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# NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

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## MBA PROFESSIONAL REPORT

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**Business Case Analysis: Increasing Air Force Dining Hall Use  
as an Alternative to Closure**

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**By: James S. Simmons, Jr.  
December 2011**

**Advisors: Raymond Franck,  
Bryan Hudgens**

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**BUSINESS CASE ANALYSIS: INCREASING AIR FORCE DINING HALL USE  
AS AN ALTERNATIVE TO CLOSURE**

James Simmons, Captain, United States Air Force

Submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

from the

**NAVAL POSTGRADUATE SCHOOL  
December 2011**

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# **BUSINESS CASE ANALYSIS: INCREASING AIR FORCE DINING HALL USE AS AN ALTERNATIVE TO CLOSURE**

## **ABSTRACT**

The current Department of Defense fiscal environment demands careful analysis of every dollar spent, and elimination of wasteful and inefficient practices. Over the last decade, the Air Force has closed 49 dining facilities, in many cases due to underuse. Recent graduate research has shown the potential for millions of dollars in savings as a result of closure and the resultant payment of Basic Allowance for Subsistence (BAS) to all airmen in its place. However, no analysis has been performed on the potential impact of increasing dining hall patronage by allowing all base personnel (adding officers, civilians, and retirees) to make use of them when and where feasible. This project will examine this alternative course of action and quantify the savings associated with this possibility by considering additional food expenses and reasonable expectations for increased patronage by performing a business case analysis on the recent pilot program at the Sierra Inn at Travis AFB, CA. This business case analysis template allows for an objective assessment of that decision based on its net present value, and should be of value elsewhere in the Air Force in both the decision to implement the Food Transformation, and as a metric of effectiveness after implementation.



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## **EXECUTIVE SUMMARY**

The current Department of Defense fiscal environment demands careful analysis of every dollar spent, and elimination (where possible) of wasteful and inefficient practices. Over the last decade, the Air Force has closed 49 dining facilities, in many cases due to underuse. Recent graduate research has shown the potential for millions of dollars in savings as a result of closure and the resultant payment of Basic Allowance for Subsistence (BAS) to all airmen in its place. However, no analysis has been performed on the potential impact of increasing dining hall patronage by allowing all base personnel (officers, civilians, and retirees) to make use of them when and where feasible.

My research examined this alternative course of action as employed at the Sierra Inn, Travis AFB, CA. Using pre- and post-Food Transformation Initiative (FTI) data on the number of meals served (broken out by sitting), number of meal card and cash patrons, food expenses, and renovation costs, I calculated the net present value for the FTI changes at Travis AFB to determine if it makes financial sense. Additionally, I examined the sensitivity of the NPV calculation by isolating and manipulating key variables in the NPV formula: discount rate, initial expense, and subsequent cash flows. The NPV for this project, using constant revenues, Office of Management and Budget-provided interest rates, and actual renovation costs was positive. Further, although the NPV is subject to changes in the variables, the calculation can be relied upon within a reasonable range, and as such, indicates that based on the government's standards for determining whether or not a project makes financial sense, the FTI changes were a smart decision for Travis AFB. This business case analysis can be of value elsewhere in the Air Force under similar circumstances, or can be adjusted accordingly based on local conditions.

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## I. INTRODUCTION

One of the most enduring features of military bases and the overall military experience over the years has been the “chow hall”, “mess hall”, or what is now known in the Air Force as the *dining facility*. In the Air Force, dining facility operations are governed by the Air Force Services Agency. In their own words,

One mission of the HQ Air Force Services Agency (HQ AFSVA) is to provide top quality food service to military personnel in modern, state-of-the-art dining facilities at Air Force (AF) installations worldwide. Daily food service is very important to the quality of life for Airmen and has a dramatic effect on morale and retention (Facilities Design Guide, n.d., 3).

The Air Force Services Agency operates approximately 276 dining facilities, and over 250 non-appropriated fund (NAF) food and beverage operations serving more than 93 million meals a year at over 100 Air Force installations around the world (King, n.d.). AFSVA coordinates operation of facilities with each wing commander by use of an internal contract, called an Installation Operating Agreement (IOA). The decision to keep a facility open or closed ultimately rests with the wing commander but requires coordination with AFSVA and any existing external contracts (such as food service contractors) (Browning, 2011).

The end of the Cold War triggered a significant draw-down in the number of Air Force installations and their respective dining facilities. However, a number of other factors beyond base realignments and closures, such as underuse of facilities, have led to the shuttering of facilities over the last decade. Further, recent Department of Defense budget cutbacks force commanders at all levels to look for potential savings, namely in those areas deemed non-critical to the mission. Given that the Air Force spends approximately \$128M annually on food service contracts themselves, plus the added utilities, facility upkeep, and manpower required to operate a modern Air Force dining facility, wing commanders are opting to close their base facility in favor of across-the-board Basic Allowance for Subsistence (BAS) payment (Spoth, 2009).

## **A. RESEARCH QUESTION**

Is it more beneficial (from a funding, morale, and health perspective) to increase dining hall patronage by allowing all base personnel (adding officers, civilians, and retirees in addition to the current enlisted patrons) to make use of them when and where feasible, rather than closing the facilities outright? Prepared food for a given meal cannot be re-served, and food requirements are based on patronage projections, so the potential for waste is high. Given the same level of food service, increased patronage could translate to decreased waste, such as fewer discarded meals and less wasted manpower while still providing a valued benefit to the Airmen and introducing the benefit to a wider base population.

My project will examine this alternative course of action and quantify the savings (or lack of wasted resources) associated with this possibility by considering wasted food quantities and associated expenses, excess seating and serving capacities, and reasonable expectations for increased patronage using the Sierra Inn at Travis Air Force Base (AFB), CA as a business case analysis. Given that this alternative has been recently implemented at Travis AFB under a pilot program, comparisons can be made showing the costs and benefits of that decision and can be of value elsewhere in the Air Force under similar conditions.

## **B. ALTERNATIVES**

The Air Force currently exercises one of two options when faced with flagging facility usage: remain status quo or close the facility outright. This study will explore one specific additional alternative for managing base dining facilities, expanded patronage.

### **1. No Changes to Dining Facility Operations**

The most obvious course of action for wing commanders with regard to the utility and future of their dining facilities is to keep operations status quo. Dining facilities are for the exclusive use of enlisted troops (both meal card holders and non-meal card holders) and personnel on temporary duty (TDY) orders who receive pro-rated per diem

based on the availability of dining facilities in accordance with DoD Financial Management Regulation, Chapter V (Hickam, 2009, p. 6). There are no additional expenses associated with this alternative; however, it offers no potential improvements in cost, waste reduction, or increased morale. Based on the unique circumstances of each dining facility around the Air Force, this option may or may not leave the dining facility increasingly vulnerable to economic scrutiny in the current budget environment. While many facilities may continue to enjoy worthwhile use and consumption levels, many more will continue to be highlighted as potential targets for budget cuts, eventually leading to closure anyway.

## **2. Outright Closure**

Recent graduate research by Capt Michael J. Hickam at the Air Force Institute of Technology (AFIT) has shown the potential for significant savings as a result of outright closure. As a result of closure and subsequent lack of government-provided meals available, the Air Force must pay all enlisted troops (not just those living off base) Basic Allowance for Subsistence, which will be discussed in later chapters. At four selected bases, research showed an estimated savings of between “\$420K and \$4.6M annually and a total savings from all four bases totaling over \$12.1M” (Hickam, 2009, p. iv). While the cost savings make for an attractive target, wing commanders must weigh this option against potential negative impacts on base morale and possibly the mission. Though dining facility usage is low, part of the customer base depends on dining facilities as their primary means of sustenance. Closure of their facilities might appear to them as yet another eroding military benefit, could indirectly affect quality of work and retention rates, and also trigger a further decline in healthy eating habit options for our most junior Airmen.

## **3. Increase Accessibility by Lifting Usage Restrictions**

A third option, which needs to be carefully considered, is to increase patronage at base dining facilities. The potential impacts of allowing all base personnel (officers, enlisted, retirees, and civil service) include less wasted food, utilities and manpower which translates to a lower per plate cost to the Air Force by spreading indirect costs over

a greater number of plates served. Further, increased accessibility means the facility is providing a valued product and service to a greater number of personnel, thereby making it a more valued asset to the base leadership and the base population. Finally, it provides a venue for military food service personnel training wherein the military's food service personnel (at those bases whose food services haven't been contracted out) receive the necessary on-the-job training and qualifications to perform their duties in the deployed environment. Closure of facilities means hampered abilities to provide this mandatory training and experience, which makes it that much more important to keep the facility open and well-used.

### **C. ASSUMPTIONS AND CONSIDERATIONS**

One key consideration when making the decision on how to run a base dining facility, is whether or not the facility can accommodate the potential increases in personnel. Total seating capacity must be compared with current average usage, and a reasonable projection for increased patronage to determine feasibility of increased accessibility. This determination must be made before entering into a serious discussion regarding increased accessibility for all base personnel.

Second, at some installations including many Air Education and Training Command (AETC) bases such as Lackland AFB, TX, junior enlisted troops are required to live in the dormitories and likely do not have the means or permission to travel off base for food. Dining facilities at such installations should be exempt from the closure discussion. Similarly, the flight kitchens which service transient aircrews at all hours of the day and night should not be considered in this discussion because they also service predominantly a population which has very limited dining options because of their work and transportation limitations.

## II. BACKGROUND

“In the last decade or so, the Air Force has done away with 49 of its 325 dining halls—many because of installation closures, mission changes or force reductions. The ones still open...are not being used as much as the service wants” (Spoth, 2009). The Air Force estimates “many base dining facilities have utilization rates of less than 50% ” (McKeen, 2010). Further, according to the director of the Air Force’s Food Transformation Initiative, Michael Szymanski, “enlisted airmen use their meal cards about 40% as much as they could.” For comparison purposes, “college campuses typically see usage rates of about 70% ” (Spoth, 2009). According to Lt Gen Richard Newton, Chief of Personnel and Services for the Air Force, “each meal served costs the service about \$20. The Air Force served about 91 million meals in fiscal 2008, which adds up to roughly \$1.8 billion” (Spoth, 2009).

One factor in the decreased usage of Air Force dining facilities is the growing trend of one-plus-one dormitory construction in which two dormitory rooms are connected by a shared kitchen with a full complement of cooking appliances. According to the Air Force’s Vision 2020 plan, all existing dormitories are planned to undergo this transformation, and certainly all new dormitories would include this feature (Arana-Barradas, n.d.). It is unclear from my research whether all dormitories presently feature one-plus-one accommodations. The option for junior enlisted troops to prepare their own meals on their own schedule has proven to be a factor in the decline of dining facility viability (Demmons, Rohlinger, & Heiman, 2006, p. 61).

With regard to Air Force budgeting, the catch-phrase “do more with less” has become the mantra for commanders at all levels looking to generate savings while still accomplishing the mission. In discussing future defense budget concerns, former Secretary of Defense (SECDEF), Robert Gates, stated that, “Defense spending is about to enter a steep decline that may force the Pentagon to abandon some military missions, shrink the armed forces and perhaps limit the U.S. role in the world” (“Robert Gates: Budget Cuts”, 2011). Similarly, former Chief of Staff of the Air Force (CSAF), General T. Michael Moseley, opens the AFSO 21 Tactical Rapid Improvement Event Fieldbook



with the following: “We must find a way to generate savings within our constrained budget that can be applied to the pressing need of recapitalization.” He later proposes that we “stop doing non-mission critical tasks” (Tactical Rapid Improvement Event Fieldbook, 2006, p. 3).

Towards those ends, in January of 2011, then-Secretary Gates announced that the Department of Defense must cut approximately \$78 billion through fiscal year 2016 in addition to \$100 billion identified as savings across each of the four military branches as a result of his previous (May 2010) mandate (Keyes, 2011). While it is unclear whether or not current Secretary of Defense, Leon Panetta will agree to this level of budget cut, or propose even deeper cuts in line with President Obama’s calls for an additional \$400 billion savings over the next 12 years, it is clear that the intent is to squeeze savings from not only the Air Force, but all branches (Bennett, 2011).

This sentiment is echoed by current CSAF, General Norman Schwartz: “We need to be disciplined and responsible. The Air Force is going to have budget cuts and will have to prioritize and make adjustments” (Chavana, 2009). With regard to where these savings will come from, Secretary Gates stated that “[t]he 'low-hanging fruit'—those weapons and other programs considered most questionable—have not only been plucked, they have been stomped and crushed” (“Robert Gates: Budget Cuts”, 2011). Therefore, this mentality has forced wing commanders to get creative with their budget cutting endeavors, which has led more and more of them to examine dining facility operations as a possible target for savings.

#### **A. CURRENT DINING FACILITY POLICY**

Air Force Instruction 34–239 states that the following personnel are authorized to dine in Air Force dining facilities: Enlisted members who are essential station messing (ESM) are authorized to use the dining facility at no charge; enlisted members who receive BAS (monthly allowance to offset meal costs) are authorized to use the dining facility as a cash-paying customer; and enlisted members receiving the meal portion of per diem are authorized to use the dining facility as a cash-paying customer (AFI 34–239, 2004, p. 35). Members on ESM are considered recipients of Subsistence-in-Kind (SIK)

and were formerly issued a meal card (DD Form 714) which authorized them to eat in the base dining facilities at no additional cost. Currently, at bases whose dining facilities are equipped with the Services Information Management System (SIMS), SIK recipients simply use their military identification card and social security numbers to receive their government-provided meals (AFI 34–241, 2008, p. 2). There are approximately 41,500 airmen in the meal card program around the Air Force (Spoth, 2009).

The Air Force automatically deducts \$277.50 per month from the pay of meal card program airmen (Spoth, 2009). One primary complaint of meal card holders is that if they miss a government-provided meal for any reason, they must then feed themselves “out of pocket” because the money has already been deducted from their pay. Missed meal reimbursement procedures are cumbersome and require coordination through the member’s chain of command as well as finance, similar to the routing and approval process for a travel voucher. As a result, the member is most likely to just absorb the additional costs and avoid the inconvenience of reimbursement (Powers, n.d.).

Single members in ranks Airman Basic through Airman First Class (E-1 through E-3), are usually directed to live in the base dormitories (capacity permitting) by the Wing Commander. Members who fall into these parameters and wish to live off base (without SIK) must request permission through their chain of command. Typically, Air Force policy allows E-4s and above with at least three years of service to live off base (“Base Housing: Barracks and Dormitories”, n.d.).

Any member not receiving SIK and therefore not in the meal card program is instead paid basic allowance for subsistence (BAS) each month and must pay for their dining facility meals. Air Force regulations allow enlisted members receiving BAS to consume a maximum of 30 meals per month at base dining facilities or else they will no longer receive BAS (Powers, n.d.). Under no circumstances are airmen receiving BAS allowed to use a meal card to procure a meal (AFI 34–241, 2008, p. 2).

Basic allowance for subsistence is “a monetary allowance prescribed by law, and paid to military personnel instead of subsistence at government expense” (AFI 34–241, 2008, p. 6). According to the Office of the Secretary of Defense (OSD) Military

Compensation website, BAS is not meant to cover all monthly food expenses, but rather “offset costs for a member's meals. This allowance is not intended to offset the costs of meals for family members” (“Basic allowance for subsistence”, n.d.). Both officers and enlisted members (not enrolled in the meal card program) receive BAS, which is a non-taxable component of military pay. Because BAS is meant to offset some meal expenses for the service member, the allowance rate fluctuates annually dependent on the price of food. Each year, adjustments are made based on the USDA food cost index. As a result, BAS adjustments are made independent of base pay (which is linked to private sector wages) and basic allowance for housing (BAH, which is linked to local housing rental prices). As of 1 Jan 2011, monthly BAS for officers is \$223.04 and \$323.87 for enlisted (“Basic allowance for subsistence”, n.d.).

With regards to officers, Air Force Instruction 34–239 states:

Permanent party officers are not authorized to use the enlisted dining facility except as provided below. The installation commander may authorize officers to eat meals in the dining facility after determining other facilities, including NAF food activities, base exchange cafeteria, and base restaurant, are not available, adequate, or readily accessible to the duty station (AFI 34–239, 2004, p. 35).

Further, when on travel, AFI 34–239 authorizes officers to use dining facilities as follows: “Officers receiving a meal portion of per diem are authorized to use the dining facility when the authorization is included in the TDY orders by the orders authorizing official. Officers may only be authorized to use the dining facility at locations where the installation commander has determined government meals are available for DoD TDY travelers.”

AFI 34–239 makes similar determinations for civilians, retirees, and dependents, adding, “generally, permanent party civilian members of the DoD component are not authorized to use the enlisted dining facility.” Regarding retirees, “installation commanders have the authority to allow retirees to use the enlisted dining facility. When making such a decision, the installation commander should consider the capability of the dining facility, the service impact on delivering the subsistence entitlement to active duty enlisted members, and the service impact on TDY travelers.” Finally, dependents of

service members “are not authorized to use the enlisted dining facility. When family members of military personnel E1-E4 are authorized to eat in the enlisted dining facility, they are charged the discount meal rate (food cost only)” (AFI 34–239, 2004, p. 36).

Table 1 (adapted from AFI 34–239) summarizes the Air Force’s dining facility accessibility policy, including whether or not the personnel are charged a discounted rate or the full meal rate (including surcharge). Currently, dining facilities include a 60% surcharge for non-meal cardholders (Demmons et al., 2006, p. 61).

Table 1. Dining Facility Access

<b>THESE CUSTOMERS</b>	<b>PAY THIS AMOUNT</b>		
	<b>NO CHARGE</b>	<b>DISCOUNT (COST OF FOOD ONLY)</b>	<b>STANDARD RATE (COST OF FOOD PLUS SURCHARGE)</b>
Enlisted members entitled to ESM (meal card)	<b>X</b>		
Enlisted members drawing BAS			<b>X</b>
Officers/DoD civilians when the installation commander determines no other adequate food service facilities are available or readily accessible to duty location			<b>X</b>
Commanders and officers as designated by installation commander when eating to determine quality/quantity of food served			<b>X</b>
Officers and DoD civilians on alert status requiring immediate			<b>X</b>

<b>THESE CUSTOMERS</b>	<b>PAY THIS AMOUNT</b>		
	<b>NO CHARGE</b>	<b>DISCOUNT (COST OF FOOD ONLY)</b>	<b>STANDARD RATE (COST OF FOOD PLUS SURCHARGE)</b>
food availability			
Officers and active duty military family members at federal holidays, Easter, and Air Force birthday when the installation commander permits			<b>X</b>
<b>TEMPORARY DUTY (TDY) PERSONNEL</b>			
Officers and DoD civilian employees not receiving the meal portion of per diem performing field duty, in a group travel status, included in ESM or on Joint Task Force (JTF) operations. Orders shall be in writing and shall specify the time period covered in all situations			<b>X</b>
Military members (officer and enlisted) and DoD civilians receiving the meal portion of per diem, when installation commander determines capacity is available to serve meals to TDY travelers orders authorize use of dining facilities			<b>X</b>
<b>OTHER CATEGORIES OF</b>			

<b>THESE CUSTOMERS</b>	<b>PAY THIS AMOUNT</b>		
	<b>NO CHARGE</b>	<b>DISCOUNT (COST OF FOOD ONLY)</b>	<b>STANDARD RATE (COST OF FOOD PLUS SURCHARGE)</b>
<b>PERMANENT PARTY</b>			
<b>PERSONNEL</b>			
Spouses and dependent children of military and DoD civilians, when the installation commander determines no other adequate facilities are available			<b>X</b>
Military retirees and immediate family members, when the installation commander has determined service will not affect service to ESM members and TDY travelers			<b>X</b>

Source: AFI 34-239 (2004).

## **B. FOOD TRANSFORMATION INITIATIVE**

In 2007, the Services Strategic Planning Board (SSPB) recommended that transformation of food services be the Air Force Services Agency's highest priority (Hickam, 2009, p. 8). As a result, the Air Force Service Agency began work on development of the Air Force Food Transformation Initiative (FTI). The FTI is a new program which "will test a food delivery model aimed at improving quality, variety and availability of food" at the dining facilities of 6 pilot bases. Those initial bases include Elmendorf Air Force Base (AFB), AK, Fairchild AFB, WA, Little Rock AFB, AR., MacDill AFB, FL., Patrick AFB, FL., and Travis AFB, CA (Waack, 2011). The program has been under development for several years, and following award of the food service contract to a single contractor, Aramark, on 31 August 2010, began Phase 1 roll-out in the end of 2010 (Tindell, 2010). According to George Miller Jr., Chief of Air Force Food and Beverage Operations:

Aramark was hired to provide the full foodservice scheme: new menus, new delivery processes and new training techniques. It's giving us more flexibility, such as expanding our hours of operation. We have gone from nine hours a day to about 12 or 13 hours, to allow people the ability to eat when they want. We're hoping for improved meal counts and higher quality of food items. Aramark can change out the menu more rapidly than we can. A college feeding operation is what we're driving ourselves toward" (King, n.d.).

In contrast to current dining facility operations, the Food Transformation Initiative relies on a sole contractor for all food service operations at each of the six pilot bases. Other Air Force bases have four different options for contractor involvement in food service operations: full service appropriated funds (APF) contract, mess attendant APF contract, full service non-appropriated funds (NAF) memorandum of agreement (MOA), and mess attendant NAF MOA (Demmons et al., 2006, p. 5).

Under a full service APF contract, "civilian contract personnel manage all dining facility operations including the administrative staff, mess attendant staff, and cooking staff" (Demmons et al., 2006, p. 5). Under a mess attendant APF contract, the contractor only performs mess attendant functions whereas military personnel from the Services Squadron manage operation, administrative duties, and all cooking for the facilities. This is the most widely used option around the Air Force (Demmons et al., 2006, p. 6).

A full service NAF MOA is similar to a full service APF contract, however, the agreement is entered into with the Services squadron via MOA, and the Services Human Resources Office hires the civilian employees (referred to as NAF employees) to provide the food operations services. Finally, under a mess attendant NAF MOA, as with the mess attendant APF contract, the NAF employees provide only the mess attendant services while all other roles are fulfilled by the military personnel (Demmons, 6). When compared to these standard options, the Air Force estimates that the Food Transformation Initiative will achieve a 30% savings in labor costs over existing service contracts (GAO 11-676, p. 10).

In May of 2009, Lt. Gen Richard Newton, Chief of Personnel and Services for the Air Force, testified before Congress regarding the initiative and stated that the goal of the program is to improve "food quality, variety and nutritious value; increase efficiency;

maintain our organic warfighting food service capability; and save money” (Spoth, 2009). Further, Lt. Gen Newton told members of the House Armed Services Military Personnel Subcommittee that the initiative would take cues on potential changes to food services operations from “cutting-edge models of leading college, university and corporate campuses” (Spoth, 2009).

Overall, the fiscal landscape demands that food service operations be considered in base-level budget discussions. The current situation of underuse has been shaped by legacy policies (AFI 34–239) and evolving food options (one-plus-one dormitories and fast food restaurants). The Food Transformation Initiative presents an alternative to closure or the status quo, and its potential for positive impact are being examined at the pilot bases.



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### **III. SIERRA INN AT TRAVIS AFB BUSINESS CASE ANALYSIS**

Travis AFB is the home of the 60th Air Mobility Wing (AMW) which operates many of the Air Force's primary airlift platforms: the C-17 Globemaster, C-5 Galaxy, and KC-10 Extender. The 60th AMW is the largest wing in Air Force Air Mobility Command (AMC), and as such, is the primary duty station for over 7,200 active duty, 4,200 reservists, and 3,700 civilians. The base is located approximately 7 miles southwest of Fairfield, CA, and 7 miles north of Vacaville, CA.

Personnel on Travis have a number of dining options to choose from, some of which have restricted access (military only, or enlisted only). The following six facilities are operated by the 60th Force Support Squadron (FSS) on Travis AFB: Sierra Inn Dining Facility (previously enlisted only), Rickenbacker's Café (inside the Westwind Inn lodging facility), Gatsby's Grill (golf course restaurant), Ten Pin (inside the bowling alley), Wingman's at the Delta Breeze Club (the collocated base officer and enlisted club facility), and the Golden Bear flight kitchen (aircrew only) ("Air Power: 60th Services", n.d.). In addition to base-operated dining options, anybody allowed on base has access to nine additional fast food restaurants located in the Exchange food court, such as Popeye's, Burger King, and Robin Hood Sandwiches, plus four more fast food options elsewhere around the base ("Travis AFB", n.d.).

#### **A. PRE-FOOD TRANSFORMATION INITIATIVE**

Prior to implementation of the Food Transformation Initiative at Travis AFB, the largest of the six pilot bases, the Sierra Inn dining facility was the only location on Travis which was covered by the essential station messing (meal card) program, and was designated for enlisted use only. The Sierra Inn has the capacity for up to 350 patrons at a time, and offered meals at breakfast (two and a half hours), lunch (two and a half hours), dinner (two hours), and a "midnight meal" (two hours) for a total of nine hours per day of food service (Hickam, 2009, p. 22). In the year prior to opening its doors to all base personnel on 29 November 2010, Sierra Inn served a total of 363,271 meals. This total equates to approximately 30,272 meals per month or 995 meals per day (Floyd,

2011). Of the 363,271 meals served from 29 November 2009 to 28 November 2010, approximately two-thirds of them (241,932 total meals) were served to meal card holders. The remaining 121,339 meals, approximately 10,111 meals per month or 332 meals per day were served to cash customers (non-meal card holders) who are charged an additional 60% surcharge in addition to the cost of the food (Floyd, 2011).

Sierra Inn menu prices were previously set by the food service staff and consisted of the price of food plus a small mark-up which funds the facility sundry costs (e.g., salt, pepper, ketchup, mayonnaise,) (Demmons et al., 2006, p. 60). Menu offerings at the Sierra Inn prior to the Food Transformation Initiative featured typical Air Force dining facility fare: a choice between two main courses (meat), two side dishes (starches), and two vegetables. On average, a dining facility meal could be purchased for around \$4.00 (including the 60% surcharge) (Demmons et al., 2006, p. 63).

Food is purchased by the 60th Force Support Squadron via regional prime vendor contracts, and paid for with appropriated funds. Annual food costs for the Sierra Inn account for approximately 17% of the total operating cost of the facility, with the labor costs and mess attendant contract costs accounting for the bulk of the expenses at 22% and 61% of the costs, respectively (Hickam, 2009, p. 28). In the year prior to implementation of the Food Transformation Initiative, Sierra Inn food costs were an average of \$108,208.99 per month, or approximately \$1.3M annually (Floyd, 2011). Hickam calculated a potential savings to the Air Force of \$4.6M (for the year prior to the Food Transformation Initiative) as a result of closing the Sierra Inn and paying all airmen Basic Allowance for Subsistence. Capt Hickam's calculation takes into account not only the food cost, but additionally the military labor costs (though these costs would shift within the overall base operation), mess attendant contract cost, and equipment maintenance contract costs for the Sierra Inn. The savings realized as a result of facility closure at Travis "would have been large enough to fund all 10 of their unfunded requirements" in that fiscal year (Hickam, 2009, p. 29).

## **B. POST-FOOD TRANSFORMATION INITIATIVE**

The changes in Sierra Inn food services began on 1 October 2010 with the dramatic expansion of hours from a total of 9 hours each day to as many as 14.5 hours per day on weekends and holidays; an increase of up to 61% in open hours. Soon after, the new contractor, Aramark, began work on 3 new food stations at the Sierra Inn, as well as a daily buffet line. They introduced a new deli, grill, and salad bar as well as a “Just4U” healthy options designator for menu options deemed as smart dietary choices and complementary to the Air Force’s broader “Fit to Fight” wellness campaign. And, most notably, on 29 November 2010, the Sierra Inn became available to all personnel with access to Travis AFB, to include officers, civilians, and retirees (“Air Power: 60th Services”, n.d.). Since inception of the Food Transformation Initiative at Travis, the base has invested over \$1.6M in Air Force-funded renovations to the Sierra Inn in an effort to create a more pleasing dining atmosphere, foster an improved sense of community, and further increase patronage (Government Accountability Office, 2011, p. 20).

In the first 8 months after implementing changes to the Sierra Inn, 463,746 total meals were served, or an average of approximately 57,968 meals per month. Compared to the pre-Food Transformation Initiative average of 30,272 meals per month, this represents a 91% increase in number of meals served. Concurrently, average monthly food expenses increased from \$108,208.99 to \$122,092.56, an increase of approximately 13% (Floyd, 2011). Essential station messing (meal card) patronage increased from an average of 20,161 meals per month to 24,097 meals per month, or approximately a 20% increase in the number of meal card patrons per month (Floyd, 2011).

In addition to the dramatic increase in hours of operation and patron base, as well as the renovations to the facility itself, Aramark has greatly increased the spectrum of individual food choices per meal at the Sierra Inn. Where previous meal options included choices between two main courses, starches, and vegetables, it is not uncommon for the Sierra Inn to offer six to eight main courses, a sandwich bar, soup and salad bar, and express dessert bar all during one meal period (“What’s new at Travis – Sierra”, n.d.).

In an effort to transition to a “campus-style” dining program for the Essential Station Messing airmen, as of 1 September 2011, all meal card holders are allowed to use their meal cards to purchase food at each of the six previously mentioned base-operated dining locations, plus an additional 24-hour per day “Knucklebuster Café” opened by Aramark. Where previously meal cardholders could only eat at the Sierra Inn, or essentially pay twice for the same meal (given that the meals are paid for by forgone BAS), they now have the option to swipe their cards at seven different venues around the base (“Air Power: 60th Services”, n.d.).

Given that the source of the food served at the Sierra Inn has not changed (still provided by regional prime vendor contract), the menu prices of the food have not changed, though there may be more expensive options presented to the patrons. However, since implementation of the Food Transformation Initiative, cash customers are now required to pay a 90% surcharge in addition to the cost of the food, up from the previous 60% surcharge (Government Accountability Office, 2011, p. 18). Initial feedback received via customer satisfaction cards at pilot facilities shows a level of dissatisfaction with the increase in surcharge, which brings the average price per meal up from \$4 (at 60% surcharge) to \$6 (at 90% surcharge). This may be cause for concern as the Air Force Services Agency considers wider roll-out of the Food Transformation Initiative around the Air Force (Government Accountability Office, 2011, p. 18).

## **1. Business Case Analysis**

A typical business case analysis to determine whether or not a project should be initiated addresses three primary questions: Is this project consistent with the organization’s mission? Does the organization have the capacity to execute the project? And, is there a favorable Return on Investment (ROI)?

At Travis AFB, the answer to the first two questions with respect to expansion of the dining facility privilege to all base personnel under the Food Transformation Initiative was obviously affirmative.

First, with over 15,000 military, civilian, and retirees living, working, or frequenting the base, it is reasonable to expect the base to provide them with dining options. Second, as previously discussed, dining hall accessibility is at the discretion of the wing commander, therefore the project is permissible in terms of legal capacity.

Within the federal government, the “standard criterion for deciding whether a government program can be justified on economic principles is net present value – the discounted monetized value of expected net benefits (i.e., benefits minus costs)” (Office of Management and Budget, 1992). The equation for Net Present Value (NPV) is as follows:

$$NPV = CF_0 + \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \dots + \frac{CF_n}{(1+k)^n}$$

$$NPV = CF_0 + \sum_{t=0}^n \frac{CF_t}{(1+k)^t}$$

Figure 1. Net Present Value

In this equation, CF = cash flow, t = time, n = project’s life cycle, and k = the project’s cost of capital. Cash flows such as construction or renovation costs are treated as negative values whereas positive revenues are treated as positive values in the equation (Brigham & Ehrhardt, 2002, p. 509). A positive net present value suggests that the project should be executed from a financial standpoint.

For government projects, the Office of Management and Budget (OMB) publishes and updates a forecast of nominal or market interest rates for varying maturities. For the analysis of the Food Transformation Initiative renovations, a reasonable assumption for the life-cycle of the renovations (time until subsequent updates are required) is ten years (t = 10). The nominal interest rate as published by the OMB for a 10-year maturity is 3.0% (k = .03).

For this calculation, I will use a constant \$2/plate increase in revenue (resultant from the surcharge increase to 90%) multiplied by the average number of increased meals

served per month (27,696 meals). Increased revenue is therefore  $\$2 \times 27,696 = \$55,392$  per month, or  $\$664,704$  per year. As previously discussed, the additional meals served drove food costs up by an average of 13%, or  $\$13,883$  per month ( $\$166,596$  per year). Net annual cash flows is therefore  $\$664,704 - \$166,596 = \$498,108$ .

Using the initial  $\$1.6\text{M}$  in Air Force-funded renovations to the Sierra Inn as the initial cash flow, net present value is as follows:

$$\text{NPV} = -\$1.6\text{M} + \frac{\$498,108}{(1+.03)^1} + \frac{\$498,108}{(1+.03)^2} + \dots + \frac{\$498,108}{(1+.03)^{10}}$$

$$\text{NPV} = \$2,648,962$$

Figure 2. Sierra Inn Net Present Value

The positive NPV of  $\$2,648,962$  indicates that this project makes sense from a financial standpoint, based on the assumptions outlined above. Further, based on the discounted cash flows, Travis AFB will reach the break-even point on their investment in just under 3.5 years as the initial outlay is offset by positive revenue in the out years.

## 2. Sensitivity Analysis

The NPV for the Sierra Inn investments under the Food Transformation Initiative are subject to shifts in the variables used to calculate the NPV. Proper consideration of these shifts and their impact on NPV is important in determining whether or not to implement the FTI changes at other bases around the Air Force.

For instance, the dining facility at Base X might be significantly larger, smaller, older, or newer, each of which could potentially increase or decrease initial the renovation expense ( $CF_0$ ) which is partially responsible for the appeal of the new facility. Further, fluctuations in base populations, as a result of deployments or expanding/contracting missions, could impact the revenue stream as well as the food expenses. Finally, the interest rates used in the calculation are subject to changes as dictated by the market.

Examination of these variances in calculating the NPV is referred to as a sensitivity analysis. A sensitivity analysis “is used to determine how much the solution will change if there are changes in the model or the input data” (Balakrishnan, Render, & Stair, 2007).

In order to analyze the sensitivity of the net present value, I first used Excel’s Solver tool to determine the interest rate at which the NPV equals zero. Solver found that given fixed revenues and initial cash outlay with a ten-year project life cycle, the interest rate must exceed approximately 28% for the NPV to fall below zero. Given that the current OMB rate is 3%, it is unlikely to approach 28% in the foreseeable future.

Second, I isolated each of the primary variables: interest rate, revenue, and initial cash outlay (CF<sub>0</sub>). Using interest rate increments of 0.5%, revenue increments of \$62,450 (25% of current average revenues), and CF<sub>0</sub> increments of \$200K yields a snapshot of the net present value under varying conditions. Figure 3, Variable NPV at Sierra Inn, depicts these values below.

Discount Rate	NPV	Annual Revenue	NPV	CF <sub>0</sub>	NPV
0.005	\$3,246,796	\$62,264	-1,068,880	-\$200,000	\$4,048,962
0.01	\$3,117,733	\$124,527	-537,759	-\$400,000	\$3,848,962
0.015	\$2,993,644	\$186,791	-6,639	-\$600,000	\$3,648,962
0.02	\$2,874,297	\$249,054	524,481	-\$800,000	\$3,448,962
0.025	\$2,759,473	\$311,318	1,055,601	-\$1,000,000	\$3,248,962
0.03	\$2,648,962	\$373,581	1,586,722	-\$1,200,000	\$3,048,962
0.035	\$2,542,568	\$435,845	2,117,842	-\$1,400,000	\$2,848,962
0.04	\$2,440,102	\$498,108	2,648,962	-\$1,600,000	\$2,648,962
0.045	\$2,341,388	\$560,372	3,180,083	-\$1,800,000	\$2,448,962
0.05	\$2,246,258	\$622,635	3,711,203	-\$2,000,000	\$2,248,962
0.055	\$2,154,552	\$684,899	4,242,323	-\$2,200,000	\$2,048,962
0.06	\$2,066,118	\$747,162	4,773,443	-\$2,400,000	\$1,848,962
0.065	\$1,980,814	\$809,426	5,304,564	-\$2,600,000	\$1,648,962
0.07	\$1,898,502	\$871,689	5,835,684	-\$2,800,000	\$1,448,962
0.075	\$1,819,054	\$933,953	6,366,804	-\$3,000,000	\$1,248,962
0.08	\$1,742,345	\$996,216	6,897,925	-\$3,200,000	\$1,048,962

Figure 3. Variable NPV at Sierra Inn

As illustrated in Figure 3, with all other variables held stable, as the rate increases, NPV decreases at an increasing rate (overall average of approximately \$100K per 0.5%). NPV becomes zero at a discount rate of approximately 28%. Further, for every 25%



change in revenue (versus current averages), the NPV changes by approximately \$531K. NPV equals zero when revenue falls below \$187,569 annually. Finally, NPV is impacted at a constant rate by varying initial outlays. NPV for the Sierra Inn becomes zero at approximately \$4.2M indicating that, all else being equal, other facilities should not undertake these changes if the renovation costs exceed this amount.

Additionally, analysis of the project’s internal rate of return (IRR) demonstrates the positive value of the FTI implementation at Travis AFB. Internal rate of return is defined as “the discount rate that equates the present value of a project’s expected cash inflows to the present value of the project’s costs” (Brigham & Ehrhardt, 2002, p. 512). If a project’s IRR is greater than the discount rate, or hurdle rate, the project should be undertaken from a fiscal standpoint.

Holding the current average annual revenues and 10-year OMB discount rate of 3% fixed, I examined the effects of changing initial cash flows (up-front renovation costs associated with the FTI) on IRR. Figure 4 shows the favorable range over which the IRR exceeds the hurdle rate.

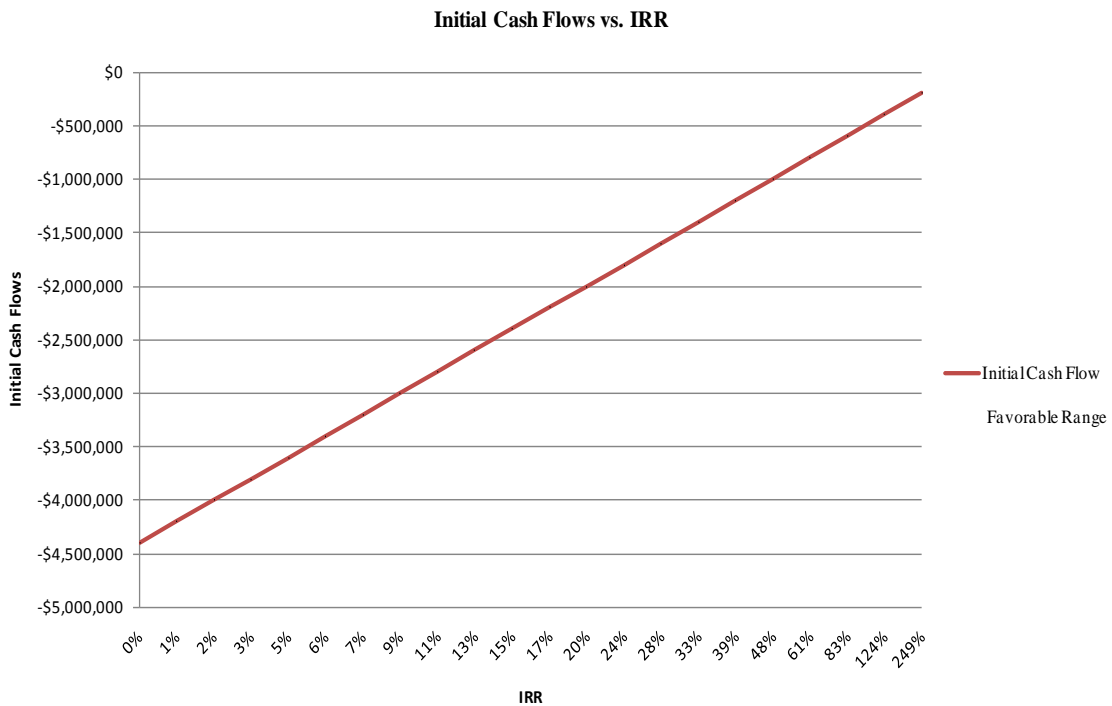


Figure 4. Initial Cash Flows vs. IRR

Finally, I isolated average annual revenues to examine their effect on IRR (holding the current initial cash flow (-\$1.6M) and 10-year OMB discount rate steady). Figure 5 shows the favorable range over which the IRR exceeds the hurdle rate given changing average annual revenues.

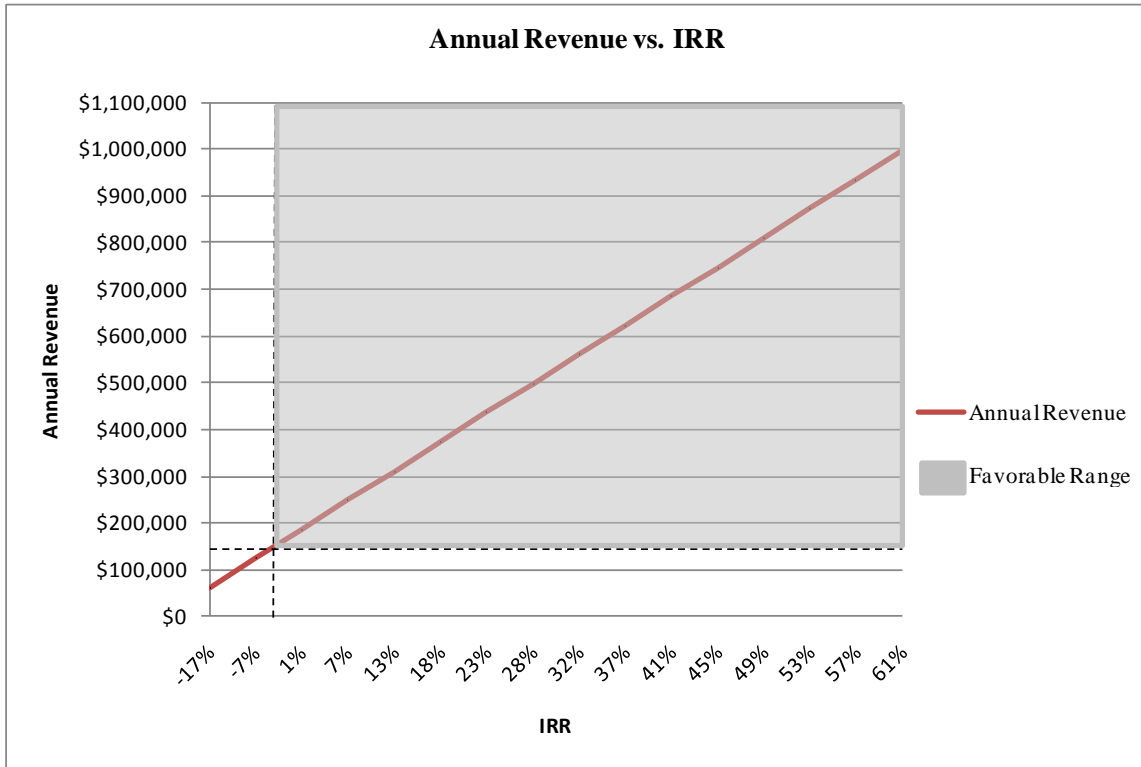


Figure 5. Annual Revenue vs. IRR

Overall, net present value and internal rate of return (over varying reasonable ranges for discount rate, initial cash flow, and average revenue) indicate that the changes associated with the Food Transformation Initiative make fiscal sense based on the assumptions discussed earlier. Coupled with the NPV computations and accompanying sensitivity analysis, the business case for the FTI changes at the Sierra Inn is robust in support of implementation. The sensitivity analysis in Figure 3 and the favorable ranges in Figures 4 and 5 demonstrate significant trade space in the variables associated with these calculations. Examination of this trade space as it applies to differing situations around the Air Force could be a great decision-making tool in their determination to implement FTI or not.

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## **IV. FINDINGS AND RECOMMENDATIONS**

Wing leadership at bases around the Air Force are scrutinizing their budgets in attempts to find the savings mandated by the highest levels of the Government and Service branches. As a result of the poor usage levels around the service, many leaders have opted to shutter their facilities in favor of across-the-board BAS payments in order to save on the food expenses, service and maintenance contract costs, and utilities expenses which have driven the cost per-plate of a dining facility meal to greater than \$20. As Air Combat Command Food Service officials announced in 2008, “with only 43% of all available meals being consumed, airmen have already shown their disapproval of dining facilities” (Wood, 2008). Without alternatives the movement towards closure is gaining momentum. For example, at Andrews AFB, MD, the Air Force has saved more than \$560K a month since opting to close one of their two base dining facilities in May 2008 when a study showed that on average only 14 of the base’s 350 meal card holders ate at the dining facility per day (Spoth, 2009). At Laughlin AFB, TX, wing leadership made the same decision after a survey found that 89% of the base’s dormitory residents (junior enlisted) would prefer receipt of BAS to the meal card program. Laughlin AFB has realized approximately \$815K in cost reductions per year since the facility closure in March 2007 (Spoth, 2009).

However, there is a new option presented by the Air Force Services Agency’s Food Transformation Initiative which aims to revitalize the Air Force’s dining facilities rather than close them. In a pilot program at six bases around the service, the FTI has hired a reputable food service industry leader, Aramark Corporation, to renovate facilities, overhaul the menu, and dramatically increase patronage levels by opening the facility to all personnel with base access.

### **A. FINDINGS**

The results have been encouraging by most measures: Within the first month of the program, the Air Force reported an average increase of 22% in patronage and 24% in meal card holder use across all six pilot locations. Although customer satisfaction ratings

for pricing have shown displeasure with the increased surcharge, facility and food selection increased by 12% while the rating for hours of operation increased by 10% as a result of Aramark's new menu and hours of operation (Tindell, 2011).

At Travis AFB, CA, the largest of the six pilot bases, the Sierra Inn has seen even more dramatic improvements over the initial eight months since launch of the FTI. Overall patronage has nearly doubled with a 91% increase, while meal card patrons have increased by 20%. These improvements come with only a modest increase in food expenses of approximately 13%. Given that the food is still sourced from the same regional prime vendor contracts and thus still costs the same to the Air Force, the significant increase in meals served juxtaposed with the very modest increase in food expenses signals an obvious decrease in waste and therefore decreased cost per plate served. Put simply, nearly twice the number of people eating only 13% more food means that less prepared food is discarded overall.

Further, net present value and internal rate of return calculations of the outlays and revenues experienced at the Sierra Inn demonstrate that the initiative has financial merit. The net present value of the Sierra Inn renovations and accessibility changes is \$2,648,952 based on a ten-year renovation life cycle, constant patronage/revenue stream, and current OMB discount rates. A sensitivity analysis of the net present value calculation demonstrates the importance of changes in interest rates, renovation life spans, revenues, and project costs and their potential impacts on the fiscal viability of a project. In the case of the Sierra Inn, the business case is strongly in favor of implementation. Sensitivity analysis in Figure 3, and the favorable ranges in Figures 4 and 5, demonstrate significant trade space in the variables associated with these calculations. Examination of this trade space as it applies to differing situations around the Air Force could be a great decision-making tool in their determination to implement FTI or not.

Additionally, though not specifically addressed in this analysis, a more severe fluctuation in the NPV (and IRR) of the project might result as the life cycle of the project and the interest rates change simultaneously, as OMB assigns different interest rates to different maturity timeframes.

Multiple changing variables could quickly make a marginal proposition a no-go and should be considered in future implementation scenarios around the Air Force.

Aside from the financial discussion of these changes to base dining, there are intangible benefits to the changes brought about by the FTI to consider. Not only was an enlisted benefit preserved at each of the six pilot bases (versus facility closure), but it was introduced to a far greater audience—the entire base population consisting of officers, retirees, and government civilians. At Travis AFB specifically, base personnel now have a healthy food alternative to the 13 fast food restaurants on base, and military food service personnel have not lost a critical enabler to their deployment training. For these reasons alone, this alternative to both the status quo (which leaves the facility vulnerable to closure as a result of increasing budget concerns) and the outright closure of the facility (which removes a critical training venue and may alienate a small yet significant customer base) deserves thorough consideration in discussions on future Air Force base operations.

## **B. RECOMMENDATIONS**

With less than a year of data and observations since roll-out of FTI changes at the six pilot bases, the Air Force Services Agency should make only tentative conclusions as to the effectiveness of the FTI's impact on utility of the dining facilities and the costs per plate that they serve. The Government Accountability Office (GAO) has tempered their responses to the initial positive findings and cautions the Air Force against premature force-wide implementation.

Their study, released in July of 2011, shows that the FTI may not achieve the 30% labor cost savings initially predicted by the Air Force because the service appears to have overestimated the number of military man-hours available to augment the contractor force, thereby underestimating total contractor hours required and decreasing the potential for savings to 27% or less (Government Accountability Office, 2011, p. 14).

Further, the limited number of months since implementation does not allow for observation of the inevitable fluctuations in the volume of base military personnel as a result of frequent unit deployments and redeployments, and more importantly, what the

GAO has termed the “honeymoon phase” associated with the dining facility changes. As personnel at the six pilot bases learn of the FTI changes to dining facility menus, accessibility, and appearance, they are more likely to try the facilities out in the first few months before deciding that they would still rather eat elsewhere or make the facility part of their daily meal routine. As those judgments are made, patronage levels could potentially settle somewhere between their current dramatic highs and previous troubling lows. Only then should a decision be made as to whether the new, permanent expected levels of usage are an acceptable alternative to status quo or outright closure in terms of tangible expenses (food costs, utilities, labor, etc.) and intangible benefits (morale, fitness effects of healthy eating options, etc.).

The Air Force should also closely monitor the effects of the increased workload on the military food service workers in the pilot facilities. As a result of the Air Force’s inability to provide as many military personnel to augment the contractor force as originally planned, a smaller number of military cooks are now serving significantly more patrons than they are accustomed to (or planned to), and are still expected to participate in physical training and additional military training on their own time (Government Accountability Office, 2011, p. 22). Unfortunately, the simultaneous downsizing of the force’s food service personnel and the underuse of the dining facilities has left that smaller cadre of food service personnel ill-prepared for the surging demands as a result of the FTI at the pilot bases. The Air Force should re-evaluate manning levels to ensure the proper mix of military and contractors at pilot bases (and future FTI locations) before initiating a more widespread implementation.

### **C. FUTURE STUDY**

Future studies on the cost and benefits of the Food Transformation Initiative with regards to dining facility patronage and overall viability need a greater period of observation to allow for a settling-in of the changes. Though initially encouraging at each of the six pilot bases, the recent GAO study made mention of several troubling oversights in the Air Force’s calculation of the potential benefits of the FTI, most notably, the manpower required to augment the contractor force. Future studies should

compare the forecasted contract labor costs with actual labor costs (after operations have stabilized) to determine the total quantifiable costs to the Air Force of the FTI contract. Total contract costs and post-FTI food costs can then be used to help make the determination as to whether or not the cost increases outweigh the benefits of the changes. Is a moderate surge in patronage worth the millions in renovations, increased contract labor costs, and minor increase in food costs?

Additionally, future study should examine the Air Force's methodology in determining the success of the program, and the criteria the Air Force Services Agency uses before deciding whether or not to initiate wider roll-out. If net present value is used, it should not be used in a vacuum, nor can the potential for significant fluctuations in renovation costs, patronage levels, interest rates, and time between renovation efforts be ignored. As the GAO observed, the Air Force lacks clear metrics for determining success of the program, and a definitive plan on how to ensure program objectives are met. Given the Air Force Services Agency's access to additional cost and revenue data at both pilot and non-pilot bases, this business case analysis and resultant return on investment can prove to be a useful objective metric to be used alongside the additional subjective metrics currently employed in assessment of the FTI.



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