects the current rental market conditions not the historical circumstances surrounding various mortgage loans for homeowners (DTIC, 2001). BAH is based on median costs, not actual expenses, and the typical member of each grade has a specified out-of-pocket expense held at a constant percentage (DTIC, 2001). For a particular individual, the actual out-of-pocket expense is greater or lower than the typical, based on their actual choice of housing (DTIC, 2001). For example, if a member chooses a bigger or more expensive residence than is typical for the grade or location, that person experiences larger out-of-pocket expenses. Alternatively, individuals choosing to live in smaller or less expensive residences incur less out-of-pocket expense. Further, airmen whose actual housing expenses are less than housing allowances are no longer expected to forfeit the unused portion of their allowances. On average, the out-of-pocket expense is the same for a given pay grade and dependency status at any location in the United States. An E-7 with dependents can expect to pay \$163 out-of-pocket for housing whether assigned to vicinities around Lackland AFB Texas, Robins AFB Georgia, or any duty location in the U.S. Estimated median monthly out-of-pocket absorption figures by pay grade and dependency status for year 2001 are provided in Table 2.

**Table 2. 2001 Estimated Median Monthly Out of Pocket Absorption
By Pay Grade and Dependency Status**

Pay Grade	With Dependents National Medians		Without Dependents National Medians	
	BAH Costs	Out of Pocket	BAH Costs	Out of Pocket
E-1	834	125	662	99
E-2	834	125	662	99
E-3	834	125	662	99
E-4	834	125	662	99
E-5	897	135	735	110
E-6	1021	153	780	117
E-7	1084	163	838	126
E-8	1153	173	922	138
E-9	1235	185	960	144
W-1	1022	153	810	122
W-2	1112	167	921	138
W-3	1196	179	964	145
W-4	1250	188	1037	156
W-5	1312	197	1099	165
O-1E	1098	165	897	135
O-2E	1183	177	952	143
O-3E	1259	189	1021	153
O-1	911	137	771	116
O-2E	1019	153	876	131
O-3E	1192	179	977	147
O-4	1339	201	1090	164
O-5	1441	216	1132	170
O-6	1453	218	1196	179
O-7	1470	221	1220	183

(Source: DTIC, 2001)

During calendar year 1998, the out-of-pocket expense amounted to approximately 20 percent of the nation-wide average housing cost for each member's respective grade and their associated housing standard. In 1999, the percentage was approximately 19.8 percent. The National Defense Act of 2000 reduced the out-of-pocket expense to

19 percent. In 2001, the percentage was reduced further to 15 percent. At a Pentagon ceremony on 10 January 2002, President Bush signed the 2002 Defense Appropriations Act. The new legislation cuts the out-of-pocket housing expenses from 15 to 11.3 percent. By 2005, total elimination of out-of-pocket is expected.

BAQ/VHA required military members to annually certify housing expenses. Members who economized on housing and reported low expenditure reinforced or drove down already low allowances. Similarly, members who overextended their housing expenditures contributed to over inflation of the old allowances. BAH sets housing allowances to standards reflecting member's needs versus the influences of economic hardship or benefit. In lieu of service members reporting their actual housing costs, a private contractor, Runzheimer International, collects housing costs data for the DoD to compute BAH. Runzheimer International collects local price data of rental properties based on the typical housing characteristics of civilians with comparable salaries of military members. For example, civilians with dependents earning around \$21,000 a year typically reside in a two bedroom apartment; civilians with dependents earning around \$29,000 a year typically reside in a two or three bedroom apartment; and civilians with dependents earning around \$36,000 a year typically reside in a three or four bedroom town house. For comparison purposes, a civilian salary equals the military base pay, average BAH, basic allowance for substance (BAS), plus tax advantage. Housing standards by pay grade, with and without dependents, is provided in Table 3.

Table 3. 2001 Housing Standards by Pay Grade With and Without Dependents

With dependents		Without dependents	
Pay Grade	Housing Standard	Pay Grade	Housing Standard
E-1	Midpoint of 2 bed apt and 2 bed townhouse	E-1	1 bedroom apartment
E-2		E-2	
E-3		E-3	
E-4		E-4	
E-5	2 bedroom townhouse/duplex	E-5	2 bedroom apartment
O-1		O-1	
E-6	3 bedroom townhouse/duplex	E-6	2 bedroom townhouse/duplex
W-1		W-1	
E-7		E-7	
O-2		O-2	
O-1 E		O-1 E	
W-2		W-2	
E-8		E-8	
W-3	3 bedroom single family detached	W-3	
O-2 E		O-2 E	
O-3		O-3	
E-9		E-9	
W-4		O-3 E	3 bedroom townhouse/duplex
O-3 E		W-4	
O-4		O-4	
W-5		W-5	
O-5	4 bedroom single family detached	O-5	3 bedroom single family detached
O-6		O-6	
O-7		O-7	

(Source: DTIC, 2001)

Housing Privatization

“The National Housing Act of 1949 provided for slum elimination, urban redevelopment, and a public housing program to provide 135,000 low-income housing units annually for six years” (Twiss and Martin, 1998:12). Among those moved into public housing were returning veterans and their families. They were also part of the rationale for expanding the public housing program (Twiss and Martin, 1998:12). A national policy emerged: The United States’ housing goal would be a “decent home and suitable living environment for every American family” (Twiss and Martin, 1998:12; Karger & Stoesz, 1990, p. 243).

In 1949, the first privatization initiative called the Wherry program was part of the National Housing Act (Twiss and Martin, 1998:13). Under the program, Congress provided mortgage insurance via FHA to private industry, which built housing for military families at DoD designated bases (Baldwin, 1993:8). Military personnel paid rent to the private investors from their housing allowance (Baldwin, 1993:8). The rental amount was tied to the type of housing versus the amount of housing allowance (Baldwin, 1993:8). The Wherry program was not the military’s preference for a solution to its family housing crisis. As an accepted policy to meet the housing needs of military members, the services preferred to build needed housing through appropriated funds (Twiss and Martin, 1998:13; Baldwin, 1996:11).

The services were pushed to privatization by factors that should be familiar to those interested in housing issues today:

- Congress was not going to appropriate the dollars required to build military family housing on a large scale.

- The FHA would not certify areas surrounding military bases in isolated locations it determined to be high risk
- The private sector was not going to build in remote areas with associated high construction costs without significant incentives. Thus, the military turned with reluctance to privatization. (Twiss and Martin, 1998:13).

Due to strict cost ceilings, Congress made it difficult to construct adequate housing in high-cost areas (Baldwin, 1993:8). Eventually, scandals associated with civilian housing programs and legislative amendments seeking to limit the potential for “windfall profits” led to the death of the program, with few new projects started after August 1954 (Twiss and Martin, 1998:13; Baldwin, 1996:12). Private sector developers appeared to calculate bids so they built the projects for the amount of obtainable mortgage; therefore, sponsors could avoid investing any of their own money into the project (Baldwin, 1996:12-13).

In 1955, Congress replaced the Wherry program with the Capehart program designed to construct housing with private funds (Baldwin, 1993:9). The federal government borrowed the costs of the housing and on-site utilities from private or semiprivate lenders and provided land and off-site utilities. In lieu of rent, occupants of the housing returned their housing allowance to the service, which repaid the interest and principal over 25 years and operated and maintained the units using appropriated funds (Baldwin, 1993:9; 1996:18).

The Capehart program offered developers higher cost ceiling caps to build housing of a better size and quality. Instead of developers building, operating and maintaining sites as implemented under the Wherry program, the Capehart program employed developers only as builders (Twiss and Martin, 1998:14). After the housing

was built, the services took over ownership, management, and operation of the new housing and assumed the mortgage (Twiss and Martin, 1998:14; Baldwin, 1996:18). The government under the Capehart program eventually purchased most of the housing units built under the Wherry program (Baldwin, 1993:9). By the earlier 1960s, DOD obtained 115,000 Capehart units, culminating the most significant expansion of military family housing in the history of the United States (Baldwin 1996:29-30).

By the late 1950s and early 1960s, there was growing criticism of the Capehart program focusing on the considered high costs of the program and the extent of new construction under the program (Twiss and Martin, 1998:15). Based on data indicating that Capehart housing was more expensive to build, in 1958, the Senate Armed Services Committee called for a move back to using appropriated funds for military housing (Twiss and Martin, 1998:15). In addition, the General Accounting Office (GAO) argued that the services were building too much housing under Capehart, the Defense Department underestimated the availability of private sector housing, and reported that unneeded amenities such as dishwashers made the new housing costs too high (Twiss and Martin, 1998:15; Baldwin, 1996:34). Finally, another criticism of the program was that the method of its development led to the illusion that the housing did not have to be paid for out of the treasury, when it just postponed the costs of the housing (Twiss and Martin, 1998:15; Baldwin, 1996:34). The Capehart program ended in 1962 under the Kennedy administration. Once again, the production of all military family housing was handled by military appropriations (Baldwin, 1996:34). Privatization for military family housing did not resurface again until the 1980s under Section 801 and 802 Housing.

On October 11, 1983, President Reagan signed into law the Military Construction Authorization Act of 1984 authorizing the DoD to enter into housing development using private financing under two pilot programs: Section 801, the Military Family Housing Leasing Program, and Section 802, the Military Housing Rental Guarantee Program (Baldwin, 1993:15; Twiss and Martin, 1998:51). A build-to-lease program for new construction, Section 801 was intended to benefit junior enlisted members; however, when legislated, only those in grades E-4 with more than 2 years service and above were eligible for the new housing (Twiss and Martin, 1998:53). The Section 801 program started slowly; however, it successfully produced more than 11,000 homes across the services between 1985 and 1995 (Twiss and Martin, 1998:53).

Although Section 801 successfully produced houses, it also experienced problems with program costs and maintenance issues (Twiss and Martin, 1998: 53). For example, developers bid close to the established cost ceilings, or maximum allowable costs (Twiss and Martin, 1998: 53). Changes occurred to the program as a result of maintenance concerns. Eventually, the services offered a net lease covering construction only and contract separately for maintenance of the units (Twiss and Martin, 1998:53). In some cases, the government provided maintenance (Twiss and Martin, 1998:53). Although newly addressed costs and maintenance issues improved program support, Congressional leaders voiced concerns over what the government would have to show for its money at the end of the lease (Twiss and Martin, 1998:53).

The Section 802 program provided rental guarantees to private developers (Twiss and Martin, 1998:53). Where Section 801 rents were tied to the costs of the housing, 802 rents were tied to military member allowances, which caused lack of developer interest

for minimal rents equivalent to junior enlisted member allowances (Twiss and Martin, 1998:53). Testifying before Congress later in the 1980s, DoD representatives repeatedly noted that Section 802 might only be successful in rural and non-metro areas, where member allowances would cover developer's costs (Twiss and Martin, 1998:54; House Subcommittee on Military Construction Appropriations, 1985, p 584-585). Housing analysts repeatedly noted this problem in the development of low- and moderate-cost housing (Twiss and Martin, 1998:54). Due to the high costs of capital, land, and development, and the necessity for the private sector to make a profit, there is little incentive for private developers to produce low-income housing without significant subsidies such as tax credits, reduced financing costs, or direct rental subsidies to cover real housing costs (Twiss and Martin, 1998:54; Burt, 1992, p. 54-55).

During the 1990s, the military services were downsized. In order to improve the quality of life of military members and their families, some Congressional leaders looked to privatization as one option to enhance services and supports (Twiss and Martin, 1998: 57).

Economic Theories Applied to Housing Military Families

The three current methods of housing military families -- Military construction (MILCON) housing, monetary allowance stipends via BAH, and housing privatization -- incur different financial ramifications to evaluate. Each requires functional players and activities/processes involved to facilitate each housing approach. These expenditures as well as funding instruments are provided later in this chapter under military housing expenditure activities and funding. Today's housing privatization program advocates

propose that military housing privatization provides housing quicker and at a lower cost to American taxpayers (CS&P, 2001). In order to shift housing functions to the private sector so as to focus on core war-fighting missions while at the same time ensure greater, continuous competition for housing and its associated services, the government could increase the general income pay provided to military members via BAH. This reasoning is based on the economic theories of utility maximization and the lump-sum principle in its application to transfer policy.

A utility is the pleasure, satisfaction, or need fulfillment that people get from their economic activity (Nicholson, 2000). Utility maximization occurs when a person is faced with a choice from among a number of possible options, that individual will choose the one that yields the highest utility. (Nicholson, 2000). In other words, people inherently want to get the most they can of what they most want when given a choice. The “lump-sum” principle states that government taxation or subsidy policies can achieve their goals at minimal costs if they focus on the overall purchasing power of individuals rather than on taxing or subsidizing specific commodities (Nicholson, 2000). When applied to transfers, a given dollar amount will raise utility more if it is provided in a lump-sum payment than if it is provided by subsidizing the purchase of specific commodities. The intuitive reasoning behind this result is that the ability of subsidies to raise individual’s utility levels is mitigated to a degree because of the distortion of choices brought about by such subsidies whereas lump-sum subsidies contain no such distortions. A dollar via subsidy in-kind transfer is worth less to the individual than is a dollar in cash. In a 1977 report on the antipoverty effects of various transfer programs, T. Smeeding used an analysis of individuals’ expenditure activities to show that \$1 of existing subsidies for

food, housing, and medical care was worth considerably less than \$1 in cash to the individuals who received the subsidies (Smeeding, 1977). Smeeding discovered that \$1 in food, housing, and medical subsidies was equivalent to 88 cents, 56 cents, and 68 cents respectively (Smeeding, 1977). He therefore concluded that the ability of such programs to increase the overall well being of poor people was considerably lessened by providing subsidies for specific goods rather than cash (Smeeding, 1977).

These economic principles may also apply to housing military members. For example, Master Sergeant John Doe, an E-7 with dependents, living in proximity of Robins AFB Georgia, received \$855 per month in BAH for off base housing expenses based on 2001 allowances (DMDC, 2002). In theory, assuming a hypothetical subsidy equivalent factor of 56 percent as illustrated in Smeeding study, it may cost the government approximately \$1,526.79 to provide the housing subsidy in kind to MSgt Doe. In addition, uniformed service personnel increasingly find that BAH does not cover their expenses, leading them to supplement the benefit with money from their own pockets. "Under current legislation, on average, troops living off base pay 15 percent of housing costs out-of-pocket. The Pentagon plans to eliminate out-of-pocket expenses by 2005" (Crawley, 2001). Based on the national median out of pocket absorption expense of \$163 for an E-7 in 2001, it may actually cost Sergeant Doe \$1,018 a month to live in off-base housing. Since MSgt Doe is provided \$855.00 for housing off base, he may prefer to reside in government provided housing, which he may value at \$1,018. However, theoretically it costs the government, and the American taxpayer \$1,539.00 per month to provide the house subsidy in kind. Therefore, it may be more efficient for the government to provide MSgt Doe \$1,018 in monthly BAH since it could conceivably

save taxpayers \$521 per month or \$6,252 per year. In addition, the increased BAH may save MSgt Doe \$163 per month or \$1,956 per year. Table 4 provides a summary of this theoretical application.

Table 4. Lump Sum Theory Application on Cost Difference between BAH Cash Subsidy vs. House Subsidy in Kind

E-7 with Dependent Monthly BAH 2001	\$855.00
Assumed Subsidy Equivalent Factor	56%
Estimated Cost of Providing House Subsidy for an E-7 w/dependents	\$1,526.79
Average Out of Pocket Percentage in 2001	15.0%
Estimated BAH with Zero Out of Pocket Expense for E-7 in 2001	\$1,018.00
Average Monthly Out of Pocket Expense for E-7 in 2001	\$163.00
Average Yearly Out of Pocket Expense for E-7 in 2001	\$1,956.00
Estimated Savings to Government Paying Full BAH vs. House Subsidy	\$521.00
Estimated Yearly Savings to Government	\$6,252.00

RAND Study on Housing Preferences

In 1996, the Deputy Secretary of Defense requested a study of the preferences of military families for different types of housing and the factors that influence their choices. RAND, a non-profit research and analysis institution, examined service member's housing preferences. The study tried to determine how and why families choose the housing they live in and what family attitudes are toward living in military communities. The study discovered the following:

- Families in Military Housing: The primary reason people chose on base housing was economic. Other reasons included security, convenience to work and availability. Having military neighbors was not considered important. These individuals were the least satisfied with 58 percent satisfaction on the quality of their residence.
- Renters: Personnel chose living in the local community because military housing was unavailable. Other reasons included avoiding

rules, lack of privacy, and bad military housing. These individuals were 70 percent satisfied with the quality of their residence.

- Homeowners: Investment and general economic motives and other reasons similar to renters. These individuals were most satisfied with a 93 percent satisfaction rate on the quality of their residence. (Buddin, et al, RAND, 1999)

RAND concluded from the study that the big difference is economic. The value of the housing benefit is larger if they can get into military housing. Economics weigh heavily in the service member's preference. Military members are drawn to the economy of on-base living and not by other features of military housing. Without the economic benefit, most military members see no compelling reason to live on base. There are several issues, which could be dollarized on the relative value to families in military and civilian housing as well as their relative costs. For example, a common rationale for maintaining military housing is these communities foster military culture, values, and cohesion, accelerate the acculturation of junior personnel, and facilitate support of families of deployed personnel. However, the RAND study further concluded the following:

There were no differences in how well those in military versus civilian housing thought their own neighbors look after their families when they are gone. Military neighbors were the least frequently cited reason for choosing to live on base and members believe their families are equally well supported on and off-base. Service members do not think living in military housing makes members more committed to the service or more productive at their military jobs. Instead, the majority of service members stated that military values were acquired in the workplace setting, rather than housing arrangements. In addition, joint military couples prefer the civilian community. This is probably due to the combined allowances to afford good housing off base. Larger families displayed a slight preference for military housing perhaps because they qualify for a larger unit on base. (Buddin, et al, RAND, 1999)

Based on RAND's findings, the lump-sum economic theory does seem plausible when applied to housing military personnel. Housing privatization shifts the choice of housing from outdated, dilapidated structures to modernized facilities in a community setting. Along with this shift, as mentioned earlier, taxpayers may still incur high overhead and administrative costs. A GAO Report presented in March 2000, concludes that several key questions remain unanswered with the housing privatization initiative, including whether the military will need the housing for the entire 50 years on many of its deals; whether developers will operate and maintain housing in accordance with the contracts; and whether the savings will meet DoD's estimates (GAO, 2000).

Types of Expenditures and Funding Instruments for Housing Alternatives

Military Construction (MILCON) Housing

Military family housing consumes a great deal of funds for construction, operations and maintenance (O&M) and contractor support. In addition, federal funds are provided to local schools in the community to offset the expense of military dependent children living on base and attending local public schools around military bases (Buddin, Gill, and Zimmer, RAND, 2001:2).

Construction and O&M

Construction Expenditures and Activities

The first general category of cost associated with base housing is construction costs. Construction is "the acquisition, construction and replacement of family housing facilities; preliminary planning and design studies on prospective projects; the conversion of other real property facility to family housing quarters; and upgrading to "adequate

public quarters those family housing dwelling units designated as rental, substandard, or inadequate” (DLAM 7000.1, June 1991). These costs consist of initial new construction, post acquisition construction, minor construction and planning and design elements (DLAM 7000.1, June 1991).

Initial new construction efforts include construction, installation, assembly, relocation, or replacement of single or multifamily housing units and associated land acquisition, site preparation, excavation, land improvements such as filling and landscaping, and associated demolition. In addition, new construction incorporates initial outfitting during construction of a dwelling unit with fixtures and other requirements which are either integral components or movable items of major equipment, including major appliances, architectural and engineering (A&E) supervision and inspection of construction . Finally, new construction also includes driveways, walks, utility systems, and community facilities, which serve the family housing units. The Air Force funds new construction projects under the construction account referred to as P-711, New Construction (AFMAN 65-604, 1998:125).

Post Acquisition Construction efforts are major improvement projects that involve major alterations, additions, expansions, and extensions to existing family housing units. Major improvements also include conversion of existing facilities to public quarters or upgrade of inadequate to adequate quarters. Finally, major renovation projects involve construction of family housing real property other than dwelling units, required subsequent to and because of previously acquired housing units. The Air Force funds these requirements under the P-713 account, Post Acquisition Construction (AFMAN 65-604, 1998:125).

Construction design projects entail planning and design for the development of additional family housing facilities; studies for site adaptation and determination of type and design of units; working drawings, specifications, and estimates; project planning reports and final design drawings for approved family housing new construction projects. Design construction also involves planning and design for major and minor improvement projects including schematic and conceptual design, field investigations, specifications, cost estimates, renderings, and working drawings. The Air Force satisfies these requirements with P-714 funds, Advance Planning and Design (AFMAN 65-604, 1998:125).

Table 1 in Appendix A displays the types of new construction, post acquisition construction, and advance planning and design activities as well as funding categories for the Air Force family housing construction program.

O&M Activity Expenditures

O&M costs including utilities are the second type of expenditure associated with installation housing. These expenditures are directed toward preserving and restoring housing units. The following three paragraphs discuss these O&M requirements starting with base family housing operation, then maintenance requirements, and finishing with utility-type expenditures.

Family housing operations encompass the “initial outfitting, maintenance, repair, and replacement of government-owned furnishings including furniture and movable household equipment (except household equipment provided as initial outfitting under a construction project), services and utilities, and the management of the family housing office” (DLAM 7000.1, June 1991). Expenses under installation family housing

operations include services such as refuse collection and disposal, fire and police protection, pest control, custodial services in common areas, snow removal, street cleaning, municipal-type services and utilities (electric, gas, fuel oil, water, and sewage). Other base family housing operation expenses include issuing, controlling, moving, handling, maintaining, repairing, and replacing government-owned furnishings, equipment and items. Finally, operational costs include the management, administration, and training of family housing office personnel along with their necessary supplies and equipment. The Air Force uses P-721 funds to fulfill operations requirements on military family housing (AFMAN 65-604, 1998:127). Table 2 in Appendix A provides the requirement types as well as associated funding codes for the operation of military family housing.

Maintenance of base family housing is “the routine recurring work required to keep family housing real property facilities in such condition that they may be continuously utilized at their original or assigned capacity and efficiency; also include nonrecurring restoration of family housing real property facilities to a condition substantially equivalent to their original or redesigned capacity and efficiency by replacement, overhaul or reprocessing of constituent parts or materials” (DLAM 7000.1, JUNE 1991). Expenses captured under maintenance of base family housing include the cost of maintenance and repair of all family housing buildings such as minor work under service calls (emergency and temporary repair); routine seasonal, annual, or change of occupancy maintenance; repairs and replacements of major components, interior utilities and installed equipment; and interior and exterior painting. Maintenance expenditures also encompass the maintenance and repair of exterior utility distribution and service

systems (including street lighting systems), grounds, surfaced areas, community buildings, and service facilities. Finally, maintenance costs involve incidental additions, expansions, extensions, and alterations to existing real property. The Air Force uses P-722 funds, Maintenance of Real Property Facilities, to fulfill base housing maintenance requirements (AFMAN 65-604, 1998:128). Table 3 in Appendix A provides the detailed activities as well as funding categories for Air Force family housing maintenance.

Utility service means a service such as furnishing electricity, natural or manufactured gas, water, sewage, thermal energy, chilled water, steam, hot water, or high temperature hot water (FAR Part 41.101, June 2001). Authorized utilities consumed in family housing as authorized are funded with P-728 funds (AFMAN 65-604, 1998:130). For a list of types and funding of utility expenditures for military family housing, see Table 4 in Appendix A.

As indicated in the preceding paragraphs, construction and O&M consume a great amount of resources for Air Force military family housing. To gather the construction and O&M costs for base housing needed for this study, the researcher acquired financial data from base-level, Major Command (MAJCOM)-level, Headquarters (HQ) Air Force-level, and DoD-level financial management offices as well as Civil Engineering resource advisors.

An important item of interest to note concerns the funds required for the management, administration, and training of family housing office personnel along with their necessary supplies and equipment. While conducting on-site observations, as well as telephone and electronic mail interviews, the researcher noted that installation housing office personnel provide services for personnel living in local communities around

installations via BAH and personnel living in privatized dwellings in addition to on base MILCON housing. In other words, the cost associated with a base housing office employee reviewing a military member's lease for off-base housing should not be considered a cost associated with traditional base housing. Likewise, the effort housing office employees provide performing research and gathering data for BAH rate studies should not be considered a cost associated with on base housing. These are activities associated with housing personnel off base via BAH. In order to differentiate the activities housing office personnel provide for these three military housing methods, the researcher requested housing offices provide general activity based workload percentages for each of the housing alternatives.

Education Impact Aid

Military families living on base do not pay local property taxes; however, their dependent children often attend school in the local community. The Impact Aid program (now Title VIII of the Elementary and Secondary Education Act of 1965 (ESEA)) provides federal funds to offset schooling expenses of military children living on base attending local public schools around military bases (Buddin, Gill, and Zimmer, RAND 2001:2). In addition, the law provides for funding to schools for children who have parents in the military or employed on Federal properties who do not live on Federal property (Buddin, Gill, and Zimmer, RAND 2001).

The cost for Impact Aid for residents on base is more than the cost for those living in the local communities off base. This is due to the fact that military personnel residing off base who own their home provide revenues to the local school district via the property taxes they pay. Personnel renting off base housing provide revenues to their landlord. In

turn, the landlord pays property tax on the house occupied by the military member.

Property taxes paid by the landlord include revenues for local school districts.

Privatized Military Housing

There are five general areas that account for the costs to provide housing to military members under the Military Housing Privatization Initiative (MHPI). The first expense associated with privatized housing is the monetary value of the individual or combination of alternative authorities for acquisition and improvement of military housing under the National Defense Authorization Act for Fiscal Year 1996 under Public Law 104-106 110 Stat 186 Section 2801. The second major expense associated with privatized housing is privatization support contractor (PSC) consultant costs. A third disbursement made due to privatized development is Title II construction inspection costs. The fourth category of expenditures connected with MHPI units is the military member occupant's basic allowance for housing (BAH) cash flow, less utility expenses, provided to the private sector company operating the privatized residence. The BAH stipend is also used by the member to pay for utility costs used in the dwelling. Finally, the fifth group of expenses associated with privatized housing involves the effort provided by military housing flight personnel. These personnel supply references, and maintain waiting lists in addition to other activities for the privatized units. Each of these major expenditures is further explained in the following paragraphs.

Alternative Authority Expenditures

The National Defense Authorization Action for Fiscal Year 1996, Public Law 104-106 110 Stat 186 Section 2801, provides alternative authorities for construction and improvements of military housing (CS&P, 2001). Under the Military Housing

Privatization Initiative (MHPI) in Public Law 104-106, DoD “may exercise any authority or any combination of authorities provided (under subchapter IV) in order to provide for the acquisition or construction by private persons family housing units on or near military installations within the United States and its territories and possessions” (CS&P, 2001). These authorities include direct loans and loan guarantees, leasing of housing to be constructed, investments in nongovernmental entities, rental guarantees, differential lease payments, and conveyance or lease of existing property and facilities. Each of these authorities basically fall under five categories: guarantees, direct loans, conveyance or leasing of housing units to be constructed or existing property and facilities, differential lease payments, and investments. The alternatives are scored to determine the cost that should be recognized based on its risk-adjusted net present value (NPV) at contract signing (HRSO, March 1998; OMB Circular A-11, 2000, Appendix A). NPV is the present value of a project’s annual net cash flows less the project’s initial outlay (Petty, Keown, Scott, and Martin, 1993:189). Scoring is required since sufficient appropriations must be available to cover the amount obligated for each contract as required by the 1990 Budget Enforcement Act (OMB Circular A-11, 2000:7-8 and Appendix A). In order to cover the amount obligated for each privatization contract, sufficient appropriations must be available (OMB, 1997). The DoD, with OMB concurrence, determines the amount of funds obligated to cover future costs that are associated with the use of the alternatives (HRSO, March 1998). These alternative authority expenditures are financed primarily from funds through the DoD Family Housing Improvement Fund (FHIF), which was established under the National Defense Authorization Act for Fiscal Year 1996 (CS&P, 2001). According to Sec 2883 subparagraph (c) of the Act, the FHIF is credited via

specific authorized appropriations, transfers from existing construction appropriations, proceeds from conveyance or lease of property or facilities, and income derived from any activities associated with the alternative authorities (CS&P, 2001). The budget impact of using each of these authorities must be estimated and sufficient funds obligated to cover the estimated cost to the government. Each of the alternative authorities as well as associated general scoring guideline is described below:

- Loan Guarantees (Sec 2873). The government can guarantee mortgage payments, directly or through an intermediary up to 80 percent of the private sector loans arranged by the property developer (National Defense Authorization Act, 1996). Loan guarantees may be used to attract private industry investment in geographic areas where minimum government commitment is necessary. Loan guarantees provide a government subsidy that must be considered and accounted for in making financial decisions. In using loan guarantees, the government makes a binding commitment to absorb a portion of the cost of default on credit extended by a private financial institution to a private borrower. The amount of obligations recorded for a loan guarantee depends on the subsidy rate. The subsidy rate represents the net present value (NPV) cost of estimated defaults and any interest rate subsidy over the life of the loan guarantee (HRSO, March 1998). For example, a subsidy rate of 10 percent applied to a loan guarantee for 50 million dollars would be scored at 5 million dollars (HRSO, 1998).
- Rental (Occupancy) Guarantees (Sec 2876). The government can enter into agreements with private parties that acquire or construct dwellings by ensuring the occupancy of the units at specified levels or rental income derived from rentals. Guaranteed occupancy levels ensure tenants but not promises of paid rent. Guaranteed rent ensures payment of a percentage of rental income by promising a cash flow whether or not there are tenants (HRSO, March 1998). Occupancy and rental guarantees are scored at 100 percent of the NPV of the full guaranteed amount over the entire term of the contract.
- Build to Lease (Sec 2874). The government may enter into contracts to lease the dwellings constructed by the private sector specifying government or owner operations and maintenance. In addition the contract under this lease may be for any term. The build to lease alternative is scored at 100 percent of the full amount of the lease for the term of the lease.

- Conveyance or Lease of Existing Property and Facilities (Sec 2878). The government may transfer title of its property to the private sector providing housing to military members via conveying or leasing property for construction of new housing, with housing to be renovated, or by using proceeds to construct housing on another property. There is relatively zero scoring when the government leases or conveys existing land and property.
- Interim Leases (Sec 2879). Under this alternative authority, the government may lease private housing units while awaiting the completion of the project by the developer. This alleviates unnecessary vacancies in structures already completed by the contractor. Scoring for interim leases are moderate to high NPV of lease payments during the interim.
- Differential Lease Payments (Sec 2877). This payment subsidizes the rent paid by military members on both existing housing and new housing acquired or built under privatization initiatives. Scoring for differential lease payments is the NPV of the payments over the life of the deal.
- Investments in Nongovernmental Entities (Sec 2875). The investment authority allows the Department to make investments via limited partnerships; stock or other equity instruments; bond or other debt instruments; or any combination of these forms with non-governmental entities involved in the acquisition and/or construction of family housing and supporting facilities. A limited partnership arrangement operates purely as a private business. DoD has no part in the management. Although there is no minimum cash contribution for any DoD investment in a project, there is a maximum cash contribution of 33 1/3 percent of the capital cost of a project that the Department may offer. Because all sites and projects are different, and because the Services will each prioritize their own projects, the full 33 1/3% cash contribution may not be needed in each project. The Department also has the authority to convey land or buildings as all or part of its investment. If land or facilities are conveyed, the investment may not exceed 45% of the total capital cost. For projects involving renovation, replacement, and support facilities, the Department's total equity contribution also may not exceed 45% of a project's capital cost. Scoring for investments is based on the total amount of the government's investment.
- Direct Loans (Sec 2873). This alternative authority allows the DoD to make direct loans to an eligible entity for the acquisition or

construction of housing units that the Secretary determines are suitable for use as military family housing. The scored amount for direct loans is based on the associated credit subsidy and the estimated cost in case of default. The credit subsidy dollarizes the benefit of the favorable loan term and is calculated as the NPV the difference between the interest rate of the loan and comparable treasury security yields such as a 30-year T-Bond rate. (HRSO, 1998)

Contractor Consultant Cost Expenditures

The second group of expenditures linked with privatized housing is contractor consultant costs. Privatization Support Contractors (PSCs) provide financial advice as well as private industry knowledge and support to the Air Force in its privatization initiatives (Muller, Jun 2001 and Helwig, 14 Sep 2001). PSCs brings their experience in structuring complex real estate transactions matching Air Force requirements to real estate market opportunities via the following:

- Developing housing privatization concepts
- Providing services on privatization feasibility studies, preliminary analysis, and other matters involving private sector financing and real estate practices.
- Soliciting interest and responses from private industry on housing privatization projects
- Providing assistance on preparing economic analysis and real estate development cost estimates.
- Developing program oversight techniques for project and loan monitoring following project award.
- Assisting in the evaluation proposals for best value, (Muller, Jun 2001 and Helwig, 14 Sep 2001)

Although the PSC provides input into evaluating proposals, they do not make the decisions on selecting the privatization developer (Potter, Jun 2001). This authority rests with the government.

Title II Inspection Costs

The third group of expenditures linked with privatized housing is Title II inspection costs. Title II Services cover construction management and inspection, submittal reviews, site visits, and preparation of as-built drawings. Title II Services for privatized housing is similar to Title II Services under MILCON housing covered under P-711 New Construction and P-714 Advance Planning and Design funding.

BAH Subsidy Expenditure for Privatized Housing

The fourth major expense associated with privatized housing is the military occupant's BAH cash flow provided to the private sector company. Unlike MILCON housing on base, members residing in privatized housing are paid BAH. These personnel pay the contractor rent, which is based on their pay grade less utility costs. The military occupant uses the remaining funds, less rent, provided by BAH to pay for utilities. If the remaining BAH funds do not cover utility usage consumed, the military member must provide out-of-pocket money for the difference. As a critical ingredient in privatized projects, BAH provides the privatization contractor an income stream to support the initial and long-term financial capability of the project (CS&P, Tenant Profile, 2001). In addition, unlike other rental housing concerns in the local community, privatization landlords are further protected against any disruption in rental payments due to base closure, downsizing, or deployment based on guarantees for these contingencies (CS&P, Tenant Profile, 2001).

Military Family Housing Services for Privatized Housing

In addition to providing services for on-base housing, military family housing office personnel contribute services for military personnel living in privatized dwellings

as well as off base housing in the local community. As mentioned in this chapter under the section on MILCON housing, in order to differentiate the activities housing office personnel provide for these three military housing methods, the researcher requested housing offices provide general activity based workload percentages for each of the housing alternatives.

Local Community Off Base Housing via BAH

This section of the thesis provides a general overview of the funding resource required to house military families in the local community around military installations. The amount of effort, activities, and costs involved in housing military families in the local community via BAH is more than just providing a general income subsidy to military members that is displayed on their leave and earnings statements (LES). There are three basic areas that account for the costs to provide housing in the local communities via BAH. The first category of cost associated with off-base housing is the actual BAH stipend or general income subsidy provided to military members. The second general area of cost associated with BAH is consideration the DoD pays a contractor to perform housing cost studies on various communities around military installations. The third group of costs connected with the BAH process is the effort provided by the base military housing flight to gather data for Runzheimer International to perform its data analysis. Each of these costs is explained in the following paragraphs.

BAH Subsidy Expenditure

The most expensive cost associated with housing families in local communities around military installations is the BAH stipend. A member with permanent duty within the 50 United States, who is not furnished government housing, is eligible for BAH. The

BAH rate is based on the member's dependency status at the permanent duty ZIP code. In addition, BAH consists of current market rental data, average utilities, and renters insurance associated with housing standards of civilians with comparable salaries of the military member's pay grade (DTIC, 2001). A civilian salary equals the military base pay, average BAH, basic allowance for subsistence (BAS) plus tax advantages associated with non-taxed BAH and BAS granted to military members (DTIC, 2001). Further, BAH is based on median costs, not actual expenses and the typical member of each grade has a specified out-of-pocket expense held at a constant percentage (DTIC, 2001). For calendar year 2001, BAH stipends were also adjusted in July. For military members with dependents stationed at Robins AFB, the average BAH rates ranged from \$685 for pay grades E1 through E3 to \$1,072 for pay grades O-7 and above stationed at Robins AFB Georgia (DMDC West, 2002).

Private Contractor Cost of Housing Study Expenditures

Another category of costs associated with housing families via BAH is the price the government pays a private contractor, Runzheimer International, to perform housing cost studies on geographical communities around military duty locations. Runzheimer International collects housing costs data for DoD to compute BAH. The contractor collects local price data of rental properties based on the typical housing characteristics of civilians with comparable salaries of military members. Runzheimer International uses data collected from military housing offices and verifies this data through personal contact to establish a 50th percentile median cost for rental property based on number of bedrooms and type of dwelling (Averill, 2002). Average utility amount is based on local utility company costs for natural gas, electric, oil, water, and sewage applied to monthly

consumption standards derived from the US Census Bureau's American Housing Survey, averaged over a 12-month period to account for highs and lows, and adjusted for historical climatology from the National Oceanic and Atmospheric Administration (Averill, 2002). Insurance amount is the average cost of the top three commercial insurance companies providing personal property and liability coverage (normally All State, State Farm, and Geico) for that area (Averill, 2002). These costs are combined to establish local median housing costs and eventually BAH rates for each grade with- and without-dependents (Averill, 2002).

Management, Oversight, and Administrative Activities Expenditures

The final category of costs associated with housing military families off-base is the effort provided by the base Military Family Housing office. Installation housing management offices perform a great deal of effort supplying local market housing information to Runzheimer International for the BAH data collection. Runzheimer distributes a request for input to the military housing offices. Housing offices collect rental housing referral lists, apartment complex lists, newspaper advertisements, and real estate contacts (Runzheimer International, 2001). The housing office screens these lists and advertisements to exclude any inadequate housing units such as transient housing, seasonal or weekly rentals, furnished housing, mobile homes, subsidized housing, or locations requiring extensive commuting (Runzheimer International, 2001). The housing office also excludes unsuitable housing such as those with poor physical condition, extremely expensive areas (i.e., resort locations, upscale neighborhoods), high-crime areas, environmental risk (i.e., industrial pollution), or other subjective issues that would be considered undesirable to any reasonable individual (Runzheimer International, 2001).

In addition, housing offices distribute surveys, collect and tabulate data, and research files (Fitts, 2002). Further, housing offices identify specific geographic problem areas by census tract exclusions, fill out a Return ID Form to include with the shipment of data, and submit the data to Runzheimer via Federal Express usually by May 1 every year (Runzheimer International, 2001). If necessary, additional or new data will also need to be submitted by June 20 during the year (Runzheimer International, 2001).

Summary

This chapter explored literature relating to this research study. First, it reviewed the evolutionary history of housing military families, which provides a background toward the current military family housing and compensation systems today. Next, the chapter discussed a previous study conducted on the housing preferences of military members. Third, the chapter investigated economic theories of utility maximization and the lump sum principal in its application to transfer policy on housing subsidies. Finally, Chapter 2 explored the expenditures as well as funding instruments employed on the different housing alternatives.

III. Methodology

This chapter explains the methodology used to compare the family housing options to accommodate military families in the United States. The methodology included both qualitative and quantitative methods to provide a report on the business of housing military families using military construction (MILCON) on-base housing, privatized development housing, and off base private sector housing in the local community.

First, the case study methodology is defined and explained. Second, the detailed scope of research is presented. Third, data sources and the manner in which the sources were acquired are presented. Fourth, the data collection phase is outlined. Finally, data analysis procedures are provided detailing the method of data analysis on qualitative and quantitative factors to draw conclusions and generalizations.

Case Study Methodology

Case studies are used when addressing “how” or “why” questions, when the researcher has little control over events, and when the focus is on a contemporary phenomenon within some real-life context (Yin, 1994:1). As a research strategy, the case study contains an all-encompassing method—with the logic of design incorporating specific approaches to data collection and data analysis (Yin, 1994:13). When developed and presented effectively, with rich and interesting detail, case studies keep conceptual discussions grounded in reality (Hitt, Ireland, & Hoskisson, 2001:C-2). A case study can present a partial clinical study of real-life situations (Hitt, Ireland, & Hoskisson, 2001:C-2). This research effort employs the case study methodology to explore, describe, and

compare military family housing options to service members domestically in the United States of America.

Scope of Research

Case studies can rely on the use of qualitative data, quantitative data, or a combination (Yin, 1994:14). These methods may include single or multiple case designs. Multiple case studies observe similar data across several cases to draw generalizations and conclusions (Yin, 1994:45). This approach is taken to ensure that the observed phenomenon is not a rare case. Hamel (Hamel et al., 1993) and Yin (1994) forcefully argued that the relative size of the sample, whether 2, 10, or 100 cases are used, does not transform a multiple case into a macroscopic study. The goal of the case study should establish the parameters and then should be applied to all research. In this way, even a single case could be considered acceptable, provided it meets the established objective. This research study selected installations for an assessment of the benefits, operations and costs linked to housing military families via on-base MILCON facilities, privatized units, and off-base housing in the local communities around the installations. The researcher purposely sampled Robins AFB, Georgia; an installation conducting the housing privatization initiative. In order to compare the three housing alternatives, the base was chosen since it was one of the first three Air Force sites undertaking housing privatization at the time the study started.

Data Sources

Yin (1994:79) listed six sources of evidence for data collection in the case study: documentation, archival records, interviews, direct observation, participant observation,

and physical artifacts. Not all need be used in every case study (Yin, 1994:90). In addition to creating a case study database and maintaining a chain of evidence, Yin suggested using multiple sources of data while collecting information for case studies to triangulate evidence (Yin, 1994:91). Triangulation backs up the data gathered from other sources (YIN, 1994:91-92). This research employed four sources of evidence: documentation, archival records, interviews, and notes from the researchers direct observation.

Documentation viewed during research included contract documents, cost records, memoranda, agendas, administrative documents, and newspaper articles. In the interest of triangulation of evidence, the documents supported evidence from other sources. Archival records were also analyzed including statements and testimonies to Congress, briefings, real estate records, census data, and literature consisting of books, journal articles, regulations, and GAO reports. The researcher took care when evaluating the accuracy of the records before using them. Even quantitative records were verified for accuracy by triangulation with multiple sources . Open-ended interviews with contracting, financial management, personnel, legal, and civil engineering professionals were also conducted. These specialists represented various levels including base level; oversight agencies such as the Air Force Center for Environmental Excellence (AFCEE); Major Commands (MAJCOMs) including Air Force Material Command (AFMC) and Air Education and Training Command (AETC); Air Force-level organizations; and DoD-level organizations. The researcher also held interviews with local real estate professionals and Chamber of Commerce personnel. During open-ended interviews, respondents were asked to comment about certain events. Some respondents provided

insight into events while others proposed solutions. Interviewees often substantiated evidence obtained from other sources. The researcher avoided dependency on single informants, and sought similar data from other sources to verify authenticity. Finally, the researcher performed site visits at two installations; as well as the Air Force Center for Environment Excellence (AFCEE); AETC and AFMC MAJCOMs, the Air Force Civil Engineering Housing Division (HQ AF/ILEH); the Deputy Assistant Secretary of the Air Force for Contracting (SAF/AQC); the Deputy Assistant Secretary of the Air Force for Cost and Economics (SAF/FMC) and Budget (SAF/FMB); the Office of the General Counsel of the Air Force, Installations and Environment Law (SAF/GCN) and Acquisitions (SAF/GCQ); and the Office of the Secretary of Defense, Competitive Sourcing and Privatization (CS&P) Office. During site visits, the researcher also collected other data in support of the subject matter studied.

Data Collection

Centering on a business comparison of housing military families in the United States, this thesis examines the benefits and cost effectiveness of the different methods of housing military families. The first component of a research design is the study's questions, which are critical when determining the scope and direction for the data collection effort (Yin, 1994:20). The following are research questions setting the basis for this study:

- Are there any initial indications that housing privatization provides housing faster and less costly to the government and the American taxpayer?

- What costs are associated with housing military families via on base, MILCON family housing, housing privatization, and local community housing?
- Which military family housing system is the most favorable in terms of benefits to military members and the Air Force as well as cost to the government?

While performing case studies, researchers need to focus on two important issues: why the study is being done and what evidence is being sought (YIN, 1994, 60).

Understanding the basic concepts, terminology, and issues relevant to the study set the tone for data collection. In order to ensure data collected for the case studies was consistent with the purpose of this research, the research was divided into the three systems used to house military families. The three systems were organized in an effort to capture the research questions underlying meanings.

The first research area investigated the history, policy, activities, benefits and costs associated with housing military families via traditional MILCON dwellings on military installations. The second research area examined the history policy, activities, benefits, and costs connected with the use of housing privatization initiatives used for housing military families. Finally, the third research area explored the history, policy, activities, and costs associated with providing BAH to service members to acquire housing in the local community near their duty station.

Data Analysis

“Data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study” (Yin, 1994:102). In order to produce a high quality analysis, Yin presented four principles needed to perform data analysis. First, show that the analysis relied on all the relevant evidence.

Second, include all major rival interpretations in the analysis. Third, address the most significant aspect of the case study. Fourth and final, use the researcher's prior, expert knowledge to further the analysis (Yin, 1994). Careful reading and thinking about case facts, as well as reasoned analysis and development of alternative solutions to case problems, are essential. Recommended alternatives should flow logically from core problems identified.

The first step taken while performing data analysis for this study was to perform qualitative and quantitative analysis on housing alternatives for each of the individual sites undertaking housing privatization initiatives. Housing provided for military members via on base MILCON housing, housing privatization development, and local community housing set the stage for this research effort. With established parameters applied to the research effort, even a single case would have been considered acceptable, provided it met the established objective.

Qualitative Factors

An evaluation of the benefits of each housing option provides an important consideration in determining which housing alternative to choose. The best alternative should be considered on the basis of a cost/benefit analysis (SAF/FMC, 2001).

According to SAF/FMC, a benefit analysis is an essential part of an economic analysis, which takes into account many intangibles that are usually difficult to assess (SAF/FMC, 2001). Intangibles are generally difficult to measure in an economic analysis since they lack a common frame of reference for objective comparison. A benefit analysis identifies the most important benefits linked with each of the housing alternatives analyzed (SAF/FMC, 2001). To resolve this difficulty, non-monetary benefits for military

members associated with housing such as affordability, safety and security, quality of schools, access to health facilities, commuting time to work, access to main base facilities, and privacy are analyzed. Further, non-monetary benefits for the Air Force associated with housing including availability timeliness and control over the housing project are examined. Both military member and Air Force qualitative benefits are analyzed using a weighting and ranking procedure as recommended by SAF/FMC (SAF/FMC, 2001). With this procedure, a cost-benefit ratio explaining the costs relative to the benefits on the three housing alternatives was constructed for this study (SAF/FMC, 2001).

For purposes of this study, seven qualitative evaluation factors affecting military members were measured while three qualitative factors influencing the Air Force and government were evaluated. Using guidance provided by SAF/FMC Benefits Analysis Model, each benefit was assigned a weighted point value according to its relative importance: 1 for somewhat important to 5 for very important. An objective score ranging from 0 percent, representing does not achieve objective, to 100 percent representing completely achieves objective, was assigned based on the degree to which the alternative met the stated housing criteria. Multiplying the weighted point value and objective score determined the qualitative benefit score. Each of the ten benefit parameters along with a brief explanation and weighted value used in this study are provided in the proceeding paragraphs in this section of the chapter. Further, Table 5 displays the structure that was used to calculate the benefit score for each alternative.

Table 5. Benefits Analysis Scoring Sheet

Benefits	Weighted Point Value	MILCON Objective Score	Privatized Objective Score	Off-Base Objective Score	MILCON Benefit Score	Privatized Benefit Score	Off-Base Benefit Score
Military Member Benefits							
<i>Affordability</i>	5						
<i>Security</i>	5						
<i>Access to Quality Schools</i>	5						
<i>Health Safety</i>	5						
<i>Commute to Work</i>	5						
<i>Access to Main Base</i>	5						
<i>Privacy</i>	5						
Air Force Benefits							
<i>Timeliness</i>	10						
<i>Control Over Project</i>	5						
TOTAL BENEFIT SCORE:							

Affordable Rent. This benefit measures whether the military member pays any “out-of-pocket” expenses for items such as utilities, non-refundable security deposits, and rental insurance. This benefit category was assigned a weighted value of 5 in accordance with standard guidance from SAF/FMC (SAF/FMC, 2001).

Safety and Security of People and Property. This parameter measures the risk of personal and property crime to military members and their dependants. In addition, mitigating factors such as outside lighting, deadbolt locks, fences, security patrol, and security systems are considered in the evaluation. Safety and security of personnel and property was valued at 5 in accordance with standard guidance from SAF/FMC (SAF/FMC, 2001).

Access to Quality Schools. When comparing prices of homes in different neighborhoods, economists believe the quality of schools is more important than a well-designed, well-built house (Savageau with D’Agostino, 2000: 195). Quality of schools

often becomes a deciding factor for relocating families (Savageau with D'Agostino, 2000: 195). Military parents have a high opinion of the quality of education provided by DoD schools (NEA, 2000). The parameter measuring military dependents access to quality schools was assigned a weight of 5 in accordance with standard guidance provided by SAF/FMC (SAF/FMC, 2001).

Health Safety. This location factor considers the degree of convenience to hospitals, clinics, emergency medical services, fire stations, and police stations. In accordance with standard guidance from SAF/FMC, a weight of 5 was assigned to this parameter (SAF/FMC, 2001).

Commute to Work. This benefit measures the influence of each housing alternative on the commuting time to and from the member's duty station. As suggested by standard guidance from SAF/FMC, a point value of 5 was assigned to this factor (SAF/FMC, 2001).

Access to Main Base Facilities. This qualitative factor measures the influence of each housing alternative on the member's convenience to main base facilities such as the Base Exchange and commissary in addition to base support facilities such as family support. This benefit was also assigned a point value of 5 for this study (SAF/FMC, 2001).

Privacy. This benefit measures the worth placed on a member's privacy and was given a weighted point value of 5 in accordance with guidance from SAF/FMC (SAF/FMC, 2001).

Qualitative Benefits to the Air Force

Timeliness. This factor measures the timeliness of the Air Force ability to obtain the housing unit for service members and their families. In addition, it answers the question, “Does the alternative provide a completed house at the Air Force or private sector standard in a timely manner?” (SAF/FMC, 2001). This factor also addresses one of the two primary goals of the military housing privatization initiative. Due to the importance placed on providing suitable housing for military members, a weighted point value of 10 was assigned to this evaluation factor in accordance with standard guidance from SAF/FMC (SAF/FMC, 2001).

Control over Project. This factor measures Air Force control, both on and over the housing project to ensure military members and their families are offered affordable, quality, and safe housing; a place where they would choose to live (SAF/FMC, 2001). In accordance with standard guidance provided by SAF/FMC, a point value of 5 was assigned to this Air Force benefit measure (SAF/FMC, 2001).

Total Benefit Score. Summing the benefit scores of each qualitative factor provides an estimated total benefit score for each of the three housing alternatives.

Quantitative Factors

A quantitative analysis was performed on the cost per housing unit in 2001 constant dollars. These costs were based on expenditures associated with providing family dwellings via on-base military family housing, privatized developed units, or local community housing as discussed in Chapter 2. The data analysis methodology on costs for the three housing alternatives is provided in this section. First, the method of analyzing on base family housing expenditures is presented. Next, the technique used to

analyze privatization costs is provided. Finally, the procedure applied to analyze costs associated with housing military families off base in the local community is given.

On Base MILCON Housing Cost Analysis

As discussed in Chapter 2, the cost of providing and maintaining on-base housing consists of the capital costs for construction obligations, O&M expenses, and education Impact Aid for military dependent children. A cost per housing unit in 2001 constant dollars was calculated on each of these categorical expenditures using past historical financial data.

In order to estimate construction costs per housing unit, previous expenditures on new and renovated construction projects were divided by the scope of housing constructed. Based on the historical new construction and major renovation projects converted to 2001 constant dollars, capital costs were computed relying on the assumption that the life of the new unit is 40 years and the life of a major renovation project is 25 years as provided in Air Force Manual 32-1089 (AFMAN 32-1089, 1996:30). Further, an assumption that the new housing unit would incur major renovation approximately 30 years after new construction is inferred. These costs were then amortized over the entire 55-year life of the house at an interest rate of 2.75 percent. Amortizing is a procedure followed in allocating costs of long-lived assets to the periods in which their benefits are derived (Petty, et al, 1993:25). Amortization views a present value that has been transferred into an equivalent series of cash flows considering the time value of money. A similar approach in computing capital costs for construction was used in a study by RAND in 1999 and by the Congressional Budget Office (CBO) in 1993 (Buddin, et al, 1999:23; CBO, 1993:18).

O&M costs per housing unit were calculated by dividing the total dollars expended on O&M requirements in 2001 by the total number of housing units on base that year.

Impact Aid costs per unit were computed by taking the difference in the average Impact Aid paid for children of families living in base housing less the average payment for children of families living in the private sector (CBO, 1993: 18). The number of dependents living on base was then multiplied by the difference between on-base and off-base costs to compute a total Impact Aid on-base distinct cost. Further, to arrive at an Impact Aid cost per housing unit, the total Impact Aid on-base difference cost was divided by the number of houses on base.

Privatized Housing Cost Analysis

As discussed in Chapter 2, the costs associated with privatized housing include the following:

- The monetary consideration of the alternative authority granted to private developers building the housing units
- Expenditures for privatization support contractor (PSC) consultant costs
- Title II Construction Inspection Costs
- The BAH cash stipend paid to the private contractor for rent through the military member.
- The services provided by military housing flight personnel in connection with privatized housing such as referrals and maintaining waiting lists.

A cost per housing unit in 2001 constant dollars was calculated for each of these types of privatized housing expenditures using past historical financial data. The

monetary consideration provided to the developer was divided by the number of housing units and amortized over the life of the contract. Likewise, PSC and Title II expenditures were also divided by the number of housing units and amortized over the life of the contract. In addition, an average weighted yearly BAH cost per unit based on the designated pay grades assigned to the different privatized housing units was estimated. Finally, the researcher requested labor workload percentages for housing personnel associated with the different housing alternatives. Military Housing Flights accept housing applications, maintain waiting lists and acts as a referral agent matching housing units to the military individual's rank. In addition, the flight employees brief service members on the privatized housing structure, policies, and difference between privatized housing and on-base MILCON housing. Further, the flight follows up on customer satisfaction and also acts as arbitrator in the event of tenant landlord disputes (Roman, 19 June 2001; Phillips, 27 September 2001). The researcher figured an estimated labor cost by multiplying the percentage of effort provided by the housing flight to the General Schedule Locality Rates of Pay from the U.S. Office of Personnel Management (OPM). The total costs of effort employed by military housing flight personnel for privatized housing was subtracted from the O&M expenditures associated with on base housing and added to the privatized housing initiative. Summing these individual category costs per unit provided an estimated total, average cost per unit per year under the privatization initiative.

Private Sector Local Community Housing Cost Analysis

The cost of relying on the local community housing market consists of three primary features. The first cost is the BAH cash stipend provided to military members.

The second cost is the consideration paid to a contractor to perform housing cost studies. The third cost is the effort provided by the base military housing flight to gather data for the contractor to perform its data analysis as well as provide off-base housing referral assistance to military members. An estimated cost per housing unit in 2001 constant dollars was calculated on each of these categorical expenditures using past historical financial data.

An average BAH cash stipend was derived by dividing the total amount of BAH expenditures for military members with dependents living in the local community housing divided by the total number of military members with dependents receiving the monetary housing compensation.

Average cost per unit due to contract expenditures for housing studies were based on the total contract price divided by the number of housing market areas covered under the study. Further, the estimated contract cost per housing market area was divided by the total population of members receiving BAH to live in the local community to arrive at an average cost per housing unit.

Concerning military family housing personnel efforts associated with local community housing, the researcher requested labor workload percentages for housing personnel associated with the different housing alternatives. Using these rudimentary activity-based workload percentages for each of the housing alternatives by military housing flight personnel, the researcher figured an estimated labor cost based on General Schedule Locality Rates of Pay from the U.S. Office of Personnel Management (OPM). The total costs of effort from military housing flight personnel for off-base housing activities was subtracted from the O&M expenditures associated with on-base housing

and added to the local community housing effort. This is the same procedure employed on privatized housing.

By summing the average BAH stipend, the average contract cost per unit, and the average military family housing office labor services per unit, an estimated average cost per unit for off base housing was calculated.

Combined Qualitative and Quantitative Benefit Analysis

After deriving the qualitative benefit score and a quantitative estimated cost per housing unit, a cost-benefit analysis was performed. This was accomplished by dividing the total average cost per unit in 2001 dollars by the benefit analysis score to acquire a cost-to-benefit grade. For example, if the total average cost per unit under one of the alternatives amounts to \$1,000 a month and the benefit analysis score totals 25.0, then the cost to benefit ratio amounts to 40.

Chapter Summary

This chapter explained the methodology used to qualitatively and quantitatively compare family housing options available to military families in the United States. The chapter opened with the definition and background of the case study methodology. Second, the scope of research covering this study was provided. Third, data sources along with the method of acquiring them were discussed. Fourth, a detailed explanation on data collection was detailed. Finally, the data analysis steps were provided.

IV. Results and Analysis

This chapter provides the results and analysis on the public and private sector military family housing options available at Robins AFB. Using the qualitative and quantitative factors discussed in Chapter 3, this chapter first provides an analysis on Robins AFB. In order to provide a background of the Robins AFB housing area, demographics as well as economic statistics on Warner Robins, the base's closest community, are provided. Next, an analysis on the qualitative as well as quantitative data on the three housing alternatives for military families is performed.

Robins AFB Results

This section of the chapter provides the analysis on factors associated with housing military families. First, a general description on the demographics of Robins AFB is provided. Next, the population, cost of living (including housing and utilities), and crime statistics on Warner Robins, the closest town to the base, is provided. Finally, the qualitative as well as quantitative factors affecting military family housing are provided and analyzed. The chapter concludes with the housing method that provides the best overall value to the military member and the government.

General Demographics of Robins AFB

As the largest industrial complex in Georgia, Robins AFB provides a major economic impact of approximately \$3 billion on the state (Robins AFB, Public Affairs Office, 2001). The base employs more than 19,800 people including over 5,200 active duty military members (Robins AFB, Public Affairs Office, 2001). Table 6 lists

demographic, cost of living, and quality of life statistics concerning personnel living on Robins Air Force Base.

General Demographics on Robins AFB Surrounding Community

Figure 1 highlights the geographic location of Robins AFB. Centrally located in the state of Georgia, the base is situated right next to the city of Warner Robins in Houston County. In terms of population, the city of Warner Robins is now Georgia's eighth largest city in terms of population. The median household income of approximately \$37,000 is slightly above the national average (Yahoo Real Estate, November 2001). Based on a national average cost of living index of 100, Warner Robins's index of 97 is relatively average compared to the rest of the nation (Yahoo Real Estate, November 2001). Annual utility costs average around \$2,439 or about \$203 a month (Yahoo Real Estate, November 2001). Further, the single family housing sales price index of 80 is 20 percent below the national average (Yahoo Real Estate, November 2001). Therefore, housing in the local community around Robins AFB is relatively inexpensive. The personal crime rate as well as property crime rate is relatively average when compared with other towns in the U.S. Table 7 characterizes the community of Warner Robins.

Table 6. Demographics, Cost of Living, and Crime on Robins AFB

DEMOGRAPHICS	Robins AFB, GA 31098
Population of Warner Robins:	6594
Median Age:	22.57 years
Median Household Income:	\$28762
Percentage of Single Households:	11.98%
Percentage of Married Households:	88.02%
Percentage Families (households with children):	95.20%
Average Household Size:	3.44 people
Percentage College or Better:	31.13%
Percentage White Collar:	37.30%
Cost of Living Index:	91
Average Yearly Utility Cost:	\$2380.15
Average Household Total Consumer Expenditures:	\$34319.37 per year
Average Household Education Expenditures:	\$296.13 per year
Average Household Entertainment Expenditures:	\$1748.83 per year
Average Household Transportation Expenditures:	\$7145.78 per year
Average Household Retail Expenditures:	\$15224.11 per year
Average Household Non-Retail Expenditures:	\$19095.26 per year
Total Crime Index:	36
Personal Crime Index:	43
Property Crime Index:	19

(Source: Yahoo Real Estate, 2001)

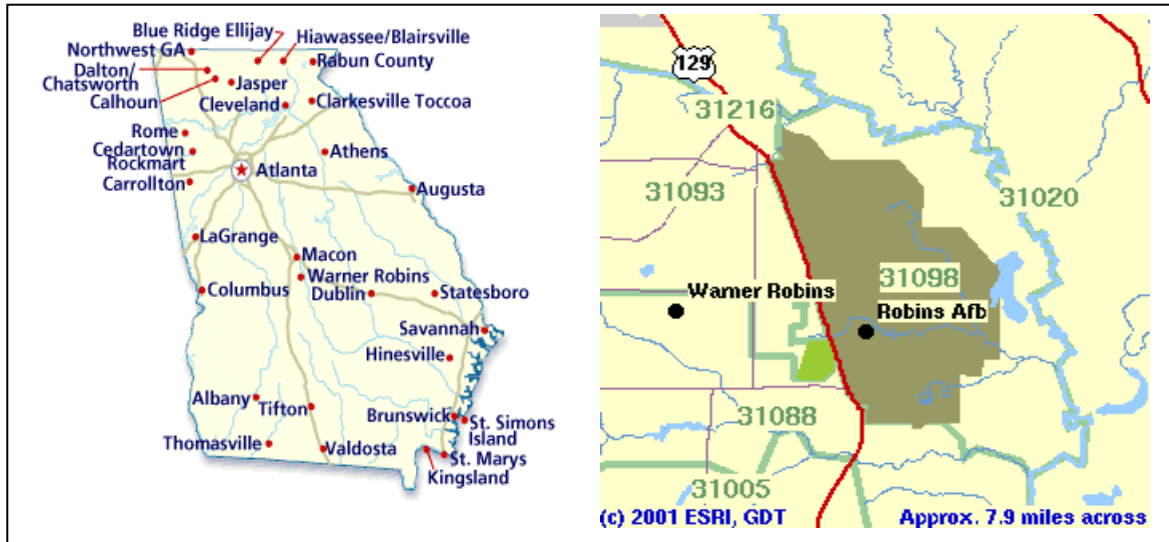


Figure 1. Robins AFB Geographic Location

Table 7. Demographics, Cost of Living, Housing Characteristics, and Crime on the City of Warner Robins

DEMOGRAPHICS	WARNER-ROBINS, GA
Population of Warner Robins	48372
Median Age:	31.75 years
Median Household Income:	\$36953
Percentage of Single Households:	46.8%
Percentage of Married Households:	53.2%
Percentage Families (households with children):	70.64%
Average Household Size:	2.52 people
Percentage College or Better:	20.77%
Percentage White Collar:	52.15%
Cost of Living Index:	97
Average Yearly Utility Cost:	\$2439.80
Average Household Total Consumer Expenditures	\$36011.78 per year
Average Household Education Expenditures:	\$345.63 per year
Average Household Entertainment Expenditures:	\$1911.22 per year
Average Household Transportation Expenditures:	\$7320.44 per year
Average Household Retail Expenditures:	\$16361.28 per year
Average Household Non-Retail Expenditures:	\$19650.50 per year
Single Family Home Sale Price Index:	80
Percent Homes Owner Occupied:	52.74%
Average Dwelling Size:	4 rooms
Total Crime Index:	111
Personal Crime Index:	105
Property Crime Index:	107

(Source: Yahoo Real Estate, 2001)

Qualitative Analysis on Public and Private Sector Family Housing at Robins AFB

This section of the chapter provides the results on the qualitative evaluation factors used in this study. First, the calculation of the benefits score for each alternative is displayed in Table 8. Immediately following the Benefit Analysis Scoring Table are analysis discussions on the resident factors effecting military members including affordability, safety and security, quality of schools, access to health facilities, commuting time to work, access to main base facilities, and privacy. In addition, the non-monetary benefits to the Air Force associated with providing family housing for military members such as timeliness and control over the housing unit is discussed.

Table 8. Benefits Analysis Scoring Sheet

Benefits	Weighted Point Value	MILCON Objective Score	Privatized Objective Score	Off-Base Objective Score	MILCON Benefit Score	Privatized Benefit Score	Off-Base Benefit Score
Military Member Benefits							
<i>Affordability</i>	5	100%	95%	85%	5.00	4.75	4.25
<i>Security</i>	5	100%	75%	33%	5.00	3.75	1.65
<i>Access to Quality Schools</i>	5	100%	75%	75%	5.00	3.75	3.75
<i>Health Safety</i>	5	100%	100%	100%	5.00	5.00	5.00
<i>Commute to Work</i>	5	100%	90%	75%	5.00	4.50	4.5
<i>Access to Main Base Facilities</i>	5	100%	90%	75%	5.00	4.50	3.75
<i>Privacy</i>	5	50%	75%	100%	2.50	3.75	5.00
Air Force Benefits							
<i>Timeliness</i>	10	25%	75%	100%	2.50	7.50	10.00
<i>Control Over Project</i>	5	100%	90%	75%	5.00	4.50	3.75
TOTAL BENEFIT SCORE:					40.00	42.00	40.90

Military Member Benefit Analysis

Affordable Rent

Members residing in traditional on-base housing surrender BAH. In lieu of BAH payments, members do not have to pay any rent, utilities, or renters insurance associated with living in the local community. Since members residing in base housing do not have to pay any out-of-pocket money from their base pay, the objective score for on base housing affordability is rated 100 percent.

Rent for service members living in privatized housing is set at BAH less 110 percent of utility expenses (CS&P, Sep 2000:4). Tenants use the remaining BAH to pay for utilities since expenses are the responsibility of the military member (CS&P, Sep 2000:4). As mentioned in Chapter 2, the military occupant uses the remaining funds, less rent, provided by BAH to pay for utilities. If the remaining BAH funds do not cover utility costs, the military member must provide out of pocket money for the difference. The expense for utilities in privatized housing is minimal to negligible (Robins AFB Economic Analysis, 13 March 1997:33). Therefore, the objective score for privatized housing affordability is rated 95 percent.

As mentioned in Chapter 2, when members reside off base, they receive BAH based on median costs, not actual expenses, and the typical member of each grade has a specified out-of-pocket expense held at a constant percentage. For a particular individual, the actual out-of-pocket expense is greater or lower than the typical, based on their actual choice of housing. In 2001, the amount of BAH provided to service members with dependents stationed at Robins AFB ranges from \$659 for an E-1 to an E-3 up to \$1,072 for an O-7 and above (Tovar, DMDC West, 30 Jan 2002). The median out-of-

pocket expenses paid by members living in the local community around Robins AFB as well as the national median ranges from \$125 to \$221 for those same pay grade personnel. In calendar year 2001, the percentage of out-of-pocket expense amounts to 15 percent. Therefore, based on DoD housing standards for military members in pay grade E-7, a typical 3-bedroom townhouse or duplex in the local community around Robins AFB costs \$1,018 for rent, utilities, and rental insurance. However, BAH only covers \$855. The median out of pocket expense for an E-7 equates to \$163. The out-of-pocket expense was 19 percent in 2000, 19.8 percent in 1999, and 20 percent in 1998. In 2002, the out-of-pocket absorption rate will be set at 11.3 percent. Elimination of out-of-pocket expenses is expected by 2005. As of 2001, the cost to members living off base is considered higher than those living in either traditional on-base housing or privatized housing on this study. Since the median out-of-pocket expense for off base housing in 2001 is 15 percent, the objective score for off base housing affordability is set at 85 percent.

Safety and Security of People and Property

Another factor that influences the choice of where to live is safety and security. On-base housing at Robins is protected by the installation security gate as well as patrolled via military security police. In addition, the residents of base housing consist of only military members. According to neighborhood crime information associated with ZIP codes, the risk of personal and property crime on Robins AFB is lower than that in the general population of Warner Robins. This was illustrated in Tables 6 and 7 covering demographics, cost of living, and crime, respectively for Robins AFB and the City of Warner Robins. Compared against a national average index of 100, the violent crime rate

for the Robins AFB ZIP code 31098 is 43, less than half the national average (Yahoo Real Estate, 2001). Further, the property crime rate index for the Robins AFB ZIP code is 19, less than one-fifth the national average. For the general Warner Robins area, the violent crime rate is slightly above the national average at 105 (Yahoo Real Estate, 2001). Likewise the property crime index for the Warner Robins general community is 107 (Yahoo Real Estate, 2001). The figures reported for the Warner Robins area are based on the Warner Robins total community. It does not represent where the military members actually reside off base. When choosing where to live, in general military members avoid living in slum, high-crime, or undesirable neighborhoods. Some regions of Warner Robins have very low crime. In addition, some military members live in other towns such as Bonaire, Georgia, which has a much lower crime rate (index of 52) than the Warner Robins general vicinity (Yahoo Real Estate, 2001). The base security police squadron as well as the Air Force Base Office of Special Investigations (OSI) Detachment informed the researcher that they do not keep statistics on crime rates against military members on versus off base.

A working group consisting of military members and families that resided in West Robins, and East Robins, expressed a great deal of concern with the local crime at the privatization development location (Robins AFB Industry Forum, 1997:4-4). The privatized housing development property is located on Gannon Road and is separated from the main base by GA Highway 247. In lieu of a protected base security gate, the privatized development provides an electronically accessed security gate. Robins AFB does not provide police or fire protection to members in the privatized units. Although

considered not as protective as main base housing, privatized housing does offer a better alternative than living in some sections of the local community.

Based on the researchers findings and statistical data on neighborhoods around Robins AFB, on-base housing located on government land seems to offer the best safety and security and is assigned a benefit score of 100 percent. Without the protection of Air Force Security Police and the military security gate, the privatized development is measured as the next best alternative with a score of 75% (Robins AFB Economic Analysis, 13 March 1997:35). Although the local community of Warner Robins has a crime rate slightly higher than the national average, the average risk of crime off base is more than three times higher than on base according to neighborhood information data (Yahoo Real Estate, 2001). Therefore, the off base objective score is set at 33 percent.

Access to Quality Schools

Military parents have a high opinion of the quality of education provided by DoD schools (NEA, 15 Mar 2000). Since on-base housing resident dependents have access to DoD schools, the on-base housing alternative score is 100%. The privatized housing project at Robins AFB involved the transfer of title property to the developer providing housing to military members as an alternative authority under Section 2878 under the National Defense Authorization Act (CS&P, Sep 2000). Linwood Elementary School, a DoD school, is located on the land conveyed to the developer. This action will cause the closing of Linwood Elementary School as well as the transfer of 400 students to schools under the Houston County School District jurisdiction (NEA, 15 Mar 2000). Since the DoD school is closing due to privatization at Robins AFB, effectively, there is not a

quality of life advantage living in privatized housing when compared to living in local community housing based on school systems. These alternatives provide a score of 75%.

Access to Health Care Facilities

Concerning medical care, Robins AFB use to have a 20-bed hospital that provided 24-hour-a-day emergency care. This facility has been down-scoped to a medical clinic. Members living in on-base housing, the privatized housing development, and the local community are all served medical care via hospitals, medical centers, and clinics dispersed throughout the local community. Warner Robins has the Houston Medical Center, which is a 186-bed care facility. The city of Macon GA has one of the top 100 hospitals in the United States in the Medical Center of Central Georgia (City of Macon, Georgia, 2001). The Medical Center of Central Georgia also has satellite neighborhood healthcare centers: Med Center Downtown, Med Center East, Med Center North, Med Center Northwest, and Med Center West (City of Macon, Georgia, 2001). In addition, Macon also has two other medical care facilities: Coliseum Health System and Middle Georgia Urgent Care (City of Macon, Georgia, 2001). There are also medical and urgent care facilities located in neighboring Perry, GA, and Kathleen GA. Based on the availability of adequate medical facilities throughout the middle Georgia area, each of the housing alternatives are also valued equally with a score of 100 percent in terms of access to medical care.

Commute to Work

With increased city size comes increased travel commuting time. Fortunately for military members assigned to Robins AFB, commuting around Middle Georgia is relatively easy. According to a survey cited in the Robins AFB Housing Privatization

Industry Forum paper, the average time required to drive to the base for off-base residents is 16.3 minutes with the busiest time of the day taking 23.0 minutes (Robins AFB Industry Forum, July 1997).

Members living on-base at Robins are afforded the best alternative in terms of traffic commute to work. They are already on the base and do not have to wait in long traffic lines to pass through the installation's security gate. The on-base housing objective benefit score is 100%.

Located across a highway from main base, the privatized community offers a short commute for members to work; however, there is a commute as well as inconvenience associated with waiting in line outside the gate. Therefore, the privatized housing objective benefit score for commuting to work is 90%.

Most of the service members stationed at Robins AFB living in the community reside in Warner Robins, Kathleen, and Centerville (Robins AFB HMA, December 2001:7). In addition, the majority of members living outside these three city locations live within a 30-minute driving time from the base (Robins AFB HMA, December 2001:5). There are some military families residing in locations outside a 30-minute commute from the base in towns north of Macon, as far west as Knoxville, south near Hawkinsville, and northeast near Gordon (Robins AFB HMA, December 2001:7). Some families prefer living in rural areas away from the base and believe where they live weighs more heavily than the commute. Overall, most members living off base incur a reasonable driving commute. However, due to the longer commutes associated with living off base, the score for this qualitative factor is 75%.

Access to Main Base Facilities

Members living in on base housing easily access main base facilities such as the commissary, Base Exchange, and base theatre. The privatized housing development located across the highway from the base is also conveniently located to main base facilities. Convenience to main base facilities and off-duty activities are weighed the same as the qualitative factor “Commute to Work”: 100% for on-base housing, 90% for privatized housing residents, and 75% for the off-base private sector housing alternative.

Privacy

Members living in on-base housing are subjected to rules and in some cases inspection of their housing unit compared with personnel living off base. Many renters choose the option of living off base to avoid rules and the lack of privacy associated with living on base (Buddin, et al, 1999:13). As mentioned in Chapter 2, a study by RAND on military member’s choosing housing options, on-base housing provided the least amount of privacy when compared with off-base housing (Buddin, et al, 1999). In addition, under guidance provided by SAF/FMC, off-base housing offers the most privacy, followed second by privatized housing, while on-base housing presents the least amount of privacy for members. Based on these findings, on-base housing scores 50 percent, privatized housing scores 75 percent, and off-base housing scores 100 percent.

Analysis on Qualitative Benefits to the Air Force

Timeliness

One of the primary goals of the Military Housing Privatization Initiative (MHPI) is to “use a variety of private sector approaches to build and renovate military housing

faster” (CS&P, 2001). Therefore, measuring the timeliness of the Air Force’s ability to provide the housing unit for service members and their families weighs heavily.

At Robins AFB, a contract was awarded on 18 March 1996 to construct 83 on-base military family housing units (Goetsch, 11 Feb 02). This project was not completed until over five years later (approximately 2,039 days) on 17 October 2001 (Goetsch, 11 Feb 02). Based on the number of days from contract award to project completion, the average number of days to construct each unit equates to approximately 24.5 days. In addition, a contract was awarded on 30 Sep 00 to improve 90 units (Goetsch, 11 Feb 2002). As of 11 February 2002, 83 of the 90 units were completed. This equates to an average of 6 days per unit for renovations.

The privatization contract was awarded in September 2000 for the construction of 370 new housing units as well as the renovation on 300 units for a total of 670 units (CS&P, DoD/Military Housing Privatization Initiative Awards, 2001; CS&P, September 2000:4). As of December 2001, approximately 460 days after contract award, 665 of the 670 units were transferred to the government (78 CES/CE, 31 Dec 2001). Just considering the construction of 365 new units, the number of days to construct each house averaged 1.25 days. The average number of days to renovate 300 units was approximately 1.53 days per unit.

Based on these figures, it appears that the military housing privatization effort builds and renovates military housing much faster than MILCON housing. Likewise, housing in the “free market” local community is readily available for military families at any time. According to a housing market analysis conducted on the Robins AFB housing market area, the 2001 inventory of suitable rental housing is 19,934 units primarily

consisting of one, two, and three bedroom houses (Robins AFB, HMA, Dec 2001:22). As discussed in Chapter 2, suitable housing is determined by number of bedrooms, physical condition, structure, crime, health and safety, quality, commute to the base, and environmental factors (Runzheimer International, 2001). The Robins AFB housing market analysis estimated a total of 913 suitable rental vacancies in 2001 including 288 one bedroom, 371 two bedroom, and 207 three bedroom units (Robins AFB, HMA, Dec 2001:23). Further, according to the housing market analysis, “a majority of the rental housing units for 2001 are under \$700, including utility costs” (Robins AFB, HMA, Dec 2001). Further, “average utility costs for rental units in the Robins AFB Housing Market Area are estimated to range from \$65 per month for a one-bedroom unit up to \$178 per month for a four-bedroom unit or larger” (Robins AFB, HMA, Dec 2001:21).

With a ready supply of affordable housing in the market around Robins AFB, local community housing completely satisfies the objective at 100% of providing timely housing for military members and their families. Housing provided by the privatization project satisfies the objective second at 75%. Finally, based on the results of recent MILCON new construction and major renovation efforts at Robins AFB, on-base housing satisfies the timeliness objective at 25%.

Control over Project

The Air Force maintains total control over operating on-base housing units via base civil engineering and the military housing flight; therefore, the score under this alternative is 100%. With privatized housing, there are several mechanisms, which provide control over the project. First, as previously mentioned in this thesis, the government performs Title II inspection services during construction of the units.

Second, the government does not assign military members to the privatized housing units. By not guaranteeing occupancy, the developer must operate and maintain a community in which members choose to live. Third, under the Robins privatization initiative, the developer owns the land and housing units. Since the developer has a direct interest in upkeep of the facilities, the contractor is inclined to maintain the properties throughout the term of the agreement. With these control vehicles in place, the score for this alternative is 90%.

The government has the least amount of control over local community housing; however, as with privatized housing, there are vehicles the government can use to protect military members living off base in the community. The military housing flight follows up on customer satisfaction and also acts as arbitrator in the event of tenant landlord disputes (Roman, 19 June 2001; Phillips, 27 September 2001). The score for this alternative is 75%.

Quantitative Analysis on Public and Private Sector Family Housing

This section of the chapter provides the results on the quantitative cost factors used in this study at Robins AFB. First, the costs associated with housing military families via MILCON units on Robins AFB are presented and analyzed. Next, expenditures associated with housing military families in privatized units are examined. Finally, the costs associated with housing military families in the local community are provided and analyzed.

On Base “MILCON” Housing

There are three primary expenditures incurred by the government when housing military families on base. The first cost is the actual construction of the dwelling.

Another major cost associated with housing military families on base is O&M expenditures. Finally, the third major cost is Impact Aid expenditures for schooling military dependent children living on base. Each of these costs are analyzed in the following paragraphs in this section.

Construction Funding

As mentioned earlier in this chapter, there have been two construction projects for on-base housing at Robins AFB since 1996 (Goetsch, 11 Feb 2002). One project involved the construction of 83 new housing units, which cost the government \$7.9 million in March 1996 (Goetsch, 11 Feb 2002). In September 2000, a contract was awarded for \$6 million to improve 90 military family housing units on the base (Goetsch, 11 Feb 2002). According to Air Force directives, the economic life for new or replaced housing is 40 years (AFMAN 32-1089, 1996:30). The economic life for major renovation projects is 25 years (AFMAN 32-1089, 1996:30). Major renovation projects are usually provided on housing approximately 30 years after new construction. Calculations of capital costs involved in the construction of housing at Robins AFB are supported by the assumption of economic life expectancy of housing units as provided in AFMAN 32-1089. All cost are presented in 2001 constant dollars.

Based on the contract to construct 83 new military family housing units at Robins AFB in March 1996, the average cost per unit averaged \$95,812 in 1996 dollars (Goetsch, 11 Feb 02). Using the USAF Raw Inflation Index provided by SAF/FMC, this cost is converted to \$102,298 in 2001 dollars (SAF/FMC, 2001). With the same procedure, the cost to perform major renovations on these same houses in 2001 would

cost \$67,751 based on the project awarded for \$6 million or approximately \$66,667 in year 2000. Table 9 illustrates these calculations.

Next, based on these estimated costs for new construction and major renovation projects, capital costs were computed relying on the assumption that the life of the new unit is 40 years and the life of a major renovation project is 25 years (AFMAN 32-1089, 1996:30). Further, an assumption that the new housing units would incur a major renovation approximately 30 years after new construction was implied. These costs were then amortized over the 55-year total life of the house at an interest rate of 2.75 percent. An average expense of \$4,942 per unit per year for capital costs of construction was derived. Amortization calculations are provided in Table 10.

Table 9. Construction Costs of On Base Military Family Housing in 2001 Constant Dollars

New Construction Project	Amount
Total Amount of Project (1996 Dollars)	7,952,412
Project Scope (Units)	83
Estimated Cost per Unit (1996 Dollars)	95,812
USAF Raw Inflation Index (Base Year 2001)	0.937
Estimated Cost per Unit (2001 Dollars)	<u>102,298</u>
Renovation Project	Amount
Total Amount of Project (2000 Dollars)	6,000,000
Project Scope (Units)	90
Cost per Unit (2000 Dollars)	66,667
USAF Raw Inflation Index (Base Year 2001)	0.984
Cost per Unit (2001 Dollars)	<u>67,751</u>

Table 10. Capital Costs of Construction for On Base Military Family Housing

Capital Costs	Amount
Assumed Costs per New Construction Units	\$102,298
Assumed Costs for Major Renovation	\$67,751
Estimated Number of Years for Renovation	30
Assumed Discount Rate	2.75%
Present Discounted Value of Major Renovation	\$30,023
Total Present Value New Construction and Renovation	\$132,321
Total Life of Unit (Years)	55
Amortized Costs of Capital for Construction Per Unit/Per Year	<u>\$4,942</u>

O&M Funding

For O&M requirements at Robins AFB, the Air Force spent approximately \$7.6 million in FY01 (James, 11 Feb 2002). As mentioned earlier in Chapter 2, O&M funding obligations include expenditures for items including management office personnel, supplies, equipment, custodial services, occupancy inspections, and surveys for the family housing office functions. Housing office personnel provide activity services for personnel living in local communities around installations via BAH and personnel living in privatized dwellings as well as traditional base housing. In other words, the cost associated with a base housing office employee reviewing a military member's lease for off-base housing should not be considered a cost associated with traditional base housing. Likewise, the effort housing office employees provide performing research and gathering data for BAH rate studies should not be considered a cost associated with traditional base housing. These are activities associated with housing personnel off base via BAH.

In order to differentiate the activities housing office personnel provide for these three military housing methods, the researcher requested the Robins AFB housing office provide a list of office personnel along with their respective pay grades and the general activity-based workload percentages they perform for each of the housing alternatives. Although these percentages were based on survey versus a computer system, it enables a rough estimate of the expenditures to assign to the various housing methods.

Using General Schedule Locality Rates of Pay obtained from the U.S. Office of Personnel Management, the researcher calculated costs for each housing office employee based on their pay grade and provided workload percentage. Although miniscule, subtracting assigned costs for off-base housing efforts as well as privatization efforts of the housing personnel provided a measure of on-base housing O&M management costs. The tabulation for the military family housing labor activities is provided in Appendix B.

There were 807 military family housing units on base at Robins in 2001 (Phillips, 27 Sep 2001). Based on the number of houses and the amount of total dollars obligated in 2001, the estimated average O&M cost per housing unit per year was approximately \$9,389. A summary of O&M expenditures for MILCON base housing is provided in Table 11.

Impact Aid Expenditures

According to the National Association of Federally Impacted Schools, in 2001, the total costs for Impact Aid at Robins AFB was \$1,133,283 for 1,878 total students (Forkenbrock, 26 Feb 2002). The program is funded based on weighted students with 1.0 for an on-base student to 0.2 for an off-base student or approximately a five to one ratio (Forkenbrock, 2002, 7 Mar 2002). Therefore, the amount of funds provided to local

schools around Robins AFB for 371 military dependent children living on base was \$1,685 per child versus \$337 per child for those living off base, a difference of \$1,348 per child (Forkenbrock, 7 Mar 2002). Multiplying this difference by the number of dependent students living on base provides the total weighted cost difference of \$500,236 for all dependents living on base. Dividing the total costs difference by the 807 on-base housing units provides a spread of Impact Aid, which amounts to \$620 per housing unit per year. Table 12 provides data on military dependent children as well as the Impact Aid support dollars provided for families living on base versus off base at Robins AFB in 2001.

**Table 11. O&M Expenditures for On Base Military Family Housing at Robins AFB
(In 2001 Thousands Constant Dollars)**

FUNDING ACCOUNT	FY01
P72110 (MANAGEMENT)	911.2
P72120 (SERVICES)	254.5
P72140 (FURNISHINGS)	179.7
TOTAL P721 OPERATIONS	<u>1,345.4</u>
P722 (RPMA)	2,252.2
P722 (RPMC)	1,962.0
TOTAL P722 RPM	<u>4,214.2</u>
P728 (UTILITIES)	2,087.1
P720 TOTAL (P721, P722, and P728)	7,646.7
REIMBURSEMENTS	4.9
TOTAL OBLIGATION AUTHORITY	<u>7,651.6</u>
RECURRING COSTS	5,684.7
NON-RECURRING COSTS	1,962.0
TOTAL COSTS	<u>7,646.7</u>
HOUSING OFFICE OFF BASE EFFORTS	34.7
HOUSING OFFICE PRIVATIZATION EFFORTS	35.1
TOTAL MILCON HOUSING O&M COST	<u>7,576.9</u>
NUMBER OF ON BASE HOUSES IN 2001	807
AVERAGE O&M COSTS PER ON BASE UNIT	<u>9.389</u>

Table 12. Impact Aid Support for Military Dependent Children On versus Off Base

Items	Dependents Enrolled		Total Dependents	Total Impact Aid	Impact Aid per Dependent
	On base	Off base			
Military Dependents	371	1507	1878	\$1,133,283	\$603
Impact Aid Ratio Formula	1	0.2			
Ratio Weighted Students	371	301	672	\$1,133,283	\$1,685
Total Cost On and Off Base	625,294	507,989		\$1,133,283	
Cost per Dependent On vs. Off Base	\$1,685	\$337			
Average Impact Aid Cost Difference On vs. Off Base	<u>\$1,348</u>				
Military Dependents On Base x Difference in Aid	\$500,236				
Number Houses on Base	807				
Average Impact Aid Cost Per Housing Unit on Base	<u>\$620</u>				

(Source: National Association of Federally Impacted Schools)

Total Costs for On Base “MILCON” Housing

As illustrated in Figure 2 and tabulated in Table 13, by adding the estimated annual capital costs for construction per unit, O&M costs per unit, and Impact Aid expenditures per unit, the total annual estimated costs for providing an average military family housing unit on base is \$14,951. This averages approximately \$1,246 per month per housing unit.

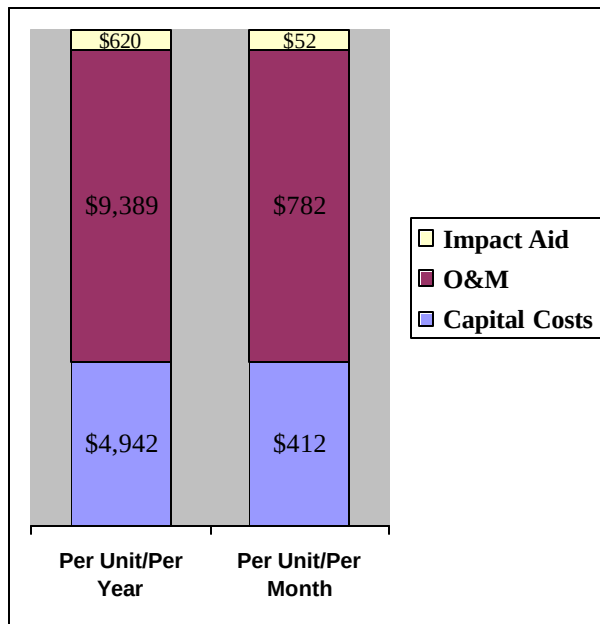


**Figure 2. Average Annual and Monthly Cost of On Base Housing at Robins AFB
(in 2001 Dollars)**

**Table 13. Tabulation of Average Annual and Monthly Cost of On Base Housing
at Robins AFB (in 2001 Dollars)**

Type of Costs	Per Unit/ Per Year	Per Unit/ Per Month
Capital Costs	\$4,942	\$412
O&M Expenditures	\$9,389	\$782
Impact Aid Costs	\$620	\$52
TOTAL	\$14,951	\$1,246

Military Housing Privatization Initiative Housing

As mentioned previously, there are five primary expenditures incurred by housing military families via privatized housing developed under MHPI legislation. The first cost is the monetary consideration of the alternative authority granted to private developers building the housing units. The second cost is expenditures incurred for PSC services. The third major cost associated with MHPI is Title II construction inspection costs. The fourth cost associated with housing military families in a privatized residence is the BAH cash stipend provided to military members who in turn use the money to pay for rent on the unit to the privatized housing management firm and utilities to the electric, gas, water, and wastewater companies. Finally, the last cost associated with privatized housing is the services provided by military housing flight personnel in connection with privatized housing

MHPI Alternative Authority Costs

The Robins AFB housing privatization project for the construction of 370 new housing units as well as the renovation of 300 units was awarded in September 2000. The total development cost for the project was \$56.5 million. However, the government did not have to provide funding in that amount for the project. The following consideration was provided to the developer under the MHPI alternative authorities:

- Under Section 2873 of Public Law 104-106 of the MHPI, the government provided a limited loan guarantee on a \$25.6 million first mortgage loan. DoD guaranteed up to 100 percent of the loan only in the event of a default due to base closure, deployment of troops, or downsizing of personnel. The credit subsidy representing the NPV cost of estimated defaults for the guarantee was estimated at 6 percent of the loan or \$1.5 million for funding purposes. (CS&P, Sep 2000:8)

Since, the amount of the guarantee on the loan was the NPV of an amortized loan, the credit subsidy was accepted as the alternative authority cost. However, for comparison purposes of this study, using the 2001 standard Raw Inflation Index provided by SAF/FMC, the \$1.5 million in FY2000 dollars was converted to \$1,524,390 in 2001 constant dollars (SAF/FMC, 2001). Table 14 illustrates this calculation.

Table 14. Credit Subsidy on First Mortgage Limited Loan Guarantee (2001 Constant Dollars)

Total Amount of Credit Subsidy (2000 Dollars)	\$1,500,000
USAF Raw Inflation Index (Base Year 2001)	0.984
Total Amount of Credit Subsidy (2001 Dollars)	<u>\$1,524,390</u>

- Also under Section 2873 of the law, the government provided a direct loan on a second mortgage for approximately \$22.3 million at an interest rate of 1.65 percent to the developer. The credit subsidy representing the favorable interest rate over the life of the guarantee was valued at \$11.1 million. (CS&P, Sep 2000:8)

Using the same procedure employed with the first loan guarantee, the \$11.1 million in FY2000 was converted to \$11,280,488 in 2001 constant dollars. Table 15 displays the calculation of this figure.

Table 15. Credit Subsidy on Second Mortgage Direct Loan (2001 Constant Dollars)

Total Amount of Credit Subsidy (2000 Dollars)	\$11,100,000
USAF Raw Inflation Index (Base Year 2001)	0.984
Total Amount of Credit Subsidy (2001 Dollars)	<u>\$11,280,488</u>

- Conveyance of Land and Properties (Sec 2878). For the privatized development, the government conveyed 270 acres of land, which included a convenience store with a service station, a youth center, soccer and softball fields, parks and playgrounds, an Olympic-sized swimming pool, tennis and basketball courts. In addition, the transaction included 670 two, three, and four bedroom attached (duplex) and detached (single family) housing units (Robins AFB Industry Forum Handout, 9 July 1997: 2-3; CS&P, Sep 2000:4-5, 8-9).

According to the Competitive Sourcing and Privatization Office (CS&P), the total property was valued at \$6.5 million for participation test purposes (CS&P, Sep 2000:9). Participation Tests are performed on privatization efforts in accordance with OMB guidance, “both on-base and off-base revitalization projects must have substantial private sector risk in order to conform with the provisions of the Federal Credit Reform Act” (CS&P, Sep 2000:8). According to an appraisal review certificate on Robins West Family Housing Area by the Army Corps of Engineers, Savannah District, the property conveyed was valued at a total of \$25 million under retail value estimate; a total of \$17 million under market value estimate; and a total of \$17.5 million under an income approach valuation (USACE, 11 Sep 1996). As a depreciating asset, the buildings conveyed would have been fully depreciated after the 50-year life of the project. However, the land conveyed will not depreciate in value. Land is not a depreciable asset. In addition, according to Air Force Housing Privatization Policy and Guidance, “conveyance of Air Force land is not generally considered in the best interest of the government” (AF/ILE, 21 Sep 00). The valuation summary provided by the U.S. Army Corps of Engineers (USACE), Savannah GA District, estimated the land value at \$3,155,250 under retail value estimate; 2,212,350 under market value estimate; and \$2,212,350 under the income approach estimate method (US ACE, 11 Sep 1996).

According to the Real Estate Appraisal Branch USACE Savannah, GA District, “the Income Approach is relied on most heavily in the valuation of the residential units. Sales and rental data relating to single and multi-family properties in the Warner Robins area were researched extensively” (USACE, 30 Aug 1996: 9). Therefore, for purposes of this study, the value of land conveyed to the developer is estimated at \$2,213,350 in 1996 dollars. According to the Board of Tax Assessors in Houston County GA, on average land values have increased approximately 8 percent per year since 1995 in the Warner Robins vicinity (Grace, 2002). Since some areas in the Houston County appreciated more than others, the board recommended an application of 6 percent annual appreciation for purposes of this study (Grace, 2002). As illustrated in Table 16, applying an annual growth rate of 6 percent to the \$2,213,350 value of land in 1996 dollars, results in an estimated land value of \$2,962,962 in 2001 dollars.

Table 16. Conversion of Estimated Value of Land Conveyed from 1996 to 2001 Dollars

Value of Land Conveyed to Contractor (1996 Dollars)	\$2,213,350
Annual Appreciation Growth of Land	6%
Number of Annual Interest Periods from 1996 to 2001	5
Value of Land Conveyed (2001 Dollars)	<u>\$2,961,962</u>

The estimated total consideration provided by the government under the MHPI alternative authorities in 2001 dollars for the construction of 370 new housing units as well as the renovation of 300 units was \$15,766,800. The project term for the Robins MHPI is 50 years (MHPI Pep, 30 Jun 01). Spreading the \$15,766,800 total cost over 50 years provides an estimated cost of \$468 per unit per year.

Consultant Contract Costs

According to the Robins AFB Preliminary Economic Analysis, 21 Nov 97, originally costs for Air Force Contract Support were assumed to equal three percent of the government cash contribution of a \$12 million to \$14 million MILCON project or \$360 thousand to \$420 thousand (Robins AFB Preliminary Economic Analysis, 21 Nov 97:13). However, according to a report submitted to Congress, the actual PSC expenditures on the Robins AFB housing privatization initiative totaled \$2.0 million (MHPI Housing Privatization Report to Congress October 2001 Quarterly Report). For purposes of this study, the \$2 million cost was spread out over the 670 units over the original 30-year life of the project resulting in an average expense of approximately \$100 per housing unit per year.

Title II Services Costs

Expenditures for construction management and inspection, submittal reviews, and site inspections totaled \$500 thousand on the Robins privatization project (Titone, 2002; Rits, 2002). These costs were also spread over the 670 units over the original 30-year project life. This presented an estimated average cost of \$25 per unit per year for Title II services.

BAH stipend

There are a total of 670 privatized housing units authorized for military members in pay grades E-1 up to O-6. Based on the respective unit-designated pay-grades assigned to each type of privatized units, an average weighted yearly cost per privatized dwelling was calculated. Although the units are not fully occupied, the average weighted yearly cost of \$9,864 per housing unit provides a representation of BAH expenditures for

comparison purposes. Table 17 provides the estimated costs for BAH expenditures for the privatized development at Robins AFB.

**Table 17. Estimated BAH Expenditures for Privatized Housing
(Based on Rank Designation of Units)**

Unit Designation	Number of Privatized Units	Associated Monthly BAH Rate	Average Weighted Rate	Total Monthly Costs	Total Yearly Costs	Average Weighted Yearly Cost Per Unit
E-5	284	\$762	\$762	\$216,408	\$2,596,896	\$9,144
E-6	110	833	833	91,630	1,099,560	9,996
E-7	134	855	855	114,570	1,374,840	10,260
E-8	28	879	879	24,612	295,344	10,548
E-9	9	917	917	8,253	99,036	11,004
O-1/O-1E	7	770 to 860	815	5,705	68,460	9,780
O-2/O-2E	6	831 to 890	861	5,163	61,956	10,326
O-3/O-3E	25	894 to 931	913	22,813	273,750	10,950
O-4	35	977	977	34,195	410,340	11,724
O-5	20	1,035	1,035	20,700	248,400	12,420
O-6	12	1,043	1,043	12,516	150,192	12,516
Total Units	670			\$556,565	<u>\$6,678,774</u>	<u>\$9,968</u>

Military Family Housing Office Support

Military Housing Flight personnel accept housing applications, maintain waiting lists and act as a referral agent matching housing units to the military individual's rank. In addition, the flight employees brief service members on the privatized housing structure, policies, and difference between privatized housing and on base, MILCON housing. Further, the flight follows up on customer satisfaction and also acts as arbitrator in the event of tenant landlord disputes (Roman, 19 June 2001; Phillips, 27 September 2001). Estimated military housing office labor costs associated with privatized housing were calculated by multiplying the percentage of effort provided by the housing flight to

the General Schedule Locality Rates of Pay from the U.S. Office of Personnel Management (OPM). The tabulation for the military family housing labor activity costs is provided in Appendix B. The total costs due to efforts employed by military housing flight personnel for privatized housing was subtracted from the O&M expenditures associated with on base housing and added to the privatized housing initiative. Using these assumptions, the amount of military family housing labor costs associated with privatized housing in 2001 was approximately \$35,100. Spreading this cost over the 670 privatized units servicing Robins AFB military personnel results in an average cost of approximately \$52 per privatized dwelling per year.

Total Costs for Privatized Housing

As tabulated in Table 18, via adding the economic consideration for the alternative authorities, the PSC consultant costs, Title II service costs, the rent provided to the privatized contractor and utility companies via member's BAH, and labor effort costs from military family housing office personnel, the total yearly estimated costs for providing MHPI housing averages \$10,509. This averages approximately \$876 per month per housing unit.

Table 18. Tabulation of Average Annual and Monthly Cost of Privatized Housing Servicing Robins AFB (in 2001 Dollars)

Type of Costs	Per Unit/Per Year	Per Unit/Per Month
Alternative Authority Consideration	\$468	\$39
PSC Consultant Costs	\$100	\$8
Title II Service Costs	\$25	\$2
BAH Payments	\$9,864	\$822
Housing Office Labor Costs	\$52	\$4
TOTAL	\$10,509	\$876

Local Community Housing Costs

The cost of relying on the local community housing market consists of three primary features. The first cost is the BAH cash stipend provided to military members. The second cost is the consideration paid to a contractor to perform housing cost studies. The third cost is the effort provided by the base military housing flight to gather data for the contractor to perform its data analysis as well as provide off base housing referral assistance to military members. An estimated cost per housing unit in 2001 constant dollars was calculated on each of these categorical expenditures using past historical financial data. An analysis on these expenditures as well as the calculations are provided in the following paragraphs in this section.

BAH Stipend

According to population figures provided by the Defense Manpower Data Center (DMDC) West, a total of 2,774 military personnel with dependents resided in the local communities around Robins AFB during the month of April, 2001 (Tovar, DMDC West, 30 Jan 2002). The Office of the Secretary of Defense (OSD) Compensation noted that April represents a standard month before or after times when the majority of PCS moves occur (Tovar, DMDC West, 30 Jan 2002). The distribution of military personnel, associated monthly BAH rates, total monthly expenditures, and estimated total year BAH costs by pay grade is provided in Table 19. Using the April 2001 figure acquired from DMDC West, estimated total year BAH expenditures were based on the assumption of monthly populations throughout the year remaining constant.

Using the populations, rates, and yearly payments in the aforementioned table, an average BAH monthly stipend per member with dependents, was calculated to represent

a per unit cost, which is provided in Table 20. The average cost to house a military family in the local community around Robins AFB was approximately \$837 per month or \$10,048 per year.

**Table 19. BAH Payments to Military Members Stationed at Robins AFB 2001
(Based on April 2001 Populations)**

Pay Grade	Population	BAH Rate	Total Monthly Payments	Total Yearly Payments
E-1	9	685	6,165	73,980
E-2	14	685	9,590	115,080
E-3	123	685	84,255	1,011,060
E-4	203	705	143,115	1,717,380
E-5	549	762	418,338	5,020,056
E-6	533	833	443,989	5,327,868
E-7	502	855	429,210	5,150,520
E-8	129	879	113,391	1,360,692
E-9	73	917	66,941	803,292
WO-3	1	895	895	10,740
O-1	24	770	18,480	221,760
O-1E	32	860	27,520	330,240
O-2	42	831	34,902	418,824
O-2E	14	890	12,460	149,520
O-3	118	894	105,492	1,265,904
O-3E	39	931	36,309	435,708
O-4	184	977	179,768	2,157,216
O-5	127	1,035	131,445	1,577,340
O-6	58	1,043	60,494	725,928

(Source: DMDC West, 2002)

**Table 20. Total and Average BAH Payments at Robins AFB in 2001
(Based on April 2001 Populations)**

Total BAH Monthly Population/Per Month	2,774
Total BAH Montly Expenditures	\$2,322,759
Total BAH Yearly Expenditures	\$27,873,108
Average Monthly BAH Expenditure per Person	\$837
Average Yearly BAH Expenditure per Person	\$10,048

Contractor Housing Cost Studies for BAH

As mentioned previously in Chapter 2, under direction from the DoD, Runzheimer International assists in the collection of the rental market housing data used by DoD to compute the BAH for military member duty locations. In 2001, the government provided approximately \$1.1 million in consideration to Runzheimer (Folkes 2002: Fredericks, Runzheimer International, 2002). The contractor performed data collection on approximately 405 housing areas in 2001 (Tovar, DMDC West, 2002). Spreading the \$1.1 million contract cost by the 405 housing areas averages \$2,716 per housing area location. At Robins AFB, there were a total of 3,978 military members with and without dependents receiving BAH payments in 2001. Spreading the \$2,716 contract consultant costs over the 3,978 members stationed at Robins AFB receiving BAH payments averages \$.068 per member for the year.

Military Family Housing Office Support

Estimated military housing office labor costs associated off base local community housing were calculated by multiplying the percentage of effort provided by the housing flight to the General Schedule Locality Rates of Pay from the U.S. Office of Personnel Management (OPM). The tabulation for the military family housing labor activity costs is provided in Appendix B. The total costs due to efforts employed by military housing flight personnel for local community housing was subtracted from the O&M expenditures associated with on base housing and added to the local community housing expenditures. Using these assumptions, the amount of military family housing labor costs associated with local community housing in 2001 was approximately \$34,700. Spreading this cost over the 2,774 military members with dependents receiving BAH to live off base in the

local community near Robins AFB results in an average cost of \$12.50 per unit for the year.

Total Costs for Off Base Local Community Housing

As summarized in Table 21, by adding the estimated yearly BAH stipend per military member with dependents, the housing data collection contract costs per member, and labor effort costs from military family housing office personnel per unit, the total yearly estimated costs for providing an average military family housing unit off base in the local community is about \$10,061. This averages approximately \$838 per month per housing unit.

Table 21. Tabulation of Average Annual and Monthly Cost of Off Base Housing in Communities around Robins AFB (in 2001 Dollars)

Type of Costs	Per Unit/ Per Year	Per Unit/ Per Month
BAH Payments	\$10,048	\$837
Contract Study Costs	\$0.68	\$0.06
Housing Office Labor	\$12.50	\$1.04
TOTAL	\$10,061	\$838

Comparison of Average Expenditures for Public and Private Military Housing

A summary on the expenditures associated with military family housing, privatized developed housing, and local community housing for military members stationed at Robins AFB GA is illustrated in Figure 2. The estimated average cost per housing unit in 2001 constant dollars for on base military family housing amounts to approximately \$14,951 per year or \$1,246 per month. The estimated cost per unit for

privatized housing averages \$10,509 per year or approximately \$876 per month in 2001 dollars. Finally, the expenses associated with housing military families in the local community around Robins AFB averages \$10,061 per year or \$838 per month in 2001 dollars.

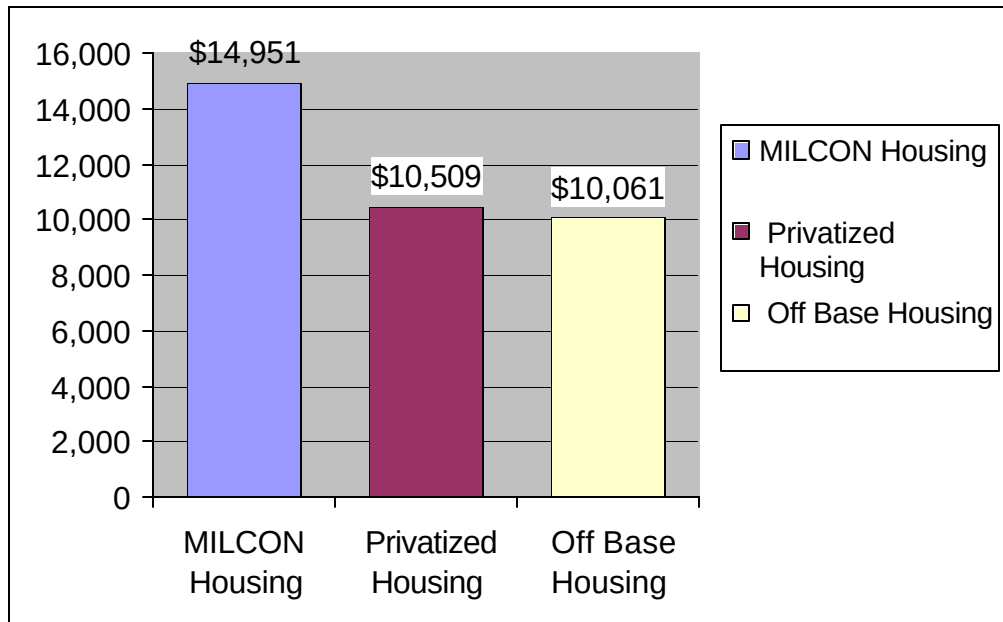


Figure 3. Average Annual Costs for MILCON, Privatized, and Local Community Housing for Military Members at Robins AFB (in 2001 Dollars)

Combined Qualitative and Quantitative Benefit Analysis

After deriving the qualitative benefit score and a quantitative estimated cost per housing unit, a cost to benefit analysis was constructed. This was accomplished by dividing the total average cost per unit in 2001 dollars, by the benefit analysis score to acquire a cost to benefit grade. The lower the cost per benefit, the better the alternative. First the cost to benefit score for housing military families via MILCON units on Robins

AFB is presented. Next, the cost to benefit score for privatized units are given. Finally, the cost to benefit score associated with housing military families in the local community is provided.

On Base “MILCON” Housing

The estimated average cost per unit in 2001 dollars for on base housing is \$14,951 per year. As tabulated under the benefits analysis-scoring sheet in Table 8 earlier in this chapter, the Robins AFB MILCON benefit score is 40. Dividing the total average cost per unit in 2001 dollars, by the benefit analysis score results in a cost to benefit grade of 374 per MILCON housing unit.

Military Housing Privatization Initiative Housing

The estimated average cost per unit in 2001 dollars for a privatized dwelling is \$10,509 per year. As tabulated under the benefits analysis-scoring sheet in Table 8 earlier in this chapter, the Robins AFB privatized housing benefit score is 42.00. Dividing the total average cost per unit in 2001 dollars, by the benefit analysis score results in a cost to benefit grade of 250 per privatized housing unit.

Local Community Housing Costs

The estimated average cost per unit in 2001 dollars for local community housing is \$10,061 per year. A benefit score for of 40.9 was tabulated under the benefits analysis-scoring sheet in Table 8 earlier in this chapter for local community housing around Robins AFB. Dividing the total average cost per unit in 2001 dollars, by the benefit analysis score results in a cost to benefit grade of 246 per housing unit.

Comparison of Average Expenditures for Public and Private Military Housing

A summary on the cost to benefit grades associated with military family housing, privatized developed housing, and local community housing for military members stationed at Robins AFB GA is illustrated in Figure 3.

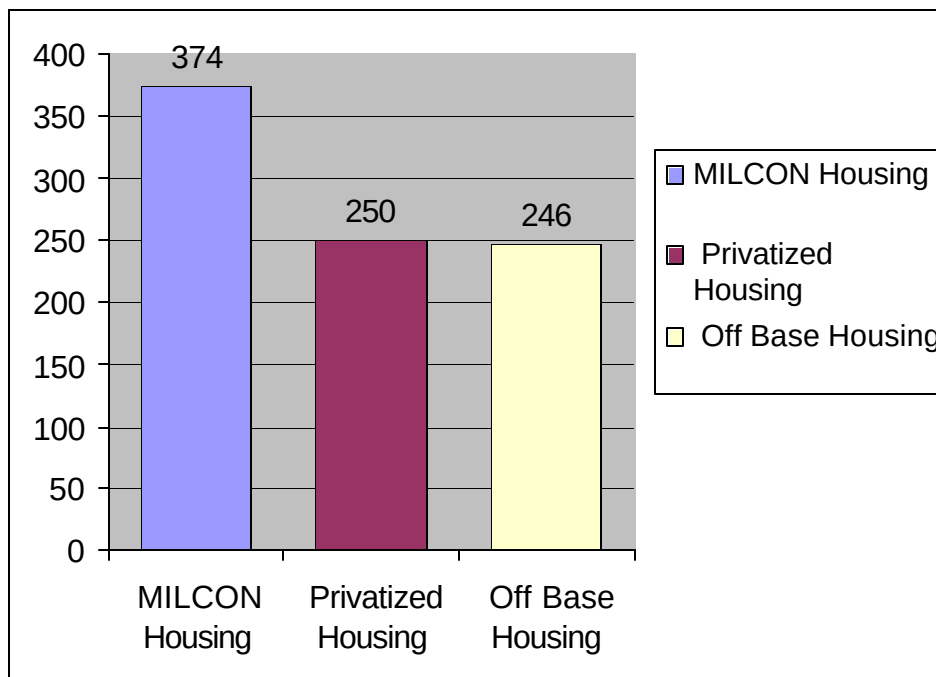


Figure 4. Cost to Benefit Grade for MILCON, Privatized, and Local Community Housing for Military Members at Robins AFB

V. Conclusions and Recommendations

Chapter Overview

This chapter provides a summary of the research effort, presents the major conclusion findings, discusses the limitations of the research, provides future research follow on topics, and concludes with recommendations.

Research Summary

This thesis studied qualitative as well as quantitative housing factors on housing alternatives for military families at Robins Air Force Base. A literature review explored the evolutionary history of housing military families and housing preferences of military members, economic theories of utility maximization and the lump sum principal in its application to transfer policy on housing subsidies, and expenditures as well as funding instruments employed on the different housing alternatives. A detailed explanation of the methodology used for this study was provided in Chapter 3. In Chapter 4, Results and Analysis, the case study results along with individual case study analysis were provided to select the most beneficial housing alternative in terms of qualitative benefits for military members and the government as well as quantitative costs to the government and taxpayer.

Conclusions

Ever since this country's origins, housing military members and their families has provided challenges to the DoD and the United States government. With today's all volunteer force, the military must continually compete with the private sector for skilled personnel by relying on quality-of-life issues including quality shelter. At the same time,

limited resources present constraints as defense budgets decline while the costs associated with housing escalate. Further problems include aging and inadequate DoD domestic housing units. Today, the military relies on three primary alternatives in the public and private sector to house its military families: public on base MILCON housing, private sector local community civilian housing, and private sector housing developed under the Military Housing Privatization Initiative (MHPI). This section of the chapter provides conclusions on the researchers findings on the three alternatives employed at Robins AFB.

On Base MILCON Housing

Living on base provides military members affordability, security, access to quality DoD schools, better commuting time to work, and easier access to main base facilities. On the other hand, on base MILCON housing provides members less privacy than the other housing alternatives. MILCON housing offers the government more control over the housing program since the government fully operates and maintains the units. Two major disadvantages to the government associated with MILCON housing are the timeliness of the ability to obtain the housing unit for service members and their families as well as costs to acquire and renovate the units.

Local Community Housing

Living in local community housing offers military members more privacy. However, there are many disadvantages associated with living off base in the civilian community. For example, currently on average members pay out of pocket money from their base pay to live in off base housing; however, as the average out-of-pocket expense continues to decline under former Secretary of Defense Cohen's initiative, living in the

local community will become more affordable to military members. Another disadvantage associated with living off base is security concerns since crime rates off base are higher than on base for members stationed at Lackland AFB and Robins AFB. In addition, members living off base lack the benefit of access to DoD schools, experience longer commuting times to work, and convenient access to main base facilities.

Privatized Housing

Privatized housing offers advantages to military members and the government associated with both MILCON housing and local housing in the civilian community. For military members, privatized units are more affordable and secure from crime than local community housing. Privatized housing also offers military members shorter commuting times to work than local community housing as well as convenient access to main base facilities since the developments are located just outside the installation or even located on installation property as in the case of other privatization initiatives such as the one at the Lackland AFB Texas. In addition, privatized units provide military members more privacy than traditional MILCON housing. For the Air Force and in turn the government, privatized housing is acquired and constructed faster than traditional MILCON housing. This is probably due to two primary reasons. First, private sector capital used via loans, which is primarily used to develop the housing, is easier to acquire by the developers than traditional MILCON funding. Second, privatized units are built to local commercial code standards, which are less burdensome than military specification MILCON codes. Even though the units are constructed to commercial standards, the housing must meet the market and jurisdictional city or county standards. As illustrated by the project at Robins

AFB, another major benefit to the Air Force and government concerning privatized housing is cost. The development costs for the Robins AFB privatization project was \$56.5 million; however, the Air Force only provided \$12.6 for funding purposes as well as land valued at \$2,212,350 by the U.S. Army Corps of Engineers (USACE), Savannah GA District. Of this amount \$1.5 million represented the NPV cost of estimated defaults for a loan guarantee in the event of a default due to base closure, deployment of troops, or downsizing of personnel. If the base does not experience closure, major troop deployment or downsizing of personnel, the government will not have to actually provide this money to the contractor. The other \$11.5 million represented a credit subsidy of the favorable interest rate over the life of the guarantee.

Under privatization, the use of private sector capital reduces the government's initial outlays for housing units by spreading the costs via BAH over a long term. Private sector funds significantly stretch and leverage the Department's limited housing funds.

Lump Sum Theory

Chapter 2 in this study discussed a 1977 report on the antipoverty effects of various transfer programs conducted by T. Smeeding. In the study, Smeeding noted that providing a dollar via housing subsidy in-kind transfer was worth 56 cents compared to providing poor people \$1 in cash for housing. As illustrated in Chapter 4, the estimated average cost to provide military members public housing transfer in kind amounts to \$1,246 per month at Robins AFB. The estimated average cost to provide military members a cash subsidy to live in the local community around Robins AFB amounted to \$838 per month. Therefore, providing a dollar via subsidy in-kind transfer is worth

approximately 67 cents compared to providing military members each dollar in cash for private sector local community housing near the base.

Privatized housing at Robins AFB cost the government approximately \$876 a month. Although this costs more than providing money for local community housing, it costs less than on base MILCON housing. Further, privatized housing meets the needs of military members demand for convenient quality housing as illustrated by occupancy rates at both locations. Although military family housing offices provide referrals to the privatized developer on military members, the Air Force does not guarantee occupancy of the units. Therefore, privatized housing seems to fit the economic market system as a place where members choose to live.

Research Limitations

Due to the use of a case study methodology, generalizations drawn from the study may not apply to the population military family housing methods at all Air Force bases or other DoD installations. The analysis and results of this study apply to the housing alternatives used to accommodate military families at Robins AFB.

Another limitation dealt with assumptions used to perform quantitative analysis on the costs associated with the three methods to house military families. Concerning capital costs of construction for MILCON housing, assumptions were based on estimated life of the housing unit as well as a fixed discount percentage of 2.75% over the expected life of the housing unit. In reality discount percentages vary over the life of the unit. Further costs were based on averages of all units under MILCON, privatization, and local community housing. When comparing the average costs associated with each housing

alternative, it is difficult to compare the actual facilities. For example, more junior ranking individuals live on base versus off base. Therefore, the average costs to live in off base units consist of more senior ranking members which may skew the average higher than the other two alternatives. In addition, the actual dwelling units differ tremendously in size, floor plans, as well as other housing characteristics. Further since costs in this study are based on 2001 dollars, expenditures associated with BAH for privatized units as well as off base local community housing were based on 2001 BAH rates. These rates are subject to change due to recent quality of life initiatives which have reduced the out of pocket expenses for military members who do not live in on base housing. Finally, estimations on efforts provided by military family housing office personnel were based on percentages provided by the housing offices versus some formal measurement of activity such as manpower engineering or activity based cost software systems.

The final major limitation of this research concerned the researcher not interviewing housing occupants. This would have provided an end-user customer view of the three housing alternatives.

Future Research

The analysis and results of this research applied to the public and private sector housing alternatives used to accommodate military families at Robins Air Force Base.

Other possible areas of research include:

- Provide surveys on quality of life issues associated with housing to military members residing in housing units on base, privatized units, and off base local community housing. From the results of the survey determine which housing alternative is perceived beneficial in terms of cost, distance to workplace,

housing space, quality of the residence, privacy, safety, in addition to other factors. As discussed in chapter 2, a similar study was performed by RAND Corporation comparing housing on base versus off base; however, the study did not include privatization initiatives.

- Explore additional Air Force as well as DoD installations that offer housing via the three housing options of MILCON housing, privatized housing and local community housing explored in this study. Other installations have adopted different approaches to the privatization initiative. For example, at Fort Carson Colorado, the Army has turned over all of its housing operations to the private sector.

Recommendations

There are two primary recommendations concerning housing alternatives for military personnel. The first recommendation is to increase reliance on local community housing. The second recommendation is to gradually replace traditional MILCON housing with privatized housing.

As the most cost effective housing alternative, local community housing offers the government housing for military members similar to their civilian counterparts. As BAH rates increase to where members experience zero out of pocket expenses, local community housing should become more appealing to military members, yet still save the government costs compared to providing a house subsidy in kind. In locations where suitable and affordable housing near military installations are insufficient, local community housing is not able to fully meet the needs of military families. Therefore, some reliance on housing earmarked for military members is required.

Traditional MILCON housing is costly. Further, much of DoD's housing inventory is outdated and inadequate. Finally, the business of housing is not a DoD core competency. Recommend the DoD gradually replace MILCON housing through attrition with privatized units. Thus far, the privatization project at Robins AFB seems relatively

successful. As the current inventory of DoD housing ends its useful life whereby maintaining the units are too costly and improving them is not as cost effective compared to replacement, it appears that privatization can fill the housing shortage capacity gap faster and less costly to the American taxpayer. Further, military members residing in privatized units are presented with similar beneficial amenities such as access to work and on base services and facilities.

Appendix A. Military Family Housing Funding Tables

Appendix A, Table 1 - Base Housing Construction Funding

710. CONSTRUCTION	
711. New Construction	This project provides for: (1) Erecting, installing, assembling, relocating, or replacing family dwelling units. (2) Related land acquisition, site preparation, excavating, filling, landscaping, or improving sites relating to work in "(1)." (3) Initial outfitting of dwelling units with major equipment and fixtures, for example, kitchen ranges and refrigerators; also washing machines, clothes dryers, and dishwashers when authorized. (4) Supervision and inspection of construction (see AFI 65-601, volume 1, chapter 21). (5) Construction of mobile home facilities and no dwelling buildings associated with a family housing area. (6) Construction of roads, driveways, walks, and utility systems, which primarily serve family housing units. (7) Construction of community facilities integral to a family housing area. (8) Replace damaged or destroyed family housing facilities.
713 Post Acquisition Construction	This project provides for construction to: (1) Upgrade inadequate family housing quarters and rental housing. (2) Improve adequate public quarters. (3) Convert existing facilities to family housing quarters. (4) Alter, expand, extend, or repair family dwelling facilities, except as provided in P722. (5) Family housing real property, (other than dwelling units), required subsequent to and because of previously acquired dwelling units. (6) Retrofitting existing units to make them more energy efficient, and to provide substantial savings in utility costs such as, upgrade ceilings, roofs, wall insulation, and heating and air conditioning systems to current standards. (7) Alter family housing to accommodate physically handicapped family members.
714 Advance Planning and Design	This project provides for planning and design of family housing facilities. It includes: (1) Preliminary and site adaptation studies. (2) Working drawings, specifications, estimates, project planning reports, and final design drawings.

(Source: AFMAN 65-604)

Appendix A, Table 2. Military Family Housing Operation Funding

721. OPERATION
721.11 Management-Government Dwellings This subproject includes all direct administration costs to support government-owned family dwelling units at installation level. This includes management office personnel, supplies, equipment, custodial services, occupancy inspections and surveys, etc., for the family housing office functions. 721.12 Management-Other This subproject includes all direct administration costs to support leased and other family housing properties and programs at installation level. This includes management office personnel, supplies, equipment, custodial services, occupancy inspection, preliminary studies, requirements surveys, and engineering construction plans made prior to OSD approval of new housing projects, etc. This subproject also includes travel and training directly related to housing, and applied for headquarters and/or installation-level personnel. 721.21 Services-Government Dwellings This subproject includes the costs of municipal-type services, such as refuse collection and disposal, fire protection, police protection, entomological services, and custodial services, etc., that support government-owned family housing units. 721.22 Services-Other This subproject includes the costs of municipal-type services, such as refuse collection and disposal, entomological services, snow removal and street cleaning, etc., that support other family housing properties and programs. 721.29 Services-Other (Nonprorated) This subproject includes nonprorated services provided to general officer quarters (GOQ). 721.41 Furnishings-Government Dwellings This subproject includes the costs of government-owned furnishings provided to government-owned family dwelling units. This includes replacement, increases to inventories, maintenance and repair, moving and handling of household furniture, equipment, and domestic appliances not installed, where authorized. 721.42 Furnishings-Other This subproject includes the costs of government-owned furnishings provided for leased housing. Also includes costs of government owned furnishings for overseas privately leased family housing. This includes replacement, maintenance and repair, moving and handling of household furniture, equipment, and domestic appliances not installed, where authorized. 721.51 Miscellaneous -Government Dwellings This subproject includes the costs of country to country agreements, accommodation charges, reimbursement to other US government agencies for government-owned family housing units and other family housing operational costs not included elsewhere. It does not include real estate taxes paid to a foreign government. 721.52 Miscellaneous -Other This subproject includes the costs of country to country agreements, accommodation charges, reimbursement to other US government agencies for other family housing properties and programs, and other family housing costs not included elsewhere. It does not include real estate taxes paid to a foreign government. 721.53 Miscellaneous -Non-BCE Costs This subproject includes non-BCE direct costs incurred to support government-owned family housing units. It provides for: (1) Contracting Office. (2) Other, as applicable.

(Source: AFMAN 65-604)

Appendix A, Table 3. Military Family Housing Maintenance and Repair Funding

722. MAINTENANCE AND REPAIR OF REAL PROPERTY FACILITIES
722.62 Maintenance and Repair-Government Dwellings
This subproject includes all maintenance and repair of government-owned family housing units, whether provided by in-service personnel or separately contracted by the government. This includes installed equipment such as hot water heaters, dishwashers, garbage disposals, furnaces, air conditioners and interior utilities as authorized. Also includes cleaning and clearing of government quarters, after change of occupancy maintenance.
722.66 Self-Help Store -Government Dwellings
This subproject includes all costs of self-help bench stock-type materials issued to military family housing occupants to perform minor maintenance and repair on their dwelling units. It also includes the cost of personnel who manage the self-help store, or issue materials and tools to housing occupants. Governing AFIs outline procedures and limitations.
722.67 Self-Help Store -Other
This subproject includes all costs of self-help bench stock-type materials issued to maintain grounds, other real property, and buildings directly associated with a family housing area. Governing AFIs provide procedures and limitations.
722.71 Maintenance and Repair of Utilities (Exterior)-Other
This subproject includes all maintenance and repair of exterior utility systems that primarily serve family housing units or areas. It excludes utility lines or mains that may pass through or front on family house locations, but which serve other base locations and facilities.
722.81 Maintenance and Repair of Other Real Property-Other
This subproject includes all maintenance and repair of other real property facilities such as roads, driveways, walks, common grounds, and community facilities, etc., that are integral to a family housing area.
722.91 Minor alterations -Government Dwellings
This subproject includes the costs of minor alterations to government-owned dwelling units.
722.92 Minor alterations and Additions -Other
This subproject includes the costs of minor alterations to other real property and buildings directly associated with a family housing area.
722.96 Major Maintenance and Repair-Government Dwellings
This subproject includes major maintenance and repair projects on government-owned family housing units including those damaged or destroyed.
722.97 Major Maintenance and Repair-Other
This subproject includes major maintenance and repair to other real property, private housing where authorized, and buildings directly associated with a family housing area including those damaged or destroyed.

(Source: AFMAN 65-604)

Appendix A, Table 4. Military Family Housing Utilities Funding

728. UTILITIES
728.11 Utilities-Government Dwellings This subproject includes costs of utilities consumed in government-owned family dwelling units. It also includes cost of reimbursable utility services furnished to civilian occupants of CONUS government quarters. It provides for: (1) The cost of water procured or produced for consumption. (2) The cost of electricity procured or produced. (3) The cost of gas, fuel oil, and coal (including delivery costs, if applicable) procured. (4) The cost of sewage disposal procured or produced. (5) The cost of base produced utilities transferred to family housing, the cost of heating and air conditioning plant operations, and the cost of other utilities or fuels, such as steam, coal, etc., provided to government-owned family dwelling units. (6) Utility construction amortization costs. 728.12 Utilities-Other This subproject includes costs of utilities consumed in other family housing properties. It also includes cost of reimbursable utility services furnished to privately owned trailers located in base-operated trailer parks. It provides for the same utility services as outlined in subproject 728.11, subparagraphs 1-6, as applicable to other family housing properties.

(Source: AFMAN 65-604)

Appendix B. Military Family Housing Office Activity Workload

Pay Grade	Annual Pay Rate	On Base Housing Workload		Privatized Housing Workload		Off Base Housing Workload	
		Effort	Cost	Effort	Cost	Effort	Cost
GS-12	58,848	75%	44,136	15%	8,827	10%	5,885
GS-9	40,580	100%	40,580				
GS-9	40,580	80%	32,464	15%	6,087	5%	2,029
GS-9	40,580	100%	40,580				
GS-9	40,580	100%	40,580				
GS-9	40,580	100%	40,580				
GS-7	33,175	70%	23,223	20%	6,635	10%	3,318
GS-7	33,175	70%	23,223	20%	6,635	10%	3,318
GS-7	33,175	100%	33,175				
GS-7	33,175	100%	33,175				
GS-7	33,175	100%	33,175				
GS-7	33,175	95%	31,516			5%	1,659
GS-7	33,175	95%	31,516			5%	1,659
GS-7	33,175	95%	31,516			5%	1,659
GS-6	29,852	70%	20,896	10%	2,985	15%	4,478
GS-5	26,785	45%	12,053	15%	4,018	40%	10,714
TOTAL			\$512,388		\$35,187		\$34,717

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14. ABSTRACT This study explored the three primary housing alternatives along with their associated benefits and costs for military members at Robins Air Force Base. Using a case study methodology, qualitative and quantitative data were collected from contract documents, cost records, statements and testimonies to Congress, literature, census data, and interviews with civil engineering, contracting, financial management and legal professionals. This data was analyzed to determine which housing alternative seems to provide the best benefits at the lowest costs for military members and the government. The data indicated that private sector alternatives are less expensive than government provided housing. In addition, it appears that the Military Housing Privatization Initiative is reaching its goals of providing housing faster and at a lower cost to the American taxpayer than traditional on-base military constructed (MILCON) housing.					
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