

01 August 2004

MEMORANDUM FOR Homeowners Assistance Program Office, Base Realignment and Closure Office ATTN: MAJ David Smith, ASA(I&E), David Bohl, David, C HQ02; David McConnell, HQ02.

SUBJECT: The Development of a Methodology to identify Military Installations with a reasonable probability of having HAP approved, and to estimate for those identified Installations 1) the percentage of personnel that should leave in order to affect the Real Estate Market, 2) the percentage of eligible homeowners, and 3) the percentage of home value HAP will pay as part of the Program.

REFERENCES: Telephone discussions were held with Ms. Peggy Mahoney, USACE HQ and Ms. Kay C. McGuire ERDC/CERL .

Conference calls with Mr. David Bohl, and Mr. David McConnell.

Preliminary briefing with Maj. David Smith, David Bohl, and Frank Jones on July 7, 2004.

Chapter 7 Homeowners Assistance Program, Section I. General, ER 405-1-12 Change 34, 15 May 2000, subsection 7-2.

Background

The Cost of Base Realignment Actions (COBRA) model calculates return on investment. DepSecDef's January 7, 1994, policy memorandum requires the DoD components to use the most current COBRA version, in order to ensure consistency in methodology. Although the model does not produce budget quality data, it uses standard cost factors and algorithms to estimate costs and savings over time, which permit a consistent comparison of bases in a functional or installation category.

Specific instructions were given for the calculation of the Homeowners Assistance Program for input to the COBRA model, as follows: "Homeowners Assistance Program (HAP)-The Secretary of the Army will provide each DoD Component with a list of installations that have a reasonable probability of having a HAP program approved, should the installations be selected for closure or realignment. HAP costs will be included for each of the installations so identified by the Secretary of the Army".

Based on such instructions, TABS determined there is a need to develop a methodology in order to determine such installations.

Objectives

When a real estate market is adversely affected by an actual or impending closure or reduction in scope of operations of a military installation due to Base Realignment and Closure (BRAC) actions, personnel may be unable to dispose of their dwellings under reasonable terms and conditions.

In this case, the Department of Defense (DOD) through the Homeowners Assistance Program (HAP) helps *eligible* homeowners offset real estate losses suffered as a result of these actions.

The purpose of CERL's work is to develop a methodology/Model that will provide:

I) A list of Installations that will have a reasonable probability of having HAP approved, if selected for closure or realignment;

II) For those installations so identified, estimate the number of personnel would have to be removed from the installation before HAP could be reasonably expected to be approved. This should be expressed as a percentage of the total installation population.

III) An estimated percentage of homeowners that will be eligible (qualified) for HAP, and

IV) An estimated percentage of house value that HAP will pay

Methodology

a) Approach

There is no after action data to be analyzed to support the determination of such eligibility. Therefore, a broader data collection and research on past HAP sites was necessary to support assumptions that were used in this effort.

CERL studied the results of Market Impact Studies (MIS) to evaluate how in previous rounds a real estate market was significantly affected by BRAC actions. The variables used were after BRAC actions, such as a 5% decline in home values, and number of days in the market. CERL found no clear evidence a reliable methodology had previously been developed that established and supported a rule of thumb that would provide a guideline for estimating market declines following a Base Closure or Realignment.

Due to the varied economic conditions of the regions at the time of BRAC/HAP actions and the inconsistent data gathering, reporting and information sharing at the DoD level, there are limitations on the reliability of lessons learned from prior BRAC/HAP actions. Therefore, CERL looked at variables related to Real Estate Market Impact, in a National level, points to be considered for our study such as

- interest rates,
- availability of mortgage loans,
- tax policy,
- national and regional economic conditions,

However, the lack of correlation between those variables and BRAC actions, to explain an Economic Impact on the region where the Installation resides, made them not a good choice for our methodology.

Further analysis lead us to use "**Installation Job-Loss**" as our variable of choice to determine Real Estate Market Impact in the region surrounding the Installation, for the following reasons:

- 1) Job-Loss and decline in Home-Value are strongly correlated. Statistical Analysis done on the MIS could confirm this claim.
- 2) It determines Market Value
 - the value of real estate in the local area is driven by the demand for its use
 - demand in the area is driven by employment.

3) It explains Market Value Impact

- with BRAC action, demand goes down with job losses,
- as well as supply going up with transfers, financial hardships and base housing privatizations.

The focus is clearly jobs and the impact to the real estate market the loss of those jobs has to a determining factor. There is little doubt that there is a direct relationship exists between job losses and real estate market declines.

However, the biggest obstacle faced was not the fact a strong correlation exists, but to what degree does a market decline following a significant job loss in an area? Moreover, what is a significant level of job losses that will impact market values? More specifically, is there a reasonable measurable relationship between that percentage of job loss and percentage of market value decline?

So in effect, CERL needed to develop a methodology to measure a significant threshold of job loss that would lead to a market decline and then estimate that level of decline the market would experience based upon the level of job losses. Knowing it was highly probable that a 1% job loss in an area would have a less significant impact than a 10% job loss; CERL felt it was critical to develop a robust model that measured that difference. CERL established a 1% job loss threshold as the significant level based upon prior government guidelines found in Chapter 7 Homeowners Assistance Program, 1977.

Other key variables such as Installation's Market Impact Area - MIA, MIA's Total Employment figures, Installation's Civilian and Military Total Employment figures, MIA's Homeownership Rates, DoD Military Married Personnel Living off Base figures, and Median Home Values for the MAI, were included in the development of our Methodology.

b) Data Sources

Potential economic data elements from various sources were located, reviewed, analyzed and considered for inclusion in the model.

Primary sources considered include: 1) HAP Market Impact Studies (MIS) provided by Sacramento and Savannah Districts, as well as the subsequent MIS reviews, from previous BRAC installations. (2) Bureau of Labor Statistics, Census Bureau, Bureau of Economic Analysis, and Fed Stats, along with numerous state and local real estate data sources.

c) Development

Development and testing of the proposed methodology was extensive.

CERL's original Branch Installation listing (sample) was provided by the TABS Group and included 371 installations consisting of 1) 104 Army, 129 Navy, 75 Air Force, 14 USMC, and 49 Defense Agencies and Field Activities. This list was cross referenced with a second Installations list provided by MAJ Smith, TABS, ASA(I&E). Those installations not on MAJ Smith's listing were removed, such as the numerous Amory listings under the Army.

The Defense Agencies and Field Activities, because they reside in large Metropolitan Area, the job loss impact will not be significant for our Methodology's standards. Therefore, they were not tested.

The result of those actions is summarized as follows:

1. Army – 67 installations test
2. Navy – 111 installations
3. Air Force – 71 installations
4. USMC – 13 installations
5. DoD – 0 installations
6. Total all branches – 262 installations

All of the original 371 installations were assigned a control number by branch and are listed in the final report although only those 262 tested have data that was included in the calculations.

d) *Model Steps Description*

Step 1. As the initial step, CERL identified and defined the market impact area (MIA) of each installation as either the MSA or the principal county (rural) the installation was located in. Principal county and MSA data sources include primarily the list of Installations provided by MAJ Smith, the fedstats.gov and Bureau of Economic Analysis (bea.gov) listing of Metropolitan Statistical Areas (MSAs) and all the comprising counties.

Step 2. Employment. Source of data for the MIA employment consisted of BEA total area employment (year 2002 full & part-time). If in an MSA then MSA total employment, if not within an MSA then principal county (rural) was used. The data source for each Installation's employment totals for both civilian and military was Directorate for Information Operations and Reports (DIOR) - 2003 levels.

Step 3. **Objective I** – *Estimate reasonable probability*. This step was to determine if an Installation would have a reasonable probability of getting HAP approved. The approach: If installation's total employment is = to or > 1% of the total defined areas employment, then reasonable probability of a market impact exists (significance = yes), thus HAP program approval is likely in the event the Installation would be selected for BRAC.

Step 4. **Objective II** - *% of personnel removed before HAP approval*. This step estimated the percent of installation personnel removed before HAP approval would be equal to the percentage of installation lost jobs to reach the 1% threshold.

Step 4. *Housing & Income*. This portion of the model focused on housing census data in an effort to estimate homeownership rates for MIA. Year 2000 housing census data elements utilized included (1) homeownership rate (%), (2) median value of owner-occupied housing units (adjusted to YR 2003/2004 by 15%), (3) median household income, which was identified but not used, and (4) financial hardship, defined by CERL as the % of owners with owner costs >35% of household income, provided in the census data.

Step 5. Estimate Civilian Eligibility. The model applied the homeownership % rate for the area times the number of civilian installation employees to estimate the number of civilian homeowners for the installation. The number of homeowners was then applied to the hardship rate for the area to estimate the number of eligible civilian homeowners.

Step 6. Estimate Military Eligibility. DoD supplied its service wide estimates of married military (52%) and the DoD rate of married military living off base (67%). The married military rate (52%) times the rate off base (67%) was then applied to the area homeownership rate. It was assumed that 100% of military homeowners would be transferred or faced with financial hardships, thus eligible for HAP.

Step 7. **Objective III** - % of HAP Eligible (qualified) homeowners. The CERL HAP model estimated the number of installation homeowners and the HAP qualified homeowners as a % of total installation employment.

Step 8. Estimate Market Impact Parameters. CERL assumed that the installation's total jobs are lost (i.e.: base closure) and that if reasonable probability had been estimated then the real estate market would be directly impacted. The assumptions as to level of market decline (impact) CERL modeled are as follows:

If installation's total employment as a percentage of area's total employment is between ___%, then ___% of decline:

- 1-2% employment lost, then 10% of prior FMV decline
- 2-4% employment lost, then 15% of prior FMV decline
- 4-7% employment lost, then 20% of prior FMV decline
- 7-10% employment lost, then 25% of prior FMV decline
- 10% or more employment lost then, 30% of prior FMV decline

Step 9. Cost to DoD. While there are two HAP program options, for planning purposes CERL selected and assumed the Private Sale by Homeowner option for the model. That option is: DoD reimburses at 95% of prior FMV, less FMV at time of private sale/sale price. The model allied the median sales price (median value for area x 15%) times total estimated HAP qualified homeowners to estimate a cumulative prior FMV, then subtracted the cumulative FMV time of private sale/sale price to arrive at an estimated cost to DoD/payments to homeowners for the installation.

Step 10. **Objective IV** - estimated % of house value that HAP will pay. The CERL model estimated potential HAP cost to DoD/HAP payments to homeowner as described above, in addition to the average cost/payment per eligible homeowner, and the estimate of HAP costs as a % of Prior FMV.

e) Model Executive Summary

The executive summary of the individual installations consisted of a complete listing of the installations, by Service, and totals for each. The Service totals were then summarized and are included with this report under findings below.

The only assumption that had to be modified to obtain a national estimate was the use of the national home median value as opposed to individual installations' MIA home median value.

FINDINGS

371 Installations were considered in our study. In the study, 262 were tested for reasonable probability of having HAP approved. A totals of 112 were identified as achieving such probability, and 150 were determined as not achieving this probability. In the study, 60 Installations were discarded from our study for the reasons mentioned on item c) above. The Defense Agencies and Field Activities were included in our study, but due to their location a reasonable probability wouldn't be reached, assuming they have a small number of personnel compared to the Metropolitan Area in which they reside.

Below is the Summary of our findings. The details of such findings, by Service and by Installation, are provided as an attachment to this document. The Models for each one of the Installations considered in this study, as well as the supporting data will be part of an appendix that will be delivered with the Final Version of this Document.

Service	FINDINGS				
	% of Personnel Removed before HAP could be applied (Objective II)	HAP Qualified Homeowners as a % of Installation Personnel (Objective III)	HAP Cost as a % of Prior FMV (Objective IV)	Total Estimated HAP Cost to DoD	Average Cost per Eligible Owner
ARMY	No National rate for this information. Provided per Installation, individually	18.97%	15.11%	\$ 1,633,933,069	\$ 20,786
AIR FORCE		18.25%	10.86%	\$ 899,421,240	\$ 14,937
NAVY		14.18%	9.76%	\$ 129,342,942	\$ 13,426
USMC		19.80%	16.81%	\$ 433,667,579	\$ 23,127
National Results		18.44%	13.46%	\$ 3,096,364,830	\$ 18,518