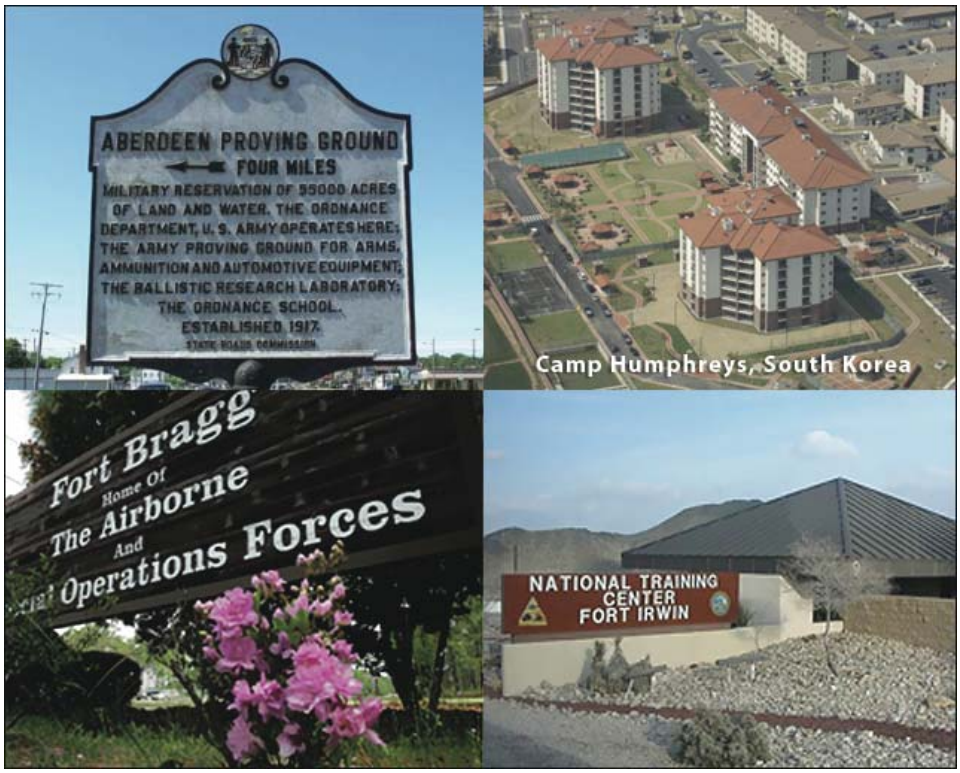
Army Science Board
FY2009 Summer Study

Final Report
December 2009

INSTALLATIONS 2025



Department of the Army
Assistant Secretary of the Army
(Acquisition, Logistics and Technology)
Washington, D.C. 20310-0103

DISCLAIMER

This report is the product of the Army Science Board (ASB). The ASB is a Federal Advisory Committee established to provide independent advice to the Secretary of the Army(SA) and the Chief of Staff, Army (CSA). Statements, opinions, conclusions, and recommendations contained in this report are those of the Army Science Board and do not necessarily reflect any official position of the United States Army or the Department of Defense.

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MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, LOGISTICS AND TECHNOLOGY

SUBJECT: Report of the Army Science Board Summer Study on Installations 2025

I am pleased to forward the final report of the Army Science Board (ASB) on Installations 2025. The report offers recommendations to the Installations Management Command (IMCOM) and Assistant Chief of Staff for Installation Management (ACSIM) on issues critical to future Army installation management.

The ASB was asked to identify specific considerations, influencers and recommendations to enable effective installation management out to the 2025 timeframe. The ASB study team developed a futures assessment model that can be used as a tool for installation planning. This model helps assess various influencers affecting the capabilities of IMCOM and ACSIM to deliver services and can be adjusted as conditions change. Key study recommendations include: (1) the Secretary of the Army should provide additional authorities necessary for the IMCOM Commander to accomplish assigned missions; (2) the Army must better integrate IMCOM's enterprise needs into the Army Total Army Analysis, Program Objective Memorandum, and enterprise management processes; (3) IMCOM should adopt and regularly use a standard "Future Assessment Model" (or similar tool) for assessing the impact of future influencers; and (4) IMCOM should collaborate with the Training and Doctrine Command to update installation doctrines, design personnel training programs, and establish career paths for IMCOM's military and civilian workforce.

I endorse all of the study's findings and recommendations and encourage you to forward the report to the Secretary of the Army.

Frank H. Akers, Jr.
Chair, Army Science Board

Contents

Executive Summary

The Commanding General of the Installations Management Command (IMCOM) and the Assistant Chief of Staff for Installations Management (ACSIM) requested that the Army Science Board (ASB) establish an "Installations 2025 Study Team." (Appendix A replicates the Terms of Reference Memorandum.) The study team was formed in January 2009 to strategically assess the capabilities and services that IMCOM would need to provide in 2025 to perform its missions and responsibilities as one of the four key commands in the Army Enterprise Model supporting force projection. The individuals that comprised the study team are listed in Appendix B.

In conducting this strategic assessment, the Installations 2025 Study Team conducted numerous primary source interviews and made installation site visits to establish a baseline of current IMCOM capabilities and current issues being faced that impact mission delivery today (Appendices C, D, and E). With this services and requirements baseline established, together with internal and external data sources, the study team established expected service performance capabilities that IMCOM must provide in 2025. Nine desired outcomes or end-states for service support were identified as required for mission fulfillment in 2025. In addition, some 200 installation service categories or service functions were identified that IMCOM needs to provide in 2025 at its installations to fully meet its mission responsibilities. Important to conducting this assessment, more than 90 future "influencers" were also identified that could positively or negatively impact IMCOM's ability to provide the required services where and when needed in order to support the desired outcomes for mission delivery at Army Installations between now and 2025.

Combining the above inputs with applicable research, the study team developed a Future Assessments Model that provides IMCOM with a methodology and a process for strategic planning and requirements/budget forecasting. The model can examine a range of scenarios involving impacts of the various "influencers" on the 2025 desired end states or outcomes. This tool, if adopted by IMCOM and with further development, can greatly assist IMCOM with preparing for and defending its budget requests as well as mitigate risks and exploit opportunities IMCOM will face between now and 2025 for successful mission delivery.

The tasking from the Commanding General IMCOM/ACSIM to the study team also identified seven specific areas of concern, to be examined in more detail, that could impact IMCOM's and the Army Installations' mission delivery in 2025:

- Manpower and Financial Resources
- Encroachment
- Enterprise Management
- Information Technology
- Physical Security and Access
- Environment
- Energy Security

Issues IMCOM faces in each of the seven areas were identified, findings summarized, and recommendations provided regarding their potential impacts to IMCOM. The study team arrived at the following conclusion and established 10 recommendations that were endorsed by the Army Science Board on September 15, 2009:

Principal Conclusion

- The IMCOM commander today has inadequate authorities commensurate with his responsibilities to fulfill mission requirements in 2025.

Principal Recommendations

- The Secretary of the Army must establish the necessary authorities in the IMCOM commander to ensure the ability to fully meet mission requirements.
- The Army should better integrate IMCOM's enterprise planning capability into the Army Total Army Analysis (TAA), Program Objective Memorandum (POM), and enterprise management processes.
- IMCOM should adopt and regularly use a standard "Future Assessment Model" (or similar model) for assessing the impact of future influencers.
- IMCOM should collaborate with TRADOC to update doctrines, design a training program, and establish career paths for IMCOM's military and civilian workforce.
- IMCOM should direct garrison commanders to immediately develop a regional growth plan in collaboration with their surrounding communities.
- The Army should take the lead in establishing a consensus within DoD on whether islanding installations is a viable approach for installation energy security through 2025.
- The Army should reexamine the doctrine and policies for installation access control, physical security, and force protection to establish clear roles and responsibilities for IMCOM to meet its mission requirements in 2025.
- IMCOM should establish an enterprise approach to reviewing, planning, and operating its information technology systems and services.
- IMCOM should take the leadership role with other Army and DoD organizations (DASA–ESOH, USACE CERL, etc.), other government agencies (DOI, USDA, etc.), nongovernmental organizations,, and communities to mitigate environmental issues from constraining operations in 2025.
- IMCOM and ACSIM must staff, train, organize, and coordinate to justify and defend the budget and resource requirements for IMCOM's multiple missions.

Because of time constraints during the study, the study team recommends that aspects of the work performed to date be continued, specifically in the areas of concern for Enterprise Management and Physical Security and Access.

Chapter 1 – Introduction

In January 2009, the Army Science Board established an "Installations 2025 Study Team" to lead a strategic assessment of the capabilities and services that IMCOM would need to be able to deliver its missions and responsibilities. This activity was in response to a tasking request from the IMCOM/ACSIM (Appendix A).

At the outset of the study, discussions were held with IMCOM/ACSIM Commanding General, LTG Robert Wilson; the following guidance was established for direction that was later embodied in the Terms of Reference (TOR).

Scope

- Review information relative to Army Installation Management Command's responsibilities in 2025, and provide a basis of data for shaping installation capabilities and delivery of services over the next 15 years.
- Support IMCOM development of strategies for effective and efficient installation management, improved facilities, and standardized products and services, and strengthen soldier and family readiness.
- Provide recommendations on policy and resourcing.

Deliverables

From the study objectives described in the TOR and discussions with the sponsor, the study team focused on three primary deliverables:

- A methodology to assess and prioritize the impact of specific future influencers.
- A discussion of selected key areas, with recommendations to mitigate risks and exploit opportunities.
- Recommendations for a fully mission-capable IMCOM.

This report documents the study team's work from January through August. The report includes background section on IMCOM (Chapter 2); the study team's organization, approach, and work plan (Chapter 3); an assessment of the influencers expected in 2025 (Chapter 4); a discussion of selected key areas—their risks and opportunities (Chapter 5); and the principal conclusions and recommendations (Chapter 6). Appendices contain backup materials and provide additional detail where needed. The final briefing charts are reproduced in Appendix H.

Chapter 2 – Background

IMCOM Background [1]

Dedicated to taking care of people and projecting the force, the U.S. Army Installation Management Command (IMCOM) provides equitable, effective and efficient management of Army installations worldwide. Established in October 2002 as the Installation Management Agency and re-designated as the Installation Management Command in October 2006, IMCOM supports readiness and execution, enhancing the well being of Soldiers, civilians, and family members, and improving the Army's infrastructure while preserving the environment. IMCOM is responsible for the operation of Army installations worldwide. Organized with six region offices, IMCOM manages $14 billion and oversees approximately 78,000 military and civilian personnel around the globe in FY 2009 (Figure 1).

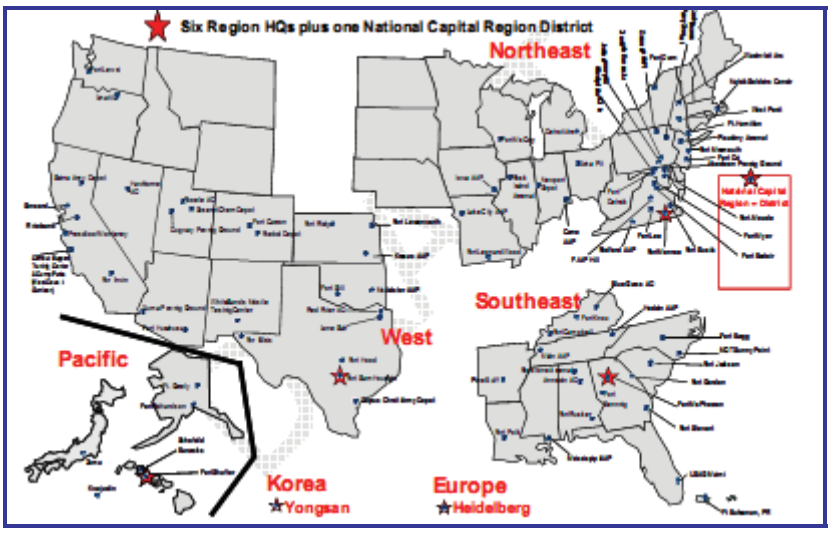

FIGURE 1. IMCOM INSTALLATIONS – THE CORNERSTONE OF ARMY READINESS

While the nation is engaged in a long war and the Army is transforming, IMCOM is at the forefront of an extraordinarily complex challenge to meet the Army's strategic requirements for forces and capabilities. IMCOM provides the infrastructure and support to enable the force to fulfill its strategic roles and missions, and directly contributes to sustaining the all-volunteer force, including Soldiers and families, that is the cornerstone of Army readiness.

In 2007, the Chief of Staff of the Army established the following four strategic imperatives that clearly define what mission success looks like in the current strategic environment:

[1] Strategic Plan 2009–2013 (Draft), U.S. Army Installation Management Command, April 2009.

- Sustain our Soldiers, families and Army civilians
- Prepare our Soldiers for success in the current conflict
- Reset expeditiously for future contingencies
- Transform to meet the demands of the 21st century

These imperatives are achieved through execution of the Army Campaign Plan objectives. IMCOM has a direct and immediate impact on achievement of the first imperative "Sustain our Soldiers, families and Army civilians"; however, IMCOM impacts all four of the initiatives in a variety of important ways, contributing to accomplishment of every aspect of the Army mission.

IMCOM is fulfilling the guidance from both the Secretary and the Chief of Staff of the Army to restore the Army's balance in the face of demands on the force from protracted warfighting operations. IMCOM is supporting installations for an expeditionary Army at war and managing installations to help restore the Army's balance by providing the facilities, services, and programs that are critical in supporting the four Army imperatives:

Sustain: Key to sustaining Soldiers and families are the resourcing and standardizing of major family programs: Army Community Service, Child Care Services, Youth Services, and Soldier and Morale Welfare and Recreation Services. These critical programs and feedback from the Army Family Action Plan help the Army sustain the all-volunteer force. The Soldier-Family Action Plan makes the promises of the Army family covenant a reality. Warrior Transition Unit (WTU) campuses with Soldier-Family Assistance Centers and WTU barracks help sustain combat-injured Soldiers—and their families—and successfully move them through the recovery and transition processes. Supporting the "sustain" imperative also means that installations are structured and managed to help Soldiers and families thrive. Sustaining natural installation environments requires implementing effective policies and practices to reduce energy usage and protect installation resources, while enabling installations to provide the realistic training environments the Army needs to successfully meet future defense challenges.

Prepare: Preparing soldiers for an era of persistent conflict means providing them with the best training and equipment. IMCOM supplies training support systems, distance learning opportunities, Military One Source, continuing education, and installations designed to meet the missions and prepare Soldiers and families with long-term life skills. Family readiness support assistants at the battalion level of deploying units and family readiness groups prepare Soldiers and families for every phase of the deployment cycle. Looking ahead, IMCOM will reach out to geographically dispersed Soldiers and families via the new Army Integrated Family Support Network, which will keep Soldiers and families prepared by connecting them with face-to-face assistance and an information network previously available only within the boundaries of military population centers.

Reset: Installations are vital to resetting Soldiers, families, and equipment for future deployments and a wide range of contingencies. IMCOM is maximizing the quality of life during dwell time between deployments by focusing on delivery of high-quality, consistent services to maximize pre- and post-mobilization time and make deployment preparation and redeployment

time efficient and effective. In concert with the Army Materiel Command (AMC), installation logistics centers are quickly rebuilding equipment for re-issue in the reset process. Army Medical Action Plan-directed programs are helping Soldiers and families better manage stresses, behavioral health problems, and injuries associated with war.

Transform: IMCOM is modernizing installation management processes, policies, and procedures to achieve greater effectiveness and efficiency and is transforming installations—and itself as an organization—to meet the demands Soldiers and families will face in the 21st century. The Command has reaped $98 million in overall savings through competitive or strategic sourcing. The Command is undergoing a significant reorganization and transformation in its facilities, infrastructure, and standardizing services by implementing common levels of support (CLS). Transforming means improving business practices with the view of supporting Soldiers and their families with the best possible quality of life while supporting senior commanders. IMCOM Headquarters and region offices are transforming and repositioning to be more responsive to both the generating and the operational forces.

IMCOM Vision, Mission, and Values

IMCOM has set forth its strategic vision, mission, and values as follows:

Strategic Vision

We are the Army's home. We provide a source of balance that ensures an environment in which Soldiers and families can thrive; a structure that supports unit readiness in an era of persistent conflict; and a foundation for building the future.

Mission

Provide the Army the installation capabilities and services to support expeditionary operations in a time of persistent conflict, and to provide a quality of life for Soldiers and families commensurate with their service.

Values

The Installation Management Command's values reflect its fundamental linkage to all dimensions of the Army. Army installations are the foundation of Soldier and family readiness; the seven IMCOM and Army values [Figure 2] are the same.

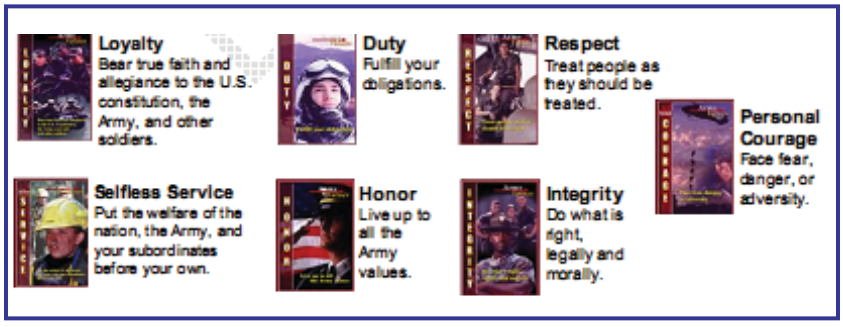

FIGURE 2. ARMY VALUES

IMCOM has also set forth the following strategic principles that drive their overarching focus in all that IMCOM does. These principles are interrelated and interdependent and create a synergy of approach in the execution of IMCOM's mission in a dynamic environment (Figure 3).

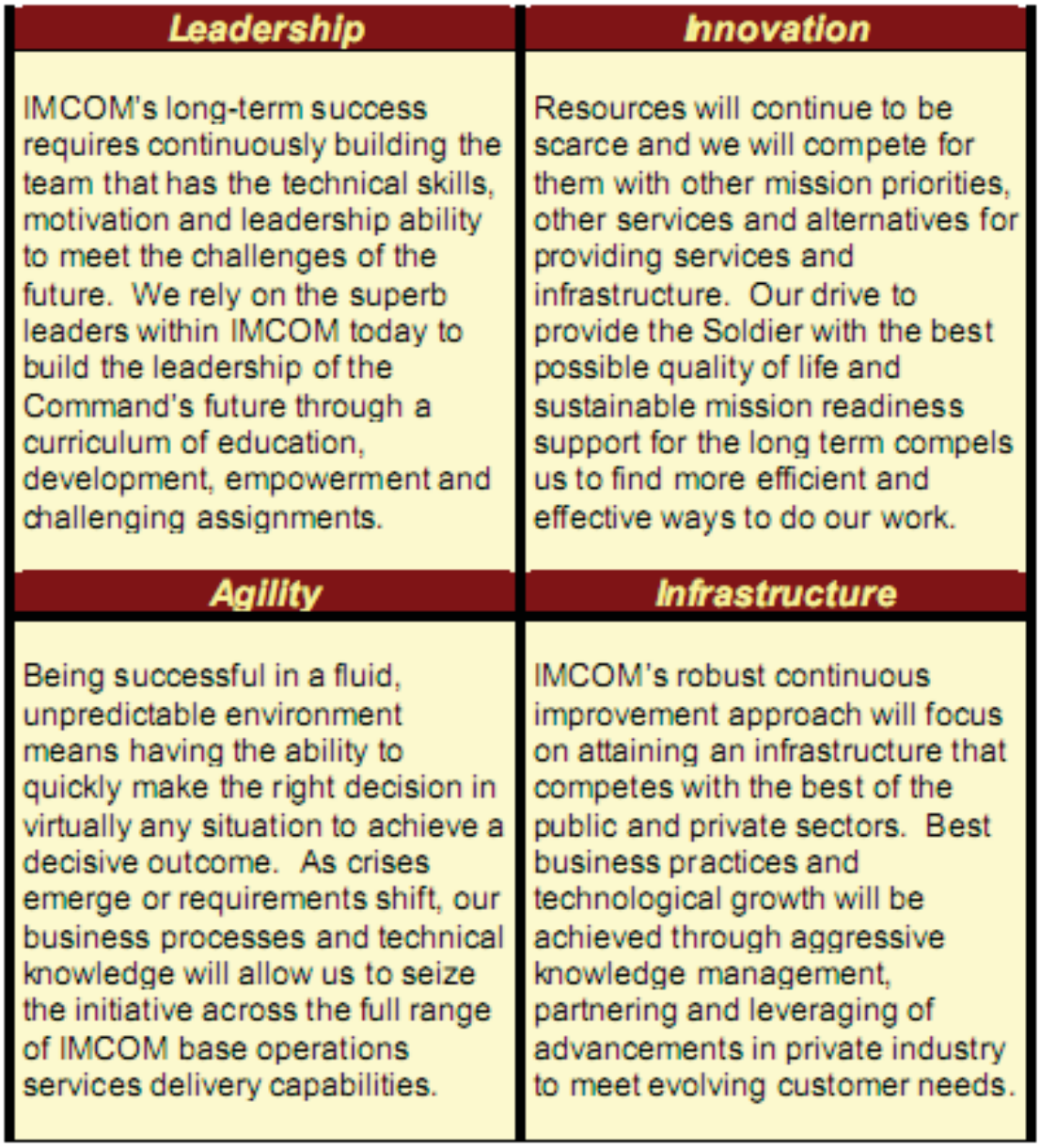

FIGURE 3. IMCOM STRATEGIC PRINCIPLES

Organization

IMCOM's organization is reflected in Figure 4. Of note, a change of command occurred in November 2009.

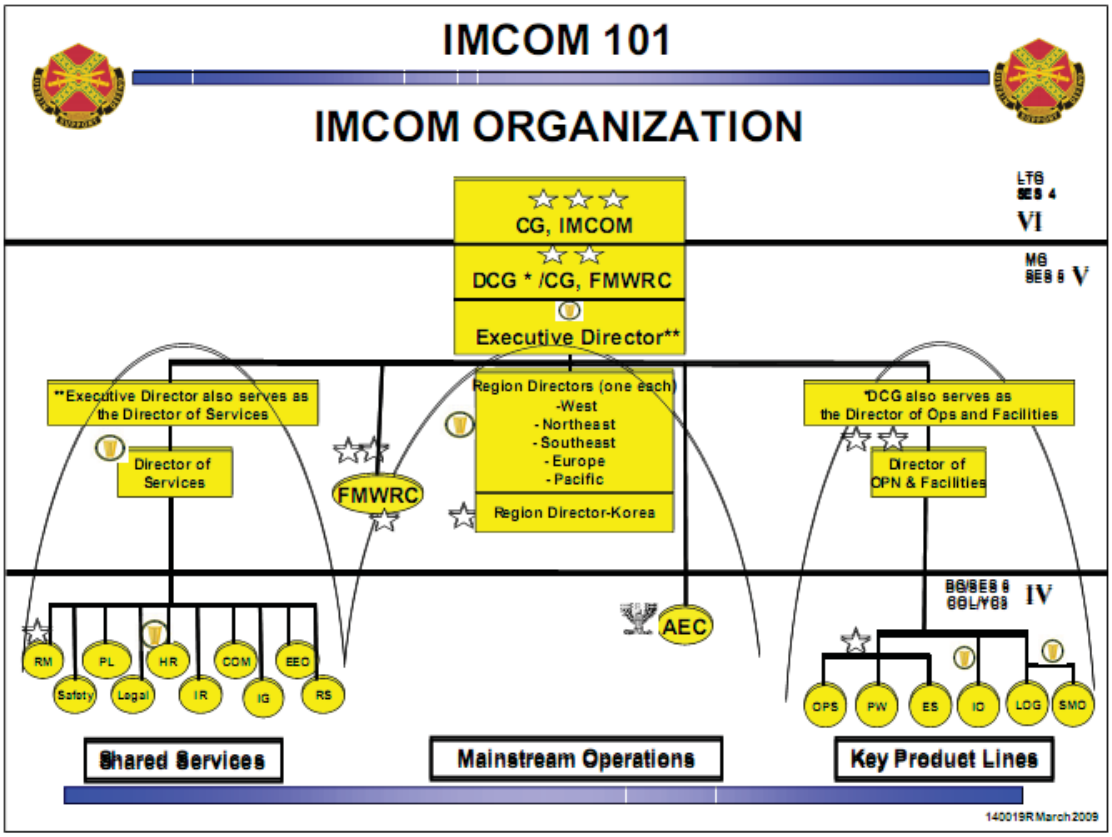

FIGURE 4. IMCOM ORGANIZATION (MARCH 2009)

Strategy for the Future

IMCOM's strategy for the future is focused on enabling Army transformation and Soldier and family readiness. IMCOM is a force multiplier, providing the platforms from which the Army generates, projects, and supports the greatest land power on Earth. IMCOM installations provide the homes, services, and other facilities that support an all-volunteer force. It provides reach-back support to commanders to increase their agility on the battlefield. IMCOM is enabling the transformation to a modular force even while relocating units and personnel across the United States and from overseas.

The strategy is to continue to improve upon all that IMCOM does, so that it can do more with what resources it has.

Chapter 3 – Study Organization and Approach

Study Team Composition

The Installations 2025 Study Team included 13 Army Science Board members and consultants. The team was augmented with an individual from RAND Corporation, which is conducting a related study. The sponsor provided individuals from the ACSIM and IMCOM staffs for input and liaison, and two ASB staff members supported the team. These individuals are identified in Appendix B.

Information and Inputs

Literature Search.

The study team surveyed a variety of literature and studies related to installation management, likely future influencers and conditions, and methodologies to assess their impact. Most of these sources are listed with references in Appendix H.

Primary Source Interviews

From March through June, small groups or individuals from the team visited selected organizations with missions similar or relevant to Army installation management. These visits were intended to identify similar activity in other organizations and to survey the field for issues and innovative ideas. These interviews included the following organizations and officials:

- Assistant Chief of Staff for Installation Management
- U.S. Army Installation Management Command
- Assistant Secretary of the Army for Installations and Environment
- U.S. Army Staff – G–8/Program Analysis and Evaluation
- U.S. Army Staff – G–3
- Office or Economic and Manpower Analysis, United States Military Academy
- U.S. Army Training and Doctrine Command
- U.S. Army Corps of Engineers
- Joint Forces Command
- Army and Air Force Exchange Service
- Air Force Scientific Advisory Board
- Air Force Studies Board
- Association of Defense Communities
- American Planning Association

Selected observations from three outside sources are summarized in Appendix D.

Installation Site Visits

From April through June, small groups visited eight Army installations and garrison commands. These installations were chosen to provide representative input from a mix of FORSCOM, TRADOC, and AMC installations, plus one OCONUS and one multipurpose (Ft. Belvoir) installation. The study developed a standardized "lines of inquiry" for the installation site visit interviews (Appendix C). Inputs and observations from each site visit are summarized in Appendix E. The installations visited were:

- Fort Bragg, MD
- Fort Bliss, TX
- Fort Lee, VA
- Fort Irwin, CA
- Aberdeen Proving Ground, MD
- Rock Island Arsenal, IL
- Fort Belvoir, VA
- Camp Humphreys, Korea

Chapter 4 – Assessment of Influencers

The study team's task was to "identify the summary conditions/influencers/technologies that IMCOM needs to address now, that, if ignored, will put the IMCOM mission at risk." The study team gathered information on Army installation management from relevant literature, primary source interviews, and installation site visits. This information was categorized by the areas of interest described in the Terms of Reference. From broader fields, a panel selected a set of the most likely potential 2025 influencers, a set of enduring installation services, and a set of desired outcomes. Employing a multi-attribute futures assessment model, the panel prioritized the future influencers by assessing their impact on the enduring installation services in terms of potential to produce the desired outcomes. Our portion of the overall methodology is shown in Figure 5. This chapter addresses the assessment of potential influencers. Additional detail of the analysis is in Appendix F.

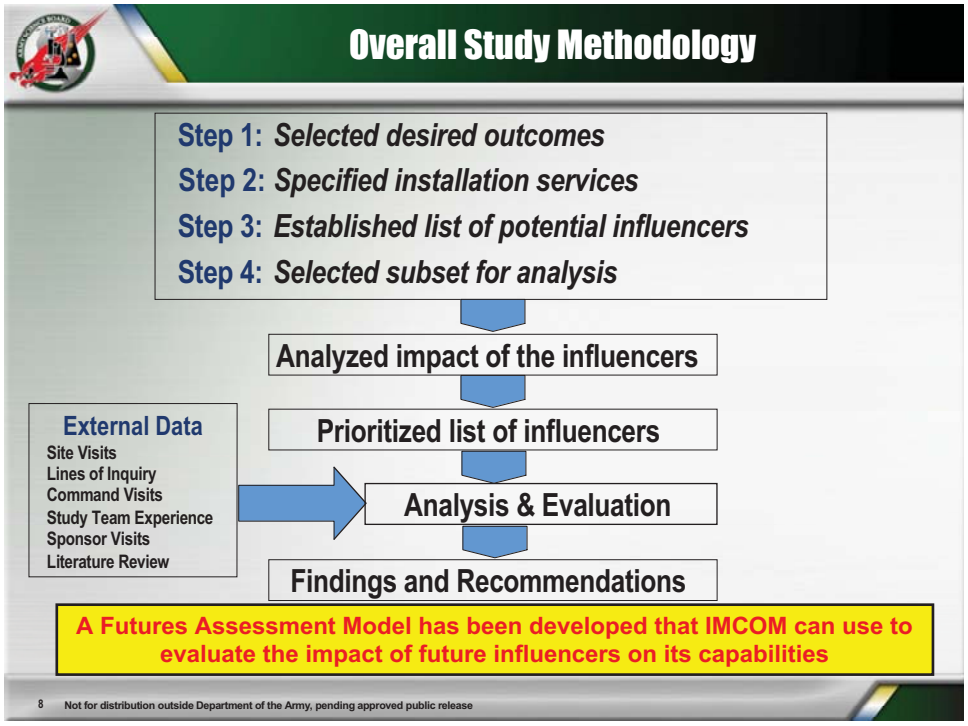

FIGURE 5. STUDY METHODOLOGY

Futures Research in General

Ideas about or expectations for the future are intertwined with decision-making. Every decision has implicit or explicit assumptions about the future environment within which the decision will be implemented. Precise knowledge about the future, especially 15 years forward, would be

valuable for decision-making but is not possible.[2] Futures research is the systematic study of possible future conditions and their likely effects on individuals, groups, and organizations.[3]

Futures research is not limited to or constrained by any particular methods. Trend extrapolation (quantitative) and environmental scanning (qualitative) are two of the most widely used approaches. The former projects current patterns into the future under the assumption that the future is an extension of the present. The latter is a detailed review of sources of information about the future including government, business, and academia. Many of these sources discuss current developments, and the researcher then makes assessments of their likely future effects. Trend extrapolation estimates the futurity of the present; environmental scanning leaps to the future. All methods in the futures tool kit are best described as systematic with goals of thoroughness and traceability. Values and judgments play a role in futures research.

ACSIM/IMCOM Planning Environment

The chances of achieving a desired end state are greatly enhanced if there is an effective plan in place to guide progress toward the goals. What planning processes are in place to guide the Assistant Chief of Staff for Installation Management (ACSIM) and the Installation Management Command (IMCOM) toward their long-range goals?

There are two groups concerned with long-range planning. The first is the Strategic Initiatives Group (SIG) in ACSIM. This group reports directly to the head of ACSIM, who also serves as the commander of IMCOM. The SIG is small, with a normal staff of one colonel and two lieutenant colonels. In addition there are two civilian employees, one in charge of strategic communications and one serving as a speechwriter for the ACSIM. These civilian employees, however, are focused on communicating the intent of the ACSIM and have no role in formulation of policy. This small group is "keeper of the ACSIM's strategic vision and intent" and as such is responsible for developing the basic concepts of the ACSIM's new initiatives, which are then passed on to planning for further development into executable plans. Work by this group in the past 9 months or so has been centered on the Army's institutional adaptation[4] effort. In general, much of the past effort has focused on similar near- to mid-term initiatives and development of longer term plans is secondary in terms of time and effort. At the moment it is unclear whether the SIG will stay in Washington, move to San Antonio, or split between the two locations.[5]

The second group is the Center for Future Installation Strategies (CFIS) in IMCOM. It is just one of several planning offices, but the others are focused on more near-term operations. The

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2 A number of aphorisms make this point well. For example, "Prediction is very difficult, especially about the future" (Niels Bohr). Others stress that the future will be a lot like the present, except different. For example, "The most reliable way to forecast the future is to try to understand the present" (John Naisbitt) and "The future is already here—it's just unevenly distributed" (William Gibson). Maybe the best advice is that "You won't get it right; try not to get it too wrong" (unattributed).

3 Adapted from Millennium Project.

4 http://www.army.mil/aps/09/information_papers/institutional_adaptation.html .

5 Interview, SIG, 10 Jul 09. ACSIM/CG IMCOM Strategic Initiatives Group (SIG) Charter, 17 Dec 08.

CFIS office was established in September 2008 and currently consists of the chief and three employees. The current head will soon be leaving this position, and CFIS will move to San Antonio with the rest of IMCOM. Additional hiring is underway to fill the staff to approximately 12. Most of the hires will be from inside IMCOM or other Army commands, and most will have backgrounds in strategic planning. However, hires from outside the Army with a background in social sciences are desirable. CFIS not only is responsible for fleshing out the concepts handed off to it by the SIG but is also responsible for communications to and from the installations. Thus in a sense, it serves an "intelligence gathering" function for the SIG.[6]

Methodology

The panel's goal was to be as comprehensive and systematic as possible given the short timeframe for the study. We reviewed public information about installation management in the military services and the Office of the Secretary of Defense; about community and city management in different regions of the United States; about existing studies and assessments addressing future conditions for economies, geographical regions, and businesses; and about future conditions affecting military organizations.

There are an infinite number of potential influencers for Army installations in the future. We used a screening tool, or model, to identify those of greatest importance and likelihood for installation services. We adapted methods from the quality and the multi-attribute decision-making literature. A similar methodology was used in a 2006 ASB study. This screening tool has the potential to be continued in use by the IMCOM staff. Our approach was to determine desirable outcomes for IMCOM and installations in the 2025 timeframe and to relate these outcomes to the services provided by installations and to assess the importance of the influencers to the installation services and the likelihood of the influencers occurring.

Thus, we were systematically relating and valuing desired outcomes, installation services, and influencers. Figure 6 is a schematic of this approach. We could then rank order influencers and discuss shaping and hedging strategies with respect to them. Modifications to outcomes, services, and installations can be made and the weights can be reassessed. Moreover, we can assess the most critical services (most affected by the important and likely influencers) and can assess the outcomes most at potential risk.

Implementation of the Methodology

Our first steps were to determine desired outcomes, installation influencers, and potential influencers. We did this through both primary and secondary sources. The primary sources were interviews with IMCOM and ACSIM staff, with installation commanders and staff, and with organizations and individuals with subject-matter expertise. The secondary sources were primarily

[6] Interview, CFIS, 9 Jul 09, IMCOM Center for Future Installation Strategies Charter, 7 Feb 09.

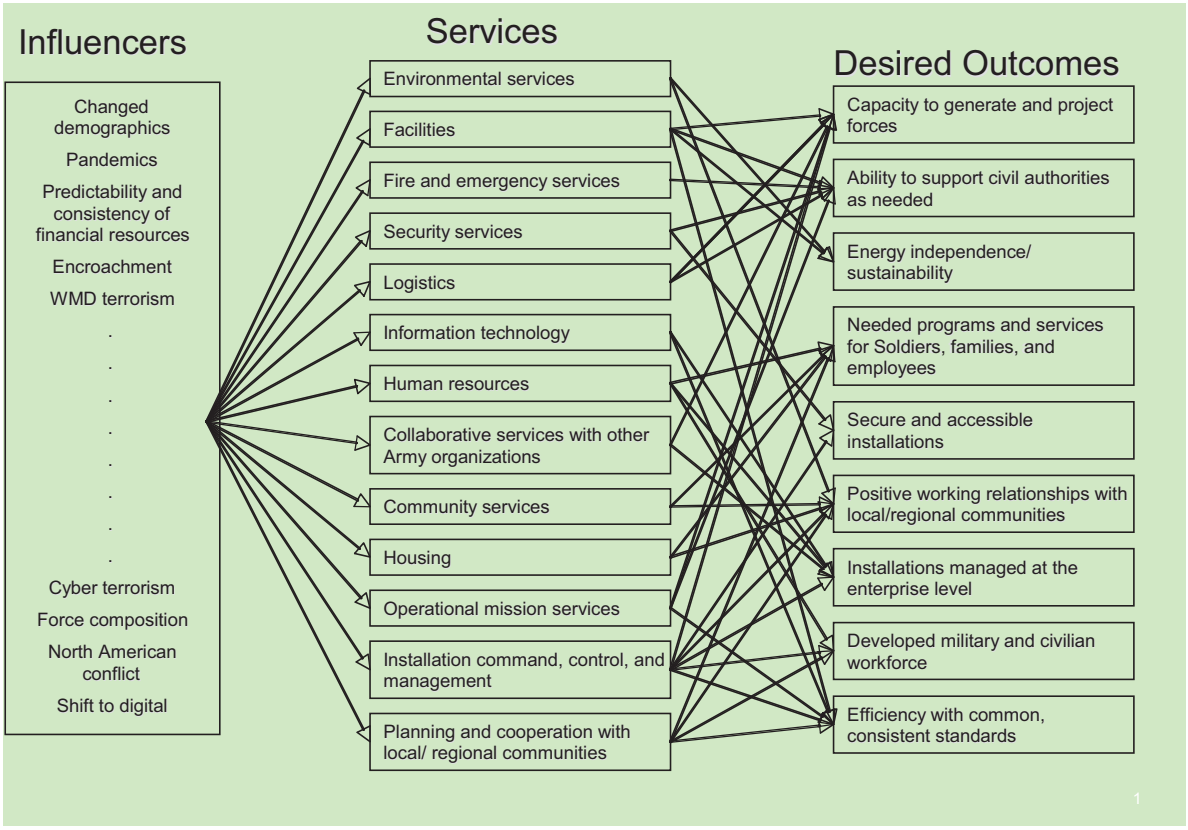

FIGURE 6. PROCESS MODEL

defense and joint publications about installation services and numerous documents and studies about future conditions and technologies.

We specified a list of desired outcomes[7] and the installation services that produce them. This list is our judgment, but it can be modified to incorporate different views. In order of importance, the desired outcomes for 2025[8] (and probably for today as well) are:

- Capacity to generate and project force
- Ability to support civil authorities as required
- Needed programs and services for Soldiers, families, and employees
- Positive working relationships with local/regional communities
- Developed military and civilian workforce
- Installations managed at the enterprise level
- Efficiency with common, consistent standards
- Secure and accessible installations
- Enhanced energy independence/sustainability

[7] The study utilized the Office of Management and Budget definition of outcome: the intended result or consequence of carrying out a program or activity.

[8] See Appendix F for a more detailed statement of these outcomes.

The installation services, and examples of them, needed to produce these outcomes are below. These services are aggregated in categories we deemed appropriate. The analysis could be disaggregated as desired. Moreover, we recognize that the services as we have them do not reflect current organizational arrangements.

- Environmental services (compliance, conservation)
- Facilities (utilities, maintenance, SRM, demolition, investment)
- Fire and emergency services
- Security services (law enforcement, antiterrorism, patrols)
- Logistics (food/dining, movement, supply, storage, distribution)
- Information technology (fixed voice, wireless, information assurance)
- Human resources (military, civilian garrison)
- Collaborative functions with other Army organizations (e.g., MEDCOM, NETCOM, Army Communities of Excellence (ACOE))
- Community services (child care; temporary lodging; morale, welfare, and recreation (MWR))
- Housing (family, unaccompanied)
- Operational mission services (airfields, ranges)
- Installation command, control, and management (chaplain, finance, legal, inspector general, public affairs)
- Planning and cooperation with local/regional communities

The next step was to select potential influencers for analysis. Initially, we created a large list of potential influencers and grouped them into 10 categories: national policies, demographics, economic, technology, municipal–military policy, infrastructure/transportation, cultural identity and values, environment, security, and wildcards. This last category represented a group of outliers, highly unlikely events that could have large effects if they happened. Figure 7 is a portrayal of the larger list of influencers.

From this large list, 31 influencers were selected for analysis.[9] (Influencers can be added or subtracted from the list as desired.)

Next, weights were assigned to the outcomes, services and influencers were assessed for their importance, and influencers were also assessed for their likelihood. This method was done using the cascading "waterfalls" of the quality and multi-attribute decision-making from literature as shown in Figure 8.

[9] See Appendix F for detail about these potential influences.

Demographics
Graying/aging
Regional distribution
Installation (on and off distribution)
Majority of minorities
Generational differences
Exodus from urban and rural to suburban
Household size
Civil unions

Technological Change
Energy use
Energy provision
Adoption of international standards
Continued digitalization
Portable electronics
Continuous and ubiquitous computing
Wireless proliferation across appliances
Longevity and efficiency of portable power
Materiel advances
Advances in pharmacology
Advances in biotechnology
Nanotechnology
Robotics
Smart vehicles and roads
Photovoltaics

Municipal–Military Policies
Partnerships
Regionalization of issues
Regional instability
Installation as regional center
Social exclusion; military segregation
Community activism
Media relations

Economic
Prosperity levels
Prosperity/Wealth distribution
Health care costs
Shift from analog and mechanical to digital and electronic
Customization of consumer goods and loss of mass-market efficiencies
Stagnation or stagflation
E-commerce

Cultural Identify and Values
Ethic/religious tension
Educational attainment
Concept of retirement
Consumer attitudes
Sustainability
Social fragmentation; less "homogenization" of society
Telecommuting
Emphasis on short term
Quality of life: wealth vs. leisure
Domestic support for the military
Immigration
Emigration

National Policies
Defense funding
Size of military
Location of military
Nationalization of key industries
Carbon caps and offsets
Health care shifts
Global leadership in science and technology
Role of nongovernmental organizations
Role of private sector
Increased regulation

Infrastructure/Transportation Pressures
Congestion
Encroachment
Aging
Investment in military infrastructure
Further consolidation
Joint basing
Sprawl
Housing standards
Density

Environmental Concerns
Climate
Water
Bio-diversity
Endangered species
Islanding

Wildcards
Pandemics
WMD terrorism
Genetics
Big increase in life expectancy
New energy source
Significant oil shocks
Large structural federal budget deficits
Economic collapse
Change in weather and storm patterns
Catastrophic climate change
Sudden technology breakthroughs
Cost-effective fusion
Rampant deflation
Rampant inflation
Cyber terrorism
North American conflict
Collapse of the electrical grid
Economic depression
Industrial or public unrest

FIGURE 7. INFLUENCERS

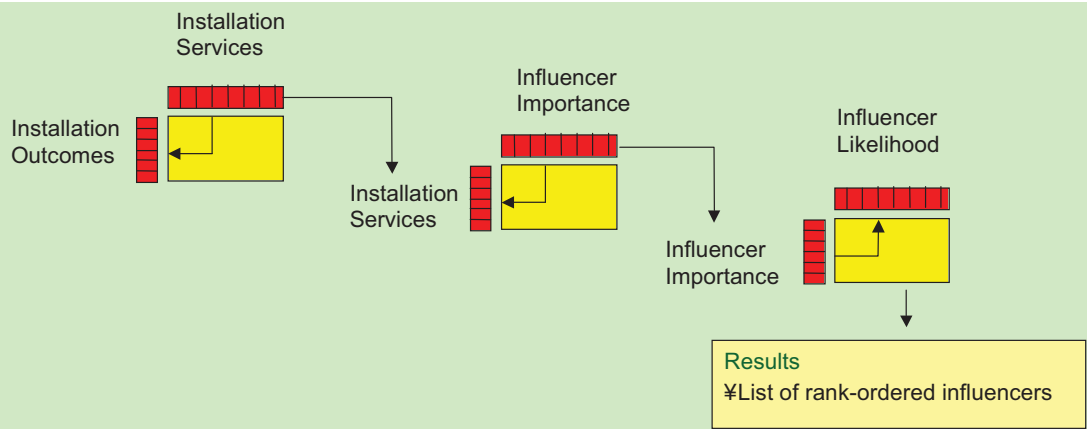

FIGURE 8. "WATERFALLING" THE INFLUENCERS

Findings

With our analysis, we can portray the results as a list of the 31 influencers[10] ranked in order. That list is shown below.

1. Ability to hire, develop, retain professional military and civilian workforce 2. Predictability and consistency of financial resources 3. Adequate level of financial resources 4. Encroachment 5. State, regional, municipal, installation relationships 6. High degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc) 7. Shift to digital and electronic from analog and mechanical devices 8. Changed social and cultural mores 9. More choice for soldiers and families as "customers" 10. Changed demographics 11. Environmental concerns 12. Improved information technology 13. New energy sources 14. Increased transportation congestion	15. WMD terrorism 16. High local threat level 17. Composition of the force: special operations, light and heavy conventional, and nuclear forces 18. Change in Army size (up or down) 19. Wireless proliferation 20. Sudden technology breakthroughs 21. Rampant inflation or deflation 22. Cyberterrorism 23. Collapse of electrical grid (permanent or rolling brownouts) 24. Pandemics 25. Industrial or public unrest 26. North American conflict (to include economic and resource) 27. Economic boom 28. More transportation modalities 29. Smart vehicles 30. Less domestic support for the military 31. Economic depression

More important than using the futures assessment model as a screening tool or the exact order of the influencers is the ability to work back through the model systematically to understand and think through in detail the causes within the model for the rankings. For example, Figure 9 shows the relationships (using counts of high importance) of a particular influencer to services and outcomes.

Whether the model is exactly right in detail is less important than the fact that it forces consideration of relationships of influencer to service to outcome. Once the relationships are understood, it is easier to consider shaping strategies (how to manage favorable trends or counter unfavorable trends) and hedging strategies (contingencies for the impact of uncontrollable influencers).

Sensitivity Analysis

We varied weights placed on outcomes and the overall weighting schema that we used for determining importance and likelihood. First, we changed the outcome weights from the rank-based ones we used in the analysis to ones that equally weighted all outcomes. Doing so did not significantly change results. At most, an influencer changed by plus or minus two places in the influencer results status.

[10] See Appendix F for a more detailed discussion of these influencers.

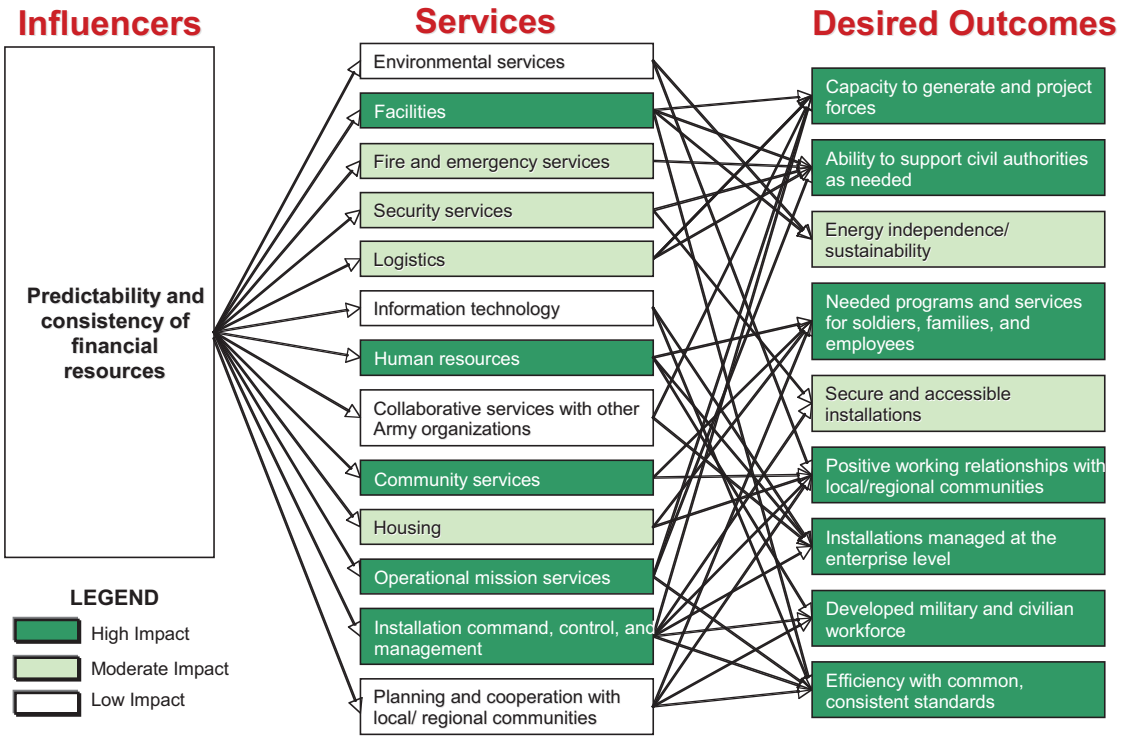

FIGURE 9. ASSESSMENT OF THE INFLUENCERS

Changing the weighting heuristic used for importance and likelihood from 9,3,1 to 5,2,1 did not have effects. Results are driven by the assessment of importance and likelihood and not by the weighting system used unless the weighting heuristic becomes extreme. Last, removing a factor (e.g., likelihood) from the analysis does have significant effects. This suggests all factors should be evaluated and not omitted from the analysis.

Summary and Recommendations

The study team was asked to identify influencers that affect IMCOM capability. This resulted in a planning tool developed by the team. It is recommended that IMCOM use it or a similar approach for assessing the influencers. Either way, the inputs and assessments need to be reviewed periodically as a basis for determining influencers for emphasis in the planning process. Other chapters of the overall report provide deeper analysis of and recommendations for some of the important issues that were identified. In this chapter, we offer suggestions for the overall planning process for installations.

The planning efforts of ACSIM and IMCOM are, in many ways, to be commended. The individuals working on long-range plans are clearly thoughtful and committed to the task. The fact that this study and a corresponding RAND study have been initiated is an obvious sign that the

leadership of these organizations recognizes the need for long-range planning. However, several areas were identified where long-range planning efforts can be improved.

The relationship between the SIG and CFIS is described by the principals as a good one. Still, several points of concern have emerged. Not only is the CFIS moving and growing rapidly, both groups will have new leadership very soon. The charter for the CFIS has made a good start at defining this relationship. Nevertheless, the current close working relationship is not yet institutionalized by the development of clearly laid out standard operating procedures. A productive working relationship seems likely to be harder to sustain if the two groups are in different locations and if the command of ACSIM and IMCOM is not vested in a single individual in the future. Accordingly, the Army Science Board recommends that further steps be taken to institutionalize the current excellent working relationship between the two groups.

A more profound weakness is the fact that there is little to no long-range planning at the level of the installations. Each installation has an installation planning board (IPB), but the focus of these groups appears to be more near term. The IPBs are not required to provide their plans, over whatever timeframe, to higher command, and there is no subsequent evaluation of whether or not the plans have been followed. This does not mean that effective planning cannot occur at the installation level, but the lack of clear guidance about what the IPBs are expected to produce and the failure to evaluate the garrison commander on whether or not effective follow through of approved plans actually occurs obviously reduces the overall effectiveness of these useful planning groups. Therefore, the Army Science Board recommends that guidance be issued and accountability mechanisms be put into place to approve plans and evaluate progress toward their execution.

There is some level of joint planning with local communities at most installations, but the degree and level of planning appear to vary widely. As an example of one good practice, a number of major Army installations have participated in a Joint Land Use Study. This program is aimed primarily at reducing encroachment around installations and is carried out by the Office of Economic Adjustment (OEA) in the OSD. Authorized in 1985,[11] up to 90 percent of the costs are paid by OEA and 48 studies have been completed through 2007. Each study benefits the local jurisdiction and the installation by promoting comprehensive community planning, encouraging a cooperative spirit between the local base command and local community officials, and integrating the local jurisdiction's comprehensive plans with the installation's plans, while preserving long-term land use compatibility between the installation and the surrounding community.

This program is an excellent place to build from. If every Army installation participated in a similar plan with the surrounding local, county, and state governments it would likely be beneficial to the ability of the Army to carry out its mission in 2025. However, such planning could be improved further. Land use is just one facet of more comprehensive regional planning. A regional plan would also address issues of critical importance to the installation such as transportation, energy, education, emergency services, housing, water, sewer, communications, recreation, and economic development. It seems likely that if the Army took the lead in promoting the develop-

11 Title 10 U.S.C. Section 2391.

ment of comprehensive regional plans, many local communities would participate. Therefore, the Army Science Board recommends that the Army promote the development of comprehensive regional plans at every major installation. As alluded to above, a plan is only useful if it is executed and reviewed regularly to meet evolving needs, so mechanisms to review adherence and revise plans as required would also need to be emplaced.

Many of the challenges that face installations will only be resolved with the aid of the surrounding communities. To the credit of the installations and the Army, most of the relationships with their communities and local and state governments appear to be excellent. This is not the result of any overarching policy or directive, but the result of individual, ad hoc efforts by the various installations. Thus, the relationships between the communities and the Army are subject to change with the whim of the local commander. An anecdotal illustration of this was provided by the city manager of Monterey, California. The relationship between City of Monterey and the Army and Navy installations there is unusually close. Among other things, Monterey provides fire service, maintains the streets, and provides plumbing services for Army buildings. The city manager is a retired Army colonel, is the Immediate Past President of the Association of Defense Communities, and teaches three times a year on the issue of community–military relationships at IMCOM's garrison commander course. He is obviously not opposed to the military presence in the city he manages. A few years back, however, the relationship between Monterey and the Army soured for 3 years when a new garrison commander arrived. The city manager described this commander's view of the local governments as one of great suspicion. In the absence of any higher command directive or expectation that the garrison commander must work with local communities, it failed to happen. Upon his replacement, the relationship improved and has grown even closer.[12]

The Director of Planning and Development for Killeen, TX also described a relationship between the city and Ft. Hood that is exemplary. He heaped praise on the local garrison's desire and ability to work with the city, but when asked directly, he also agreed that his feeling was that the excellent relationship was dependent on personalities and that the need to maintain and improve relationships with the local governments was not "hard-wired" into the Army institutionally.[13] Both officials pointed out that the relationship must be a two-way street. The Army must be prepared to help civilian entities to accomplish their goals rather than merely expecting the local government to meet the Army's needs without conditions.

Places where poor relationships with the local communities have hindered the Army in accomplishing its mission can be cited. One interesting example is the contrast between the decades-long opposition to the destruction of chemical weapons stockpiles at Blue Grass Army Depot, while deployment of identical technology to destroy stockpiles did not meet any significant opposition at many other locations. The way that the chemical demilitarization project was presented to the communities and the level of trust between them and Army certainly appears to

12 Interview, City Manager, City of Monterey, 9 Jul 09.

13 Interview, Director of Planning and Development, Killeen, TX, 10 Jul 09.

be a major component in this difference. The lack of community acceptance at one installation has literally cost the Army billions of dollars in developing new technology and years of delay.

The Army Science Board recommends that a well-defined policy be established that defines the desired relationship between garrison, the community, and local, county, and state governments. Suggested actions to accomplish this goal should be provided, and garrison commanders should be evaluated on their ability to improve and maintain these vital relationships. Examples might include regular meetings between garrison leadership and local elected and appointed officials, the development of regional plans, and cooperative agreements on services.

Chapter 5 – Selected Key Areas: Risks and Opportunities

The study team noted that each of the areas of concern specified in the TOR relates to one or more of the top 15 of the 31 prioritized influencers. Considering this prioritization, plus other information inputs, the study team categorized the areas of concern as follows; this chapter discusses each of the areas of concern:

- Manpower and Financial Resources (Influencers 1, 2, 3)
- Encroachment (Influencers 4, 5)
- Enterprise Management (Influencers 5, 6, 12)
- Information Technology (Influencers 7, 12)
- Physical Security and Access (Influencers 7, 12, 15)
- Environment (Influencers 4, 11, 13)
- Energy Security (Influencers 5, 11, 13)

Manpower and Resources Management

Issues

IMCOM is a relatively new command. It was activated on 24 October 2006 as a direct reporting unit. Its current manpower and resources management structure today is a combination of three independent commands:

- The Installation Management Agency
- The Family and Morale, Welfare and Recreations Agency
- The Army Environmental Command

The resulting HQ IMCOM had separate manpower and resource management systems in place to manage the legacy commands. Today, HQ IMCOM is responsible for integrating those individual manpower and resource management systems into one system capable of supporting multiple sustainment and support functions for CONUS-based forces and OCONUS forces. One issue associated with the integrated structure is the requirement to have compatible manpower and resource management systems to support IMCOM as a single core enterprise with:

- Six regional offices
- The National Capital Region District
- 157 Army installations including the Army National Guard's 46 installations
- A military and civilian workforce of approximately 116,000
- A budget of approximately $13 billion

IMCOM needs to improve its manpower resources allocation system and its financial resources allocation capabilities.

A second issue is associated with the complex missions of IMCOM. The primary IMCOM mission is to provide the sustainment and support services for expeditionary military operations in a time of persistent conflict while at the same time providing Soldiers and their families with quality-of-life support consistent with hometown USA support services.

Findings

Based on CONUS and OCONUS field visits to IMCOM installations using standardized lines of inquiry questions across IMCOM, the results suggest that IMCOM is under-resourced by approximately 25 percent in terms of both manpower and financial resources. This leads to significant undocumented overtime for both military and civilian forces that support IMCOM worldwide.

A second finding is related to the professional development of the IMCOM civilian workforce. IMCOM does not provide workforce development programs for all Department of the Army civilian employees. Only two Army civilian career development programs are in place to provide professional career development training and support:

- CP 11, Comptroller Career Program (approximately 1,500 personnel)
- CP 26, Manpower and Force Management (approximately 750 personnel)

A third finding is related to IMCOM manpower requirements and the allocation of financial resources to support those requirements in The Army Authorization Documentation System (TAADS). A significant portion of the IMCOM civilian and military manpower requirements is not properly documented in TAADS. This leads to improper allocation of both TAADS authorizations and, in turn, leads to the improper allocation of funds to support IMCOM.

A fourth finding is associated with lack of IMCOM workload metrics to support the workloads associated with the multiple missions provided by IMCOM. This causes the improper allocation of both manpower resources and financial resources for IMCOM.

A fifth finding is associated with the lack of IMCOM doctrine to assure the proper allocation of both manpower and financial resources to meet the mission commander's needs.

Discussion

The above five findings are not unusual for a command formed from three separate commands just 3 years ago. The Army has experienced such command mergers in the past and has substantial experience and support organizations capable to deal with the findings associated with IMCOM's manpower resource allocations and financial resource allocations.

Recommendations

IMCOM should use the resources of the U.S. Army Manpower Analysis Agency to ensure compliance with Assistant Secretary of the Army for Manpower and Reserve Affairs manpower policies, organizational design, manpower requirements analysis, and force structure management. IMCOM should collaborate with the U.S. Army Force Management Support Agency, a

G–3/5/7 HQDA organization. G–3/5/7 provides manpower allocation support services to Army commands as part of their Army HQDA force management function. In addition, IMCOM should simultaneously collaborate with TRADOC to develop the necessary doctrine and training programs for the efficient management and delivery of sustainment and support services. Updating the IMCOM doctrine will lead to the improvement of services delivered to Soldiers, families, and commanders. Updating the doctrine will also lead to the improved management of military and civilian workforce resources and the improved allocation of financial resources to support IMCOM's multiple missions.

IMCOM could improve its civilian workforce capabilities by conducting a gap analysis to determine what skills are needed to support the current and future workforce requirements and instituting a hiring strategy to acquire needed talent. Further, IMCOM could improve services to OCONUS installations and personnel by accurately determining manpower-specific requirements to operate in an environment with language barriers, political realities, skills shortages, and Status of Forces Agreement work restrictions and policies.

Encroachment

The issues of environment and encroachment are pervasive in the operation of all military installations. Depending on the national priority, environmental and encroachment can consume significant resources. Current political and social trends with regards to environmental and encroachment will contribute to making it difficult for military installations to conduct operations (training, operating, construction, etc.).

Issues

Most encroachment is generally attributed to two main issues[14]: extensive land development and a decline in U.S. biodiversity. Land development near installations, especially sprawl, comes from a multitude of sources including:

- Retirement community/home building
- Suburban and rural sprawl from commuters
- Resort development

As more and more people live near Army posts and communities sprawl around them, many encroachment problems start to increase, including noise complaints, airspace competition, air pollution problems, radio-frequency spectrum competition, and water quality and supply problems.

Less significantly, declines in U.S. biodiversity cause threatened and endangered species (T&ES) concerns and other environmental encroachment problems. Loss of biodiversity is

14 These issues were identified and this discussion comes from Lachman, Beth E., Wong, Anny, and Resetar, Susan A., "The Thin Green Line: An Assessment of DoD's Readiness and Environmental Protection Initiative to Buffer Installation Encroachment," Santa Monica: RAND Corporation, MG–612–OSD, 2007.

increasing because of development pressures, habitat loss, and landscape fragmentation, pollution, and invasive species. These pressures result in more threatened and endangered species.

Sprawl and other incompatible land development pressures near U.S. installations are likely to continue through 2025 and beyond because land is a finite resource being divided up for more and more uses, continued population growth and land development pressures, and installations that were isolated in remote rural areas are becoming less and less isolated. There will be more encroachment pressures from the surrounding communities, and those community relationships and dealing with the encroachment concerns will become more important. As discussed in the environmental section, biodiversity loss is also expected to increase.

The Army has taken strategic approaches to address such issues, including the Army Compatible Use Buffer (ACUB) program, collaborative ecosystem management, and sustainability.

> *An ACUB [project] allows an installation to work with partners to encumber land to protect habitat and training without acquiring any new land for Army ownership. Through ACUBs, the Army reaches out to partners to identify mutual objectives of land conservation and to prevent development of critical open areas. The program allows the Army to contribute funds to the partner's purchase of easements or properties from willing landowners. These partnerships preserve high-value habitat and limit incompatible development in the vicinity of military installations.*[15]

The Army has successfully implemented ACUB projects at many installations, including Forts Benning, Bragg, Carson, Lewis, and Stewart, to help mitigate and prevent encroachment pressures that can affect testing and training ranges.

Similarly, Army ecosystem management activities and partnerships are helping to mitigate and prevent T&ES, habitat, and watershed encroachment problems. A good example is Fort Carson's participation in the Central Shortgrass Prairie (CSP) ecoregion partnership to help prevent black-tailed prairie dogs and other species from becoming T&ESs and encroaching on post-training activities. The CSP partnership is a collaboration of different federal and state governments, nongovernmental organizations, and private landowners to study, manage, and preserve the CSP ecoregion that contains 146 animal and plant species that are state or federally listed, and are considered imperiled, endemic, or declining, including the black-tailed prairie dog. The CSP focuses on identifying and protecting key ecological patches and conservation corridors so managers can try to maintain a healthy viable ecosystem. By better conserving and managing key pieces of the CSP ecoregion as a healthy viable ecosystem, this partnership would recover CSP T&ES and prevent any other species from inclusion on the T&ES list.[16]

However, more needs to be done in such areas, and more collaborative regional growth management with state and local governments is needed to ensure that residential development is

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15 "U.S. Army Sustainability: Army Compatible Use Buffer Program (ACUB)," home page at http://www.sustainability.army.mil/tools/programtools_acub.cfm.

16 For more information see Neely, B.S. et al., "Central Shortgrass Prairie Ecoregional Assessment and Partnership Initiative, Final Report," The Nature Conservancy, July 2006; and Lachman, "The Thin Green Line," loc. cit.

not located adjacent to key training ranges and other installation operations that may impact surrounding communities.

Findings

Army installations are vulnerable to physical and cyber attacks to the energy infrastructure that if attacked would prevent them from accomplishing their missions to project forces, house soldiers, etc. Studies should be conducted and polices developed and implemented concerning islanding, redundancy and resiliency, ingress/egress, and the role of backup power systems. We need a systems solution to all these issues.

Given future environmental trends (e.g., loss of biodiversity, climate change, water scarcity), likely changes in resulting environmental policies and increasing regulations (such as more threatened and endangered species and local water restrictions), pressures from the growth of surrounding communities (which leads to noise complaints, frequency interference, etc.) and other types of encroachment, will make daily operations at an installation challenging. The Army needs to be strategic in addressing these issues now rather than waiting until the future. Examples of strategic activities include the Army Sustainability Program, ACUB, ecosystem management, etc.

Discussion

When established decades ago, most Army installations were far from major cities and towns, but this is no longer true. A growing U.S. population and changing land development patterns over the past several decades have led to lands that are vital to military readiness being surrounded by urban, suburban, and other types of development. Such development, especially large residential tracts next to training ranges, can be incompatible with some military operations and may limit the installation's operational capability. Complaints about noise, dust, and smoke from helicopters, tanks, weapons, and other vehicles force commanders to modify or curtail training of certain types or during certain hours. As development destroys or displaces native species of plants and animals, military posts become their critical refuge, and their presence further restricts military operations. Such pressures are called encroachment and future trends are that such pressures are continuing to increase.

Encroachment can be defined as things external to the installation that affect or have the potential to affect the ability of an installation to conduct training, testing, construction, and other operations. Contributing factors include: [17]

- Urban growth around military installations
- Endangered species habitat on military installations
- Wetlands
- Water quality and supply
- Noise pollution

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17 This listing has been adapted for the Army from Office of the Secretary of Defense, "REPI: Readiness and Environmental Protection Initiative Second Annual Report to Congress," May 2008; and Lachman, "The Thin Green Line," loc. cit.

- Air pollution
- Cultural resources for airspace
- Unexploded ordnance and munitions constituents
- Competition for airspace
- Range transients
- Competition for radio frequency spectrum
- Energy infrastructure developments

Recommendations

The Army needs to take strategic actions now to mitigate future encroachment concerns. If it does not, future encroachment problems could significantly affect installation's training, testing, construction, and other operations. In collaboration with state and local governments, the Army should develop regional and growth management plans. The Army, through ACSIM, should invest more in Army Compatible Use Buffer and other strategic approaches that provide permanent protection against incompatible development in key areas of encroachment concern. Also, IMCOM should conduct a study to identify and assess all the possible anti-encroachment options and how best to implement the most promising ones. Lastly, the Army needs to develop a strategy for how best to address all encroachment threats across the Army.

Enterprise Management

Issues

Performance measures and business metrics are relatively new tools to the Army. In the private sector, business metrics and performance measures have been used for many years mainly due to the requirement to become more efficient to protect the bottom line of profitability. The private sector has developed many specific applications of business metrics models to measure the performance of their organizations. Collectively, these are generally referred to as business analytic process models. Most contain the same six major phases:

- Developing an understanding of the core business elements to be measured, and assigning a value or priority to each of the core business elements.
- Collect data that are currently available for initial measurement.
- Organize the data for analysis. Normally that means arraying the metrics performance data for better understanding and formatting the data to match the analysis tools.
- Analyze the data and draw conclusions based on the analysis. This phase is where the initial "results" are presented and the analysis is developed to "provide the baseline performance measures."
- Assess the analysis and evaluate the implications of the initial findings. These initial findings provide the first benchmark for future business metrics comparisons.
- Provide initial results and communicate those results to the senior-level decision-makers. Also, include any recommendations to improve the "next performance

measurement" cycle so senior-level decision-makers are constantly included during the ongoing performance measurement process.

IMCOM has initiated a performance measurement program based on common levels of support (CLS) data and data from the monthly IMCOM Managerial Accounting Report (MAR). IMCOM also uses both "outcome" and "output" measures, which indicate how well a service support team (SST) provides services or the volume of the work that the service providers produce.

Findings

The IMCOM Draft Strategic Plan for 2009–2013 presents an initial Enterprise Performance Management Architecture. That architecture is dependent on the installation planning board (IPB) as a

> *. . .forum to provide a common operating picture for all tenants and the garrison commander with regard to capacity and utilization, real property master planning, financial resources, base operations service delivery, CLS guidance, business process redesign/lean six sigma projects, natural environment preservation, operations sustainability, changing mission requirements, local community issues, Soldier and family readiness, and more.*

The IMCOM Draft Strategic Plan generally references performance metrics and measures but does not specifically describe when, how, and at what level IMCOM outcome or output measures will be implemented. The plan does present the strategic IMCOM framework and a specific set of goals and objectives that can be used to measure performance in accordance with the performance measurement model referenced in other sections of this report.

Discussion

The IMCOM CLS was not designed to provide a basis for performance measurement. A recent article[18] compares CLS performance measurement with MAR measurement:

- CLS will be improved by relying on the expertise of a specialized Community of Practice for each installation service.
- MAR will focus on financial issues and whether financial goals were met or not met.

IMCOM at this stage does not have a single metrics-based performance measurement system that connects HQ IMCOM strategic objectives to the performance of the support and sustainment functions at the garrison level.

Recommendations

It is recommended that IMCOM form an interim IMCOM Performance Measurement Board to assess current performance measurements systems in place today, present a single performance metrics base plan, and prepare an implementation plan in accordance with the model described previously. The board should recommend the performance measures at the garrison level, assure

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[18] Armed Forces Comptroller, "Measuring Service Performance at Army Installations: How Well Is the Army Doing at Delivering Services at Its Installations?" Winter 2009.

their connectivity through the IMCOM regions to IMCOM HQ, and recommend how aggregations of those performance measures will match the HQ IMCOM goals and objectives. That linkage will provide transparent high, mid, and low levels of performance for the command performance posture. An HQ IMCOM command dashboard should be designed with close to real-time performance data with respect to selected functions and monthly for all other performance measures.

The Performance Measurement Board should be selected from senior Career Program 11 (Comptroller), Career Program 26 (Force Management), and senior experienced military financial managers; force management managers; and IMCOM functional managers.

Information Technology

Issues

Information technology is a strategic resource to support IMCOM's mission to support expeditionary operations in a time of persistent conflict. The ability to access secure networks and portals in an environment is essential to maintaining IMCOM's support to deployed forces, CONUS forces, and family members as contained in the IMCOM's mission statement.

IMCOM is in a unique opportunity to upgrade IT technologies and capabilities with the deployment of the General Fund Enterprise Business System (GFEBS) on 1 October 2009. That should permit the termination of old IMCOM legacy IT technology for financial management resource allocations across the command, and support to the warfighter worldwide for the following legacy financial systems:

- Family and Morale, Welfare and Recreation Command
- Army Environmental Command
- Installation Management Command

During GFEBS deployment, selected portions of the financial IT architecture of each of the three commands should be examined to determine if legacy elements should be retained to support HQ IMCOM's financial decision-making. Although the goal is to transfer all legacy financial systems to GFEBS, some may be retained for MWR, chapels, Soldiers and family assistance centers, warrior transition units, and community health care organizations. After GFEBS is fully deployed, a decision will be required to determine whether smaller financial IT systems can be incorporated in GFEBS or whether they should be included in a temporary IMCOM service-oriented architecture (SOA) until all IMCOM financial systems can be fully integrated under and within an Army enterprise IT architecture.

Findings

The Army G–6/Army Chief Information Officer (CIO) proposed an Army enterprise IT architecture based on four functional areas through a global enterprise construct:

- Personnel
- Readiness

- Material
- Services and Infrastructure

The proposed architecture is based on three warfighting command structures:

- Battle Command
- Enterprise Activities
- Networks

The ACSIM is included under "Enterprise Activities" since it supports Soldiers, commands, commanders, and families. The key finding is that the ACSIM and IMCOM are able to participate in the design of the proposed G–6/CIO architecture beginning with fiscal year 2010.

Discussion

The new Global Network Enterprise Construct (GNEC) will use the Army Enterprise Architecture (AEA) and will employ the following AEA goals while it is being implemented:

- Employ an architecture that can be synchronized with building the Army and guiding investment choices across the Army.
- Use a just-in-time architecture design approach.
- Build a consensus across the key battle command, enterprise activities, and network stakeholders based on the GNEC.
- Assure vital communication across the personnel, material, readiness and services, and infrastructure communities are achieved.
- Implement and synchronize Army capability sets consistent with DoD and federal guidance.

IMCOM has a unique opportunity to not only integrate the multiple legacy systems used today throughout IMCOM, but IMCOM can participate in the development of an integrated Army architecture that will transform enterprise functions as part of larger G–6/CIO proposed IT architecture for the Army.

Recommendations

Based on the unique timing of the GFEBS implementation and the G–6/CIO proposed Army IT architecture initiatives proposed this year, IMCOM should continue with plans for an SOA for the interim integration of IMCOM legacy IT systems. Simultaneously, IMCOM should collaborate with the Army G–6/CIO so all future IMCOM IT systems will be designed, implemented, and operated in a responsive and cost-effective manner under the AEA to support IMCOM sustainment and support functions worldwide.

Physical Security and Access

Issues

- IMCOM lacks full authority over installation security countermeasures, access policies, and technology and systems solutions.
- Detailed analyses of Army security needs and costs and benefits of various security initiatives have not been conducted recently.
- IMCOM's management of installation security is complicated by the fact that multiple agencies have responsibility in this area. For example, the provost marshal general is the program manager for the Army installation entry (AIE) program and reports directly to the vice chief of staff of the Army. Similarly, US NORTHCOM is the executive agent for antiterrorism and issues security directives for their area of operations.
- Requests for proposals have been postponed and the acquisition strategy is currently under review for many physical security initiatives.
- The practice of authenticating people in vehicles through the installation of flash passes and automobile decals is seriously outdated, provides little security, and is in need of modernization.

Findings

- Multiple organizations in OSD and Army provide policy direction, guidance, technology and requirements without sufficient IMCOM involvement resulting in lack of effective installation command and control at the garrison level.
- INCOM's roles and responsibilities in setting and prioritizing policy and technology solutions for installation security and access control are inadequate.

Discussion

In the wake of September 11, 2001, the Army has committed considerable resources for providing new physical protection for its facilities—for example, enlarging the standoff area around buildings, increasing the sophistication of its barriers, and adding intrusion detection sensors. However, it does not appear that any systematic analysis of the costs and benefits of new security measures has recently been performed by the Army.

Although many modes of attack on an installation other than at the "front gate" are possible, access control warrants considerable investment. The reason we believe this is twofold. First, even though other aspects of an installation merit security investment, gates must still be secured. Second, and even more importantly, efficiently functioning gates are vital to the overall functioning of any military installation. Investment in access control may not have a huge impact on the actual security, one might argue, since, at least so far, current measures have kept most of the bad guys out. Nevertheless, hours of time wasted at a gate by vendors, employees, soldiers, family members, or the public seeking legitimate access to an installation has a huge cost both in money and in goodwill. Investment in improving access control should be a priority for the Army.

The Army has taken some steps to employ more modern digital authentication techniques; nevertheless, there is a growing requirement to integrate identity management, authentication, and authorization techniques into an Army-wide enterprise strategy for installation access that would add security commensurate with the risk. In the future, the fast flow of people through installation gates, avoiding long bottlenecks, while increasing the security and authentication of people in vehicles entering the base should be accomplished through the use of improved technology without increasing the resources devoted to this function.

Office of the Provost Marshal General (OPMG) manages the AIE program. OPMG reports directly to the vice chief of staff of the Army. This places the control of an access control policy outside of IMCOM, the primary "customer" for access control. US NORTHCOM, which is the executive agent for antiterrorism, further complicates coordination across the enterprise, as it has applied additional policies for deployment in its area of operations. At the other end of the spectrum, a great deal of access control related control has been given to local commanders. Although this has provided flexibility to tailor security policies to their installations, which is often to the good, it has also led to a lack of consistency across the enterprise.

Unfortunately, the confusion in leadership in access control seems to be reflected in the process of modernizing. An RFP for AIE has been anticipated for nearly 2 years with an estimated cost of $180 million over a 4- or 5-year period. The project was expected to provide AIE to installations in CONUS, Alaska, and Hawaii. It is not clear when the RFP will be issued. In the meantime, IMCOM has awarded a contract for vendor fast access control that appears to be independent of the AIE.

Although the above discussion focused on the need to secure gates, it is important to remember that an attack on an installation does not have to pass through a gate, but can instead come over the fence line. In the future, the availability and sophistication of such technology will only increase while the cost decreases. IMCOM must seriously consider how to defend against such attacks or limit their possible effects.

Moreover, IMCOM should pursue a mass notification system to alert both on- and off-post employees. At its simplest, a mass notification system might be a siren or giant voice system, as commonly used to issue storm warnings. In the past decade though, mass notification systems have become far more sophisticated, with the ability to notify people of emergencies by calls to landline or mobile phones, text messages, e-mails, or pop-up windows on networked computing devices. Each military branch has taken a different approach to implementation, with the Army being the most decentralized

What IMCOM should do is determine what capabilities work best to meet its future needs. Once it develops that vision for these future systems, it needs to clearly and precisely communicate that vision to vendors so that those needs are met. This precept is valid for the many other security and nonsecurity issues that IMCOM will face in the next 15 years.

Recommendations

- A systematic and integrated solution should be developed addressing all elements of physical security.
- IMCOM should take the lead in implementing Homeland Security Presidential Directive (12) (Common Access Card) utilization for all Army installations versus the multiple credential systems now in use.
- The Army needs to reexamine the doctrine and policies for installation access control and physical security to establish clear roles and responsibilities to permit IMCOM to control its ability to meet its mission in 2025.

Environment

Issues

Given the current and projected trends, environmental issues are likely to continue that will have negative impacts on future installations, including climate change, loss of biodiversity, and water scarcity. To address such environmental trends, national, state, and local policies and regulations are likely to create more restrictions on installation operations in the future.

Given the range and significance of these environmental issues, collaborative approaches are needed to address them at all levels. Government, industry, and military environmental experience has demonstrated that strategically addressing environmental issues sooner can prevent and mitigate future problems at lower life-cycle costs—pollution prevention, ecosystem management, and sustainability. Examples of activities in each of these three areas are briefly discussed here.

There is a long history of industry, the military and governments implementing approaches to avoid, eliminate, or reduce pollution at the source and save costs and reduce environmental impact over the long term. In the 1990s, companies like Intel, DuPont, 3M, and Procter & Gamble Corporation had significantly reduced wastes and emissions with proactive pollution prevention activities.[19]

The Chesapeake Bay Program is a large ecosystem management effort that covers about 64,000 square miles of the Chesapeake Bay watershed across six states. A regional partnership was formed from diverse organizations including Maryland, Virginia, Pennsylvania, and the District of Columbia governments; the Chesapeake Bay Commission, a tristate legislative body; and the U.S. Environmental Protection Agency. The program establishes the policy direction for the bay and its living resources. The program works cooperatively with these and other partners,

[19] For information on these and other industry examples, see The Business Roundtable, "Facility Level P2 Benchmarking Study," Washington, D.C., November 1993; and Lachman, Beth E., et al., "Integrated Facility Environmental Management Approaches: Lessons From Industry for Department of Defense Facilities," Santa Monica: RAND Corporation, MR–1343–OSD, 2001.

including other federal agencies, local governments, and industry, to improve and maintain the health of the Chesapeake Bay ecosystem.[20]

Many Army installations have started to develop and implement installation sustainability plans (ISPs), which are long-range plans addressing mission, community, and environmental issues developed through a strategic planning process. Installations, such as Forts Bragg, Carson, Hood, and Lewis, have made considerable progress in developing and implementing ISPs that address a range of environmental issues. For example: "Fort Hood saved more than $2.5 million in 2006 through its qualified recycling program, compost recycle program, inert material management, deconstruction management, special waste management, and electronics waste recycling program. Fort Hood also used recycled tires to create a platform for a tank firing range to reduce dust and air-quality impacts."[21] More of these types of strategic activities are needed to help avoid the impact of environmental issues on Army installations in the future.

Findings

- Installation planning to mitigate the potential impact of future water availability is inadequate.
- Continued loss of biodiversity will cause more threatened and endangered species issues, which will produce more restrictions on training, construction, and other installation activities.

Discussion

The U.S. Army has a long history of managing and addressing environmental issues. Environmental issues are ones that relate to the environment, such as air quality, water quality and supply, hazardous materials, solid and hazardous wastes, chemical and toxic substances, noise pollution, and land and natural resource concerns (species, ecosystems, habitats, soil quality, arable land, wetlands, watersheds, etc.).[22] The U.S. has a complex set of federal, state, and local environmental laws, regulations, and policies that military installations must follow just as businesses and other organizations do.

Army activities in environmental compliance, natural resource management, pollution prevention, sustainability, ecosystem management, and other types of environmental management have been effective at managing environmental resources, complying with environmental regulations, addressing environmental concerns, and promoting long-term environmental stewardship. At times, however, environmental issues can negatively impact installation operations and even military readiness. Issues, such as threatened and endangered species (T&ES) and air pollution restrictions because of the Clean Air Acts Amendments, can place restrictions on testing, training,

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[20] For more information, see http://www.chesapeakebay.net/index.aspx?menuitem=13853.

[21] Lachman, Beth E.,. Pint, Ellen M Cecchine, Gary, and Colloton, Kimberly "Developing Headquarters Guidance for Army Installation Sustainability Plans in 2007," Santa Monica: RAND Corporation, MG–837–A, forthcoming.

[22] The Army considers cultural resources to be an environmental issue, even though they are not included in the traditional definition of environmental issues.

construction, and other installation operations. For example, Fort Lewis and Yakima Training Center have incurred training restrictions because of environmental concerns:

> *Air quality restrictions limit Fort Lewis's ability to operate new smoke generators. The presence of endangered species and their habitat limits the use of off-road vehicle training in both facilities and limits river crossing operations at Yakima. It also restricts maneuvers in prairie areas at Fort Lewis to preserve an endangered plant and at Yakima to protect western sage grouse habitat.*[23]

In looking at environmental trends out to years 2015 and 2025, many of these environmental issues are likely to continue and cause more impact on installations. Three key issues are climate change, loss of biodiversity, and water scarcity. Organizations as diverse as the National Intelligence Council (NIC) and the U.S. Environmental Protection Agency (EPA) have identified some of the implications of climate change. Loss of biodiversity[24] is continuing throughout the Earth. As biodiversity is lost, more species will named on federal and state T&ES lists, which leads to more restrictions on activities, including installations that affect such species and their habitat.

According to the NIC, clean water will become the world's scarcest but most-needed natural resource.[25] In the United States, the Government Accountability Office (GAO) projects that at least 36 states will face water shortages by 2013 because of a combination of rising temperatures, drought, population growth, urban sprawl, waste, and excess.[26] As fresh water becomes scarcer, local communities start placing restrictions on it use, which could impact installations. Table 1 gives examples of how future environmental trends in these areas could impact installations.[27]

Recommendations

The Army should address environmental issues sooner to help prevent or mitigate potential future negative impacts on installations. The Army also needs to continue and expand its strategic collaborative environmental management activities, including sustainability and ecosystem management. Given the complexities and uncertainties of environmental trends, diverse Army organizations need to track, assess, and study these trends and how the Army can best address them, including IMCOM, ACSIM, Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health (DASA–ESOH), Army Environmental Policy Institute (AEPI), Army Environmental Command, and the U.S. Army Corps of Engineers Construction Engineering Research Laboratory (USACE CERL). The Army must collaborate with other government agencies, nongovernment organizations (NGOs), and communities using strategic approaches to address environmental issues. For example, IMCOM in coordination with DASA–ESOH and

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23 Lachman, "The Thin Green Line," op. cit., page 7.

24 Biodiversity refers to biological variety and it is important to maintaining ecosystem, habitat, and species ealth. For more information, See Lachman, "The Thin Green Line," op. cit., Appendix A.

25 National Intelligence Council, "Global Trends 2025," November 2008.

26 GAO, "Freshwater Supply: States' Views on How Federal Agencies Can Help Them Meet the Challenges of Expected Shortages," 2003.

27 This discussion about future environmental trends and their potential impacts on the Army comes from Lachman, Beth, "External Trends Impact on Army Installations 2025: Initial Findings," unpublished research, Santa Monica: RAND Corporation, June 2009.

TABLE 1. FUTURE ENVIRONMENTAL TRENDS

Future Trend	Sample Implication for Army Installations
Climate Change	Will experience physical changes in the local environment that could impact water supply, habitat issues, training, etc.
Loss of Biodiversity	Causes more threatened and endangered species (T&ES) problems, which likely will result in more restrictions on training, building, and other installation activities
Water Scarcity	Will need to collaborate more with local communities to manage scarce water resources to avoid local water restrictions

ACSIM should work with Department of Interior (DOI) and Department of Agriculture (USDA) to have them protect biodiversity on their lands.[28] Lastly, all the aforementioned Army organizations have a role in helping installations participate more in regional collaborative ecosystem management.

Energy Security

Assured delivery of energy is dependent on both physical and cyber security.

Issues

The physical and cyber security of energy sources and distribution elements for installations (up to the gate) is viewed by most as lacking. The two major issues central to our energy security task are whether the Army should devote scarce resources to islanding or partnering with local power providers to build hardened, redundant, and resilient power systems. If islanding is identified as the option of choice, how can this method best be accomplished? Short term the Army should focus on developing a resilient infrastructure system[29] in concert with local utility companies. Long term, this means investing scarce procurement and research and development funding in nuclear and other alternative energy sources. This option requires implementing alternative energy sources in a more concerted systems approach to not only provide some element of security but to comply with the many new laws and requirements that will affect installation operations.

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[28] DOI's Bureau of Land Management and USDA's Forest Service along with DoD manage the majority of federal lands containing most of the United States' biodiversity and habitat where biodiversity is most at risk. What they do on the land under their control can affect military installations, particularly with respect to biodiversity loss. Therefore, it is in the Army's long-term interest to work with them to have them preserve species and habitat. This discussion and recommendation are adapted from Lachman, "The Thin Green Line," loc. cit.

[29] A resilient infrastructure is a system or system of systems that is able to withstand damage or disruption, but if affected, can be readily and cost effectively restored.

Long term, we believe that installations must be able to island during a time of major war. Nuclear energy will likely be an important future component for energy security and independent operation for Army installations during times of national crisis. The Air Force Scientific Advisory Board conducted a study in 2009 and in essence came to the same conclusions. In summary, a systems approach is needed to identify all stakeholders, requirements, technical solutions, and associated risks. An understanding of not only the technical challenges but also insight into the social and legal issues surrounding islanding during wartime is needed.

Findings

- New laws and requirements regarding alternative energy sources will affect installation operations and will require an integrated systems approach.
- There is little or no policy on physical and cyber security standards for installation energy sources or distribution systems.
- There is no consensus on whether future installations should rely on redundant and resilient infrastructure or should operate with the "islanding" concept.

Discussion

Many believe that Army installations should have the ability to island from the power grid and have the ability to operate independently through renewable energy sources.[30] Yet many challenges exist to making this a reality—the most important being that an investment strategy should be developed. Installations are spending scarce resources on redundant systems and entering into long-term agreements with local and regional power associations.

The Air Force study looked at many forms of renewable energy to support islanding of their facilities. Figure 10 shows the analysis developed in support of that study[31]. The Air Force also devoted a significant amount of effort to assessing the viability and readiness of small nuclear reactors, which is discussed in their report.

Recommendations

The recommendations based on energy security needs include:

- An enterprise approach is needed to address existing and new laws and requirements affecting energy generation, usage, and management.
- A systems approach should be developed and implemented for physical and cyber security of energy sources and distribution elements for installation.

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[30] Army Installation 2025 Concept Paper, Pre-decisional Draft, January 14, 2009.

[31] From a Air Force Scientific Advisory Board study, "Alternative Sources of Energy," 26 June 2009.

		Renewables	Small Nuclear
SECURITY ASPECTS	Vulnerability to attack	Medium	Low
	Consequences of attack	Power Loss	Power Loss / Potential Release
	Availability 24/7/365	Technology dependent	Yes
SYSTEM ASPECTS	Geography independent	No	Yes
	Land footprint	Large	Small
	Maturity	Commercially available	NRC Licensing required*
	Load following	Intermittent	Base Load
	Public perception	Positive	Improving

FIGURE 10. ASSESSMENT OF ALTERNATIVE ENERGY IN SUPPORT OF INSTALLATION SECURITY

- The Army needs to develop a consensus on whether islanding is a viable approach for Army installations—this affects investment in energy and security.
- The viability of nuclear energy should be studied to help address future energy needs and requirements—it appears to be a promising option for islanding of facilities.

Cyber Security Threats

Reduction of IMCOM's exposure to cyber security threats is essential in completing the mission in 2025. As new threats and vulnerabilities are identified, IMCOM must be able to address and mitigate them.

Issues

- Cyber activity, including commercial encryption, navigational devices and high capacity information systems, contain detail maps, digital images, and video capabilities that are available to terrorists.
- 24-hour news cycles will enable media warfare to dominate the news cycles and aid in terrorist timing of intrusions and attacks.

Findings

Technology advances will prove to be economical enablers for rogue organizations to organize, coordinate, and execute in dispersed operations making IMCOM's sustainment and support mission prime targets.

Discussion

Cyber, economic resources, asymmetrical and psychological warfare, and other forms of non-warfare are likely to be more prevalent in future conflicts. It is possible that enemy cyber operations will become a weapon of choice against IMCOM's sustainment to support expeditionary forces worldwide.

Recommendations

IMCOM should:

- Work proactively with DoD, G–6, and other Department of the Army agencies to counter rouge cyber activities to assure that IMCOM's sustainment operations are protected.
- Collaborate with both G–6 and G–2 to monitor IMCOM's networks to assure that intrusions will not interrupt IMCOM's sustainment and support functions.
- Monitor and develop measures in collaboration with both G-2 and G-6 to protect and secure networks so that essential sustainment and support operations in support of combat commanders are not interrupted.

> *Potential U.S. adversaries will continue to level the playing field by pursuing asymmetrical strategies designed to exploit perceived U.S. military and political vulnerabilities. In the future, advanced states might engage in counterspace strikes, network attacks and information warfare to disrupt U.S. military operations on the eve of a conflict. Cyber and sabotage attacks on critical U.S. economic, energy and transportation infrastructures might be viewed by some adversaries as a way to circumvent U.S. strengths on the battlefield and attack directly U.S. interests at home.*[32]

Based on this assessment, a small IMCOM headquarters cyber security unit should be established to monitor new service-oriented architectures (recommended in other sections of this report). This unit will ensure that these architectures are secure and can withstand cyber attacks on the IMCOM sustainment and support network operations worldwide. In addition, IMCOM should participate in meetings and plans with G–2, G–6 and other HQDA and DoD organizations as they formulate strategies to reduce cyber security threats on deployed forces throughout the world.

32 "Global Trends 2025," loc. cit.

Chapter 6 – Principal Conclusions and Recommendations

The Installation Management Command is one of the four pillars of the Army Enterprise Model—all of which are essential to successful delivery of ARFORGEN capability in providing trained and ready forces to the combatant commanders. IMCOM provides the myriad services and infrastructure that enable accomplishment of the TRADOC, FORSCOM, and AMC missions. Effective and consistent installation management and delivery of services is the bedrock for soldier welfare and power projection capability.

The study team considered relevant information from literature and primary source interviews, combined with insights and perspectives gained during eight installation site visits. The team identified and prioritized a set of factors that will likely have the most impact on future installation management, and then analyzed the seven specific areas of concern itemized in the Terms of Reference. The recurring themes observed through all of this input and analysis are constrained resourcing and the limited authorities derived from IMCOM's status as a direct reporting unit. Currently, the IMCOM commander does not have the resources, authorities, or strategic relationships commensurate with the scope and scale of IMCOM's Army enterprise mission. For effective and prolonged ARFORGEN support, the IMCOM pillar must have equivalence with the three Army major commands.

Principal Conclusion

The IMCOM Commander today has inadequate authorities commensurate with his responsibilities to fulfill mission requirements in 2025.

Principal Recommendations

Considering all inputs and reiterating several recommendations from the areas of concern discussed in Chapter 5, the study team developed 10 principal recommendations.

1. The Secretary of the Army must establish the necessary authorities in the IMCOM commander to ensure his ability to fully meet mission requirements. Considering the key role of IMCOM's infrastructure and services in the Army enterprise model, IMCOM must have the ability to create the policies and deliver the resources necessary to achieve the desired ARFORGEN outcome of trained and ready combat forces.

2. The Army should better integrate IMCOM's enterprise planning capability into the Army TAA, POM, and enterprise management processes. With Army staff support, IMCOM must continue the integration of disparate legacy manpower and resource management systems into a single efficient core enterprise system fully compatible with all Army enterprise systems.

3. IMCOM should adopt and regularly use a standard "future assessment model" (or similar model) for assessing the impact of future influencers. Prediction of likely future outcomes is essential for policy development and resource allocation. The IMCOM staff should have an

in-house capability to shape desired outcomes by relating the impact of future influencers to the set of enduring installation services.

4. IMCOM should collaborate with TRADOC to update doctrines, design a training program, and establish career paths for IMCOM's military and civilian workforce. Workforce development programs, career field management, gap analysis for future workforce skills, and other proponency support activities are essential for efficient and effective delivery of installation management and sustainment support services in the future.

5. IMCOM should direct garrison commanders to immediately develop a regional growth plan in collaboration with surrounding communities. All trends indicate that encroachment issues will continue to increase in coming years. Proactive actions now are necessary to avoid incompatibilities that will jeopardize future training, testing, and operational capabilities.

6. The Army should take the lead in establishing a consensus within DoD on whether islanding installations is a viable approach for installation energy security through 2025. The "islanding" concept would enable installations to operate independently and continue mission activities under levels of extreme risk or disruption of the regional grid service. However, the development of renewable and alternative energy sources at installations will be costly in terms of both time and money. A clear Army-wide, and preferably DoD, policy is a prerequisite for developing the appropriate investment strategies.

7. The Army should reexamine the doctrine and policies for installation access control, physical security, and force protection to establish clear roles and responsibilities for IMCOM to meet mission requirements in 2025. Security is essential for most operations on Army installations, but security-related requirements can easily become a bottomless pit for resources. Coordinated Army-wide policies should provide the basis for security investments in manpower, hardware, and technologies.

8. *IMCOM should establish an enterprise approach to reviewing, planning, and operating its IT systems and services.* This approach must sunset obsolete IMCOM legacy IT systems, enable savings and operational efficiency, reduce vulnerability to cyber attacks, and comply with the G–6/CIO-proposed Army IT enterprise architecture.

9. IMCOM should take the leadership role with other Army and DoD organizations (DASA–ESOH, USACE CERL, etc.), other government agencies (DOI, USDA, etc.), NGOs, and communities to mitigate environmental issues from constraining operations in 2025. Environmental issues will certainly continue to impact Army installations. Continued proactive engagement with all environmental stakeholders is necessary to limit future restrictions on operations and training, and to manage the costs and limitations of environmental mitigation measures.

10. IMCOM and ACSIM must staff, train, organize, and coordinate to justify and defend the budget and resource requirements for IMCOM's multiple missions. To ensure adequate resources for critical missions, the command must be able to justify its resource requirements by integration

of its enterprise planning capability into the Army TAA, POM development, and other enterprise management processes.

Workforce Professionalism – The Key Ingredient

Every installation visited, and most of the primary source interviews, described a unique array of issues not addressed in this report. The nature of our tasking in accordance with the Terms of Reference and the time constraints for study team members to participate, allowed only top-level conclusions and recommendations. On several installations we visited, the garrison staffs were in the midst of BRAC and Army transformation construction and unit relocations. These are once-in-a-generation opportunities for installation staffs, which represent a huge amount of extra work for a workforce that is already overburdened. Every one of our installation site visit teams noted an extraordinary commitment of the garrison staffs to "get the job done," regardless of resource limitations, policy shortcomings, or other issues. The level of professionalism and dedication across the IMCOM workforce was evident and consistent in every installation visit. In our collective opinion, this professionalism and dedication will be primary factors in delivery of effective and efficient installation management in 2025.

Final Note

Based on the time constraints for this study leading to the inability to engage in more depth in areas of concern such as physical security, the study team recommends continued assessment of selected areas.

Appendix A – Terms of Reference

DEPARTMENT OF THE ARMY
ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

APR 10 2009

Dr. Frank H. Akers, Jr.
Chairman, Army Science Board
2511 Jefferson Davis Highway
Arlington, Virginia 22202

Dear Dr. Akers:

I request that the Army Science Board (ASB) conduct a study to determine those actions necessary to produce effective and efficient Army installations in the 2025 timeframe. The study should be guided by, but not necessarily limited by, the Terms of Reference described below.

Background:

The ACSIM is developing strategic concepts to shape the future of Army installations and Army installation management. These concepts will foster staff and garrison exploration, conceptualization and innovation, with an end result of improved soldier and family readiness through efficient and effective installation management. This study should produce specific considerations, influencers and recommendations that will enable long-term actions which produce effective installation management in 2025.

Scope:

This study will review information available relative to envisioning Army installation management in 2025. Your review should include government, business, and academic products to gather multiple viewpoints and perspectives of potential influences on future Army communities. Your research will provide a basis of data for shaping installation capabilities and delivery of services over the next 15 years. Your report should enable IMCOM to develop strategies to deliver efficient and effective installation management, which produces improved facilities, standardized products and services, and ultimately strengthen soldier and family readiness.

Your study should address the following topics, and provide recommendations where appropriate. You may coordinate with the sponsor to modify this list as information becomes available, and should include any other observations and recommendations you deem appropriate.

1. Likely conditions, influencers and technologies existing in 2025 which will impact IMCOM's ability to provide:
   --Effective and efficient installation management
   --Support to ARFORGEN and readiness
   --Standardized programs and services to soldiers and Army families, in garrison, as well as during deployment and dwell time
   --Development of the future military and civilian installation workforce
   --Development of facility designs and master plans

2. Opportunities for Enterprise-level solutions to achieve:
   --Better services and infrastructure in support of ARFORGEN
   --Integration of the capabilities of IMCOM, MEDCOM, and ACOE
   --Synergy with likely future DoD or Joint installation management policy, and support of future Joint basing and interagency operations

3. Considerations relative to security and energy issues, and impacts on the environment and neighboring communities, to include:

--Physical security and access
--Energy security and efficiency
--Environmental impact
--Encroachment issues

Your report should provide inputs and recommendations which the ACSIM can use in constructing the FY12-17 POM, with the objective of setting conditions to enable effective and efficient installation management through and beyond year 2025.

You will have open access to all elements of the Army Staff and major commands needed to elicit the information you require. You will also have free access to Army installations and garrisons you decide to visit, and any appropriate staff members of those organizations.

Study Sponsorship:

The sponsor for this study is the Assistant Chief of Staff of the Army for Installation Management.

Study Duration:

A briefing will be provided by August 31, 2009. The final report should be provided by October 15, 2009.

Sincerely,

Robert Wilson
Lieutenant General, GS
Assistant Chief of Staff
for Installation Management

Appendix B – Study Team Composition

ASB Members/Consultants

- Mr. Dave Swindle, Co-Chair
- BG Dean Ertwine USA (Ret.), Co-Chair
- COL Michael Landrum USA (Ret.) Co-Chair
- Mr. Buddy Beck
- Ms. Ruby DeMesme
- MG Joe Ernst USA (Ret.)
- Dr. John Farr
- MG Paul Greenberg USA (Ret.)
- Dr. Jeanette Jones
- Dr. Ivan Somers
- Dr. Wesley Stites
- Dr. Harry Thie
- Dr. Harry West

FFRDC

- Ms. Beth Lachman, RAND Corporation

Government Participants

- LTC Andrew Miller, ACSIM
- Ms. Karen Baker, IMCOM

Support Staff

- Deborah Konopko
- Vivian Baylor

Appendix C – Lines of Inquiry Template for ASB Team Visit/Discussions

Installation/Site:

Date of Visit:

Primary POC:

Background/References:

a) Sponsor: IMCOM/ACSIM – LTG Wilson, Action Officer: ACSIM – LTC Andy Miller

b) TOR – Scope: Review Information relative to Army Installation Mgt in 2025 and provide basis of data for shaping installation capabilities and delivery of services over next 15 years; support IMCOM development of strategies for efficient & effective installation management, improved facilities, standardized products & services, and strengthen soldier & family readiness; input/recommendations for FY 12 – 17 POMs

c) TOR Specific Areas of Interest: Include but are not limited to:

1. Likely conditions, influencers, and technologies existing in 2025 that will impact IMCOM's ability to provide:

- Effective and efficient installation management
- Support to ARFORGEN and readiness
- Standardized programs and services to Soldiers and Army families, in garrison, as well as during deployment and dwell time
- Development of the future military and civilian installation workforce
- Development of facility designs and master plans

2. Opportunities for enterprise-level solutions to achieve:

- Better services and infrastructure in support of ARFORGEN
- Integration of the capabilities of IMCOM, MEDCOM, and ACOE
- Synergy with likely future DoD or joint installation management policy and support of future joint basing and interagency operations

3. Considerations relative to security and energy issues, and impacts on the environment and neighboring communities, to include:

- Physical security and access
- Energy security and efficiency
- Environmental impact
- Encroachment issues

d) ASB Schedule: Draft Report by 24 July 2009; Briefing by August 31, 2009; Final by 15 October 2009

Organizations/Departments/Functions at Installations To Participate/Input to Study Team Installation Visit

(Note—Site being visited may or may not have all the functions or personnel assigned in the respective rolls; degree of direct participation to be decided by installation POC for facilitating the study team's visit.)

- Garrison Commander
- Senior commander
- Master Planning
- Defense Public Works
- Range Management
- Directorate of Plans, Training, and Mobilization
- Environmental Management
- Natural Resources Management
- Encroachment
- Sustainability
- Energy Management/Services
- Planning, Analysis and Integration Office
- Directorate of Information Management (DOIM)

Lines of Inquiry:

General

- Provide overview of installation to include missions supported, organization, status of infrastructure, needs, and issues from an installation perspective.
- Identify/summarize any in-progress studies and planning underway relevant to futures planning for Army infrastructure, installations, installations management, budgeting, and mission support through 2025 or beyond.
- Identify critical information needs, gaps, or guidance needed in order to accomplish your needed planning through 2025 or beyond.
- Identify areas of unknowns/areas that could impact your preparedness and the future of your installation/command in the future; for each area, how could these unknowns affect your installation/command in the future?
- Describe current structure for interaction/engaging with local government/communities, level of community/installation integration and interdependencies and how you view the effectiveness of the interfaces and any gaps. Do your installation and the local government/communities conduct any regular or ad hoc joint planning for future land use, transportation needs, education, housing needs, economic development, and so forth?

- Describe current structure for interaction/engaging with MEDCOM and USACE, the level of integration of planning and operations, and how you view the effectiveness of the interfaces and any gaps.
- (Garrison commander or ACUB staff) What are your main concerns/issues in dealing with local communities and other external stakeholders (such as regulators)? How do you anticipate this will change in the future?
- What changes do you anticipate in recruiting/retaining/training a suitable civilian workforce out to 2025?
- (Garrison commander) What are your main challenges to installation management? How have you dealt with them? How do you think these challenges might change in the future? Looking out to 2025?
- (ACUB staff or garrison commander) What types of encroachment have your experienced in the past or currently? How have you been dealing with any encroachment concerns? What changes do you anticipate in the future with respect to encroachment? What guidance and involvement is received from IMCOM on addressing encroachment)?
- (Range management staff/testing management staff) What are your main training/testing concerns/issues? How are you dealing with them? How do you think these issues might evolve in the future? Looking out to 2025? What about the need for training space in the future; how might that change?
- (IT staff/DOIM) How is your installation taking advantage of advances in information technologies (for example, Geographic Information System, wireless, handheld devices)? What are the barriers to using such technologies? How are you addressing such barriers? How do you anticipate the use of such technologies to change in the future
- (Director of Environmental/Natural Resource Management) What are your main environmental/natural resource concerns and issues? How are you addressing them? How do you anticipate such issues will evolve in the future? Out to 2025?
- (Energy manager) What energy efficiency/conservation activities are you currently implementing or planning? What renewable energy technologies are you currently implementing, planning, or exploring the feasibility of? How robust/redundant are your connections to outside energy supplies? How do you think energy issues will evolve in the future? Out to 2025?
- What lessons learned or best practices from your installation would have the greatest positive impact if implemented across IMCOM?
- What long-term challenges do you face in securing the installation? Do you foresee the need for major changes in the control of ingress for soldiers, employees, dependents, or visitors to increase either security or the efficiency of entry?

Installation Specific

- As senior commanders or mission support commanders, you are the front line for implementing current and identification of future infrastructure needs and interfacing with your communities. Please discuss/identify from your perspective any gaps or issues that frustrate you as well as work well for you in maintaining your installation and assuring its readiness for the Soldier, their families, and the missions to be supported.
- Describe how guidance comes to you and the effectiveness/reliability of the guidance. What are your recommendations (if any) in areas that should be addressed/resolved/clarified in the future to improve future planning and planning implementation.
- From a command or installation perspective, discuss how you are integrating with the community and businesses. Describe lessons learned, how you are addressing security under varying threat conditions, any co-dependencies your installations have with your communities, and what needs are not being addressed.
- From the site/installation/command perspective, where are opportunities for standardization/modernization, and how are you as commanders involved in future planning and master planning for your installations/commands?

Appendix D – Primary Outside Source Interviews

Army and Air Force Exchange Service

Issue

Can AAFES sustain the expected "delivery of dividend" to MWR/IMCOM that is essential for sustainment of existing MWR operations on Army garrisons?

Findings

- The commanding general conveyed that AAFES's 5-year business plan is solid and capable of delivering the intended financial support to MWR.
- AAFES has been a consistent provider of funds over time to MWR. In 2008, AAFES had sales of $10. 8 billion and contributed $264.5 million to MWR. MWR dividends represent two-thirds of AAFES's total earnings of $376.2 million. For 2008, AAFES paid a per capita dividend of $276 to every Soldier and Airman. AAFES's dividends to MWR in 2008 were Army, $149.3 million; National Guard, $10.9 million; Air Force, $90.0 million; Marine Corps, $12.8 million; and Navy, 0.6 million.
- Approximately 50 percent of AAFES sales are generated from the retiree population. Although military numbers have remained constant or perhaps grown, the retiree population with convenient access to military installations has been reduced by BRAC base closures and has impacted a significant customer base.

Recommendations

A review of MWR services being delivered to military members may warrant a review in order to determine the best and most cost-effective means to utilize AAFES dividends of $276 per Soldier and Airman.

Association of Defense Communities

The ADC is an organization whose members include civic leaders, installation management command leaders, staff administrators, and business leaders and developers who share a common bond of facilitating and developing support for military installations in the community. Most members are in "growth communities" that are gaining military populations requiring increased community infrastructure. Of particularly importance are housing, schools, roads, and utility infrastructure. Topics and concerns discussed included:

- Enhanced-use lease of existing and new structures by the government and private sector
- Regulations and government compliance
- Requirements for land
- Ingress/access by civilian tenants
- Partnerships (government and private sector) with emergency services/utilities/ schools/etc.
- Growth communities

- Personnel development for defense communities
- Renewable energy
- Innovations for 2025 garrison commanders

Summary

- Energy Independence/Renewable Energy – all goals of DoD, Air Force, and Army.
- Community partnerships are becoming a major factor that needs development (over-arching strategy).
- Joint basing will become more dominant. Multiple services and government agencies will be located at one installation. Mega installations will require more education and skills for garrison leadership.
- Residential Communities Initiative – 50-year contracts for housing tend to "BRAC proof" installations.
- BRAC is moving Soldiers from North to South and from higher cost to lower cost regions.
- Enhanced-use leases are a growing and challenging conventional security process.

American Planning Association (W. Stites)

Several phone discussions were held with the director of research and the public relations officer of the American Planning Association. This professional group brings together those who work in regional and city planning. Among other activities, the association will host meetings to educate those new to regional or city planning in the benefits and mechanics of the planning process. The discussion with these individuals centered on costs and procedures required for such a meeting.

Appendix E – Installation Site Visit Summary Reports

Aberdeen Proving Ground

Date(s) of Visit: 4 Jun 09

Participants: Dean Ertwine, Dave Swindle, Buddy Beck, Harry Thie, Ivan Somers, Ruby DeMesme (ASB)
Beth Lachman, Kim Curry (RAND)
John (Rusty) Kreitz (IMCOM staff)

Primary POC: Ms. Pat Johnson, Ms. Marty Giffing

Site Overview

APG serves as the home for 70 tenant organizations, with the largest organizations being Army Test and Evaluation Command, Aberdeen Test Center, 20th Support Command (CBRNE), U.S. Army Medical Research Institute for Chemical Defense, Joint Program Executive Office for Chemical and Biological Defense, U.S. Army Center for Health Promotion, Research Development and Engineering Command and Preventative Medicine, and CECOM Life-Cycle Management Command. BRAC has added a force projection role to the APG mission.

Summary of Visit

The key observation from this visit is that commands are overwhelmed with day-to-day requirements. The Counsel of Colonels and the APG Board are two groups that deal with current issues, but do not have time for considering future needs. A balanced management approach looking ahead to future installation requirements as well as current needs is not possible. An example of where this particularly impacts a multitenant installation like Aberdeen is that the installation level is in many ways the best place to look ahead and deal with changing needs. The inability to project future site service and infrastructure needs is caused in large part by the inability to forecast installation population, which in turn drives both needs and budgets. There is little confidence in population projections beyond 1 or 2 years.

In addition to the lack of planning, there is a lack of flexibility in the ability to re-program or move funding at the installation level, resulting in inefficiencies and missed opportunities. When funding authorizations come from the top down, numerous constraints and restrictions limit use at the installation level. Funding is also confused by the lack of clear communication about the Army's installation investment strategy. For example, mixed messages regarding energy investment prevent commands from planning and aligning with higher command intent. Funding is also inflexible in that programs on site do not provide resources for general installation maintenance and services. That burden falls on IMCOM, but the funding from IMCOM lags behind the pace of change and operational needs. Today IMCOM funds 75 percent of maintenance needs as forecasted, but preventive maintenance for sustainment,, restoration, and modernization (RSM) is unfunded.

Transportation in the surrounding region is a significant problem, and state and local governments have not committed to improvement of the local transportation infrastructure. As access to the installation and nearby communities and services become even more problematic with the influx of personnel due to BRAC, there may be an adverse impact on mission accomplishment.

Water resources are another area where interface with the region is critical. As the city of Aberdeen grows and pulls more water, there is concern that groundwater on the installation will be affected. Proactive planning on this issue with local governments is required.

IMCOM dictates solutions that are often too inflexible. This "one-size-fits-all" approach does not provide the correct solutions for security and maintenance allocations, to name just two specific areas. APG is a recipient of "green" all-electric vehicles. However, for a site such as APG, with its dispersed and sizeable operations, such vehicles are impractical. APG was not consulted by IMCOM, resulting in an impractical, wasteful program.

Frequency management for telecommunication and data transmission on site is an area where the installation is losing authority to NETCOM. APG leadership feels frequency management should be at the garrison command level. Another issue relating to the relationship with other Army organizations is the question of interface and transition between AMC and IMCOM. After study by higher command for 3 years, the installation was abruptly ordered to immediately implement plans seen for the first time by the garrison. Besides this failure of communication, these instructions were not accompanied by necessary tables of allowances, orders, or funding alignments.

The addition of a force projection mission to APG by BRAC will need assessment and adjustment of how this mission and its impact on installation operations such as base access and transportation will affect other tenant organizations in their ability to carry out their missions. Further, as the uniformed presence on APG decreases and the civilian population increases due to BRAC, the issue of how MWR services will be funded will become a major issue. Direction from higher command on how to accomplish the planning and scheduling required by BRAC was lacking. An internal BRAC transformation office was established and reported to the garrison commander and provided a valuable integration and coordination function to accomplish BRAC. This should be recognized as a best practice.

Camp Humphreys

Date(s) of Visit: 15–19 Jun 09

Participants: Dave Swindle, Harry West, Ruby DeMesme (ASB)
Vivian Baylor (ASB staff)

Primary POC: Monika Tanedo

Site Overview

Camp Humphreys, currently in the midst of the largest construction project of any Army installation, is the major garrison in South Korea.

Summary of Visit

Camp Humphreys is an installation in the midst of a major transformation, and many of the observations made relate to problems with that process of transformation. The lack of an agreed-to baselined manpower level (Solders, civilians, family members) to be supported at U.S. Army Garrison (USAG) Humphreys is impacting current and near-term planning. Similarly, this affects the DoD's school requirements, MWR, MEDCOM, etc., where gaps currently exist

Responsibilities for antiterrorism policy and technology solutions at installations are at best unclear between the G–3, provost marshal and IMCOM; this area needs to be examined (enterprise).

The USAG Humphreys is in need of technical support and subject-matter expertise in antiterrorism force protection for base defense given that the future USAG Humphreys will have a significant portion of their installation bounded by water (river).

Changes in moving NETCOM out of IMCOM and the loss of the DOIM support under the command of the garrison commander is adversely affecting the ability of the installation to sustain and respond to information technology needs and operations at the garrison; this move needs to be reexamined.

In developing and planning resource needs at USAG Humphreys, a "force developer" is needed on the resource management staff.

There is insufficient feedback and involvement of garrison-level users in the planning and decision implementation of the garrison operations and maintenance.

Communication processes to and from IMCOM K (region) and IMCOM HQ and to and from the garrison command can be improved.

Too many operational orders are issued from IMCOM HQ with the accompanying resources to implement disrupting already-strained resource management and operations.

The Relocation Transition Office is making commitments that obligate garrison commanders without their input.

A considerable amount of overtime is undocumented; total time accounting should be implemented.

The absence of defined training and a comprehensive workforce development program for all of IMCOM is currently impeding the ability of IMCOM to successfully recruit, retain, and develop its workforce to achieve its mission (enterprise).

IMCOM is approximately 6 years into the Standard Garrison Organization (SGO); it is still a draft but needs to be completed and baselined (enterprise).

The relationship between IMCOM K and the 8th Army in terms of support and installation operations requires reexamination as the transition occurs from Yongson to USAG Humphreys (installation).

USAG Humphreys has a unique mission if an invasion or war occurs—a personnel evacuation mission. This function needs to be thoroughly exercised (table top or field exercise) and results measured before final designs and operational planning for Humphreys are complete.

Given plans to consolidate Yongsan garrison into the "new" USAG Humphreys will not fully be accomplished until the very last moment for policy and practical operational reasons, IMCOM K needs to develop a budget, establish a timeframe, and determine resource requirements to be able to operate both USAG Humphreys and USAG Yongsan simultaneously for some period of time (installation).

Fort Belvoir

Date(s) of Visit: 11 May 09

Participants: Max Noah, Paul Greenberg
John Dyer (ASB Staff)

Primary POC: COL Jerry Blixt

Site Overview

Ft. Belvoir is a major post in the Washington, DC area. It provides facilities for 130 tenant organizations from Army and DoD. It houses 7,000 residents on post in 2,700 units. It is a major medical facility for the military population in Northern Virginia. It has the largest commissary in the world and will build a new PX soon. Several areas managed as part of the installation are noncontiguous with the main installation.

Summary of Visit

Already large, with approximately 24,000 people on post each workday, the size of the installation is expected to significantly increase by 2030. With the local (nonbase-related population) on the increase combined with an ever-increasing workforce, one of the larger problems facing Belvoir will be access and egress through the security gates. Improvements to local roads are planned,, but with increased installation and local population, problems will likely increase. Transportation *internal* to the installation is also a problem. With no bus or shuttle service on post, all internal transportation is by automobile or truck. Access control is a related issue that will also deteriorate with increasing population.

As the area around Belvoir continues to develop, encroachment is a concern. The construction of highrise buildings in proximity to the high security National Geospatial Center is the major issue.

Ft. Bliss

Date(s) of Visit: 27–29 May 09

Participants: Dean Ertwine, Harry Thie, Wesley Stites (ASB)
Charlotte Hogan (IMCOM staff)

Primary POC: Marie Doyle, Dave Johnston

Site Overview

Fort Bliss, next to El Paso, TX, is in transition from being the home of Air Defense to the location of X brigade combat teams. A nearly $5 billion construction project to provide facilities for a more than doubled base population is approximately half completed.

Summary of Visit

Several significant frustrations were expressed by garrison staff managers. The most prominent concern was over hiring policies and restrictions and the inability to manage their table of distribution and allowances (TDA). There is a considerable lag between changing missions and the ability to hire staff to accomplish the mission. Mission requirements are still met, but often by working undocumented overtime or neglecting other work. Fluctuating and unpredictable resourcing also concerned garrison managers as it limits their ability to manage proactively and effectively. Another frustration was the CLS (common levels of support) report system, which was thought by many to measure the wrong things. Moreover, its use for resourcing precludes an installation from establishing its priorities and funding them. IMCOM should sponsor a study to examine and revise the CLS metrics. In general, there is a tension with higher headquarters (IMCOM) over standardization, which results in "cookie-cutter" and "one-size-fits-all" policies and resourcing and is perceived as micromanagement. Local conditions need to be addressed.

There is also some frustration over lack of IMCOM guidance on future planning. No one is thinking beyond "transformation," which is already 30–50 percent complete. A specific example of short-term thinking was the failure to incorporate energy-saving measures, green technologies, and other future efficiencies and flexibilities into new construction. This reflects an inability to "invest now" to enable significant life-cycle cost savings and to adapt to mission changes over the next several decades.

Several concerns at the level of enterprise management surfaced. The garrison staff is concerned about the transfers of the contracting function from IMCOM to AMC and the IT management function to NETCOM. IMCOM should establish some formal liaison or organizational linkage to ensure that the director of contracting and DOIM stay attuned and responsive to local installation requirements. Another opportunity for an enterprise-level management is present at the interface with MEDCOM. MEDCOM maintains its own security force and access control at William Beaumont Army Hospital. This function could be transferred to the Fort Bliss garrison, with greater efficiency and savings due to scale.

For the remaining transformation construction contracts, IMCOM/ACOE should incorporate energy-saving technologies to reduce life-cycle operating and SRM costs.

Regional/joint installation management with White Sands Missile Range and Holloman AFB could be explored.

IMCOM should explore alternative energy collaborations and potential pilot projects between Fort Bliss and the local utilities, the City of El Paso, and Texas and New Mexico state agencies. With more than 300 days of sunshine, consistent wind, abundant groundwater, and 1.1 million acres of land, Fort Bliss has the resources to support alternative energy solutions.

Fort Bragg

Date(s) of Visit: 13–15 May 09

Participants: Harry West, Harry Thie, Jeanette Jones (ASB)
Deborah Konopko (ASB Staff)

Primary POC: Carrie Rice

Site Overview

Ft. Bragg, located west of Fayetteville, NC, is the home of the XVIII Airborne Corps and the 82d Airborne Division. The U.S. Army Special Operations Command and the U.S. Army Parachute Team (the Golden Knights) plus several commands and brigades are also located on the base. Ft. Bragg is the largest Army base by population with more than 52,000 active duty Soldiers, 12,500 reserve components and temporary duty students, 8,500 civilian employees, 3,500 contractors, and 63,000 active duty family members. Additionally, nearly 100,000 Army retirees and family members reside in the area.

Summary of Visit

Ft. Bragg is nearing capacity for a variety of reasons. Encroachment, environmental issues, and competing demands on ranges all threaten to curtail training. The transfer of Pope AFB to Ft. Bragg may relieve much of this pressure, but a long-term land management plan must be developed to maximize the utility of this installation.

The civilian workforce at Ft. Bragg is another area of concern. A great deal of undocumented overtime is being worked to fully support missions. The failure to document actual workload means that adjustments to the TAA, POM, and budget will probably not be made to generate a better match of manpower to mission needs. In the longer term as new missions and systems are assigned to Bragg, new and specialized skills sets will be needed in the civilian workforce. It is not clear that these needs can be met from the existing workforce. Forecasting the needs and working to develop the workforce appropriately will need to be considered.

Ft. Irwin

Date(s) of Visit: 27–28 May 09

Participants: Joe Ernst, Ivan Somers (ASB)
Matthew Barden (IMCOM staff)

Primary POC: MAJ Kevin Heinonen

Site Overview

Ft. Irwin, located 35 miles from the nearest town, Barstow, CA, is the home to the National Training Center. As such, it has a very large population of transient soldiers.

Summary of Visit

One of the major strengths of Ft. Irwin is its remote location, which enables training uses that are impossible in more populated areas. There is a price to be paid for this strength, and several key issues at Ft. Irwin relate to the remote location of this installation. The recruitment and retention of qualified civilian employees is a constant challenge. Despite a 28 percent pay premium, the civilian work force is 30 percent under desired strength. Similarly, educational and recreational opportunities at this location are limited. Nearly, an hour by road to the nearest civilian hospital, the delivery of quality medical care on the installation is a serious concern.

CLS is considered too inflexible. For example, the hours of operation for libraries and fitness center are not convenient in this remote location where most Soldiers and families are largely restricted to base.

Even at this remote location, encroachment is a concern. In the case of Ft. Irwin, this is not driven by development but by environmental concerns. Listing of endangered or threatened species and possible further legal restrictions on the use of wilderness areas all may have a major impact on the Army's ability to train at Ft. Irwin.

Ft. Irwin is remote from population centers because the limited water supply restricts the development of towns. Ft. Irwin draws water from three brackish aquifers and is currently drawing faster than they recharge. In 30 to 35 years, the water supplied by these aquifers will be depleted unless some action is taken.

Aging buildings and infrastructure are another issue. Older buildings represent a greater maintenance burden, are often poorly suited to current uses, and may be much less energy efficient than newer building. Ongoing investment in renovation or new construction is required.

Security and accessibility are in tension, even at this remote site. One entry point must serve more than 10,000 people. Only 19 full-time guards secure 750,000 acres.

Ft. Lee

Date(s) of Visit: 11 June 09

Participants: Ivan Somers, Michael Landrum (ASB)
Karen Baker (INCOM Staff)

Primary POC: Melissa Magowan DGC

Site Overview

Fort Lee is bounded east and west by Interstates 295 and 95 respectively, so its 6,000 acres are fundamentally unchanging and unchangeable. As well, the extraordinary BRAC buildup and influx of population and mission is fast turning Fort Lee from a functioning quartermaster center into an urban logistics university locale.

Summary of Visit

Encroachment issues are interesting at Fort Lee. The interstate highways make boundaries that prevent adjacent communities from trying to borrow or buy parts of the post. So the main encroachment issues have to do with the enormous capital building projects on post roads and facilities, housing areas, and so forth that are creating an urban environment where a suburban/rural one existed. Fort Lee has one of the Army's outstanding environmental offices and seems to be well ahead of most of the Army in assessing and addressing the changes.

The training area on Fort Lee proper is limited, and it comes with manageable but demanding tasks and staffing requirements. With training for growing logistics students and for reserve component deployment troops starting no later than 2010, one option that could be considered is use of Ft. A.P. Hill. A current major issue with using Ft. Hill is time and dollar costs of transportation. Proposals for rail systems would make field training at AP Hill viable thereby freeing the field training area at Fort Lee for other uses.

Other transportation issues include roads that need to be rerouted around the post to create efficient traffic patterns. The largest security and operational challenge at Fort Lee will be creating a transportation system of roads, gates, rail, etc., that accommodates the robust logistics center that will operate here. No heli-pad or airstrip exists on the post. Gate operations need to blend with significant major roads and highways in the region. A very mixed population of mission, support, and ancillary personnel will continue to work at Fort Lee, all meriting different treatment and security access.

Rock Island Arsenal

Date(s) of Visit: 19 May 09

Participants: Paul Greenberg, Joe Ernst, Michael Landrum (ASB)
Harold Balbach (IMCOM staff)

Primary POC: Joe Himsl

Site Overview

Rock Island is a true island, 950 acres surrounded by the Mississippi River. Serving as the home for six major Army tenants, several facilities are home to civilian enterprises through enhanced-use leasing. RIA is near its current capacity of 7,500 people, nearly all civilian, but building renovations should increase capacity by about 1,000.

Summary of Visit

Transportation and physical security are major issues for RIA. Rather than local road improvements, the major transportation issues appear to be the need to improve movement of the workforce and material on and off its three bridges. Security is an interesting issue as the many enhanced-use leases require accessibility regardless of threat level. This "mixed-use" is expected to increase over the next few years.

RIA appears to be a model of their ability to effectively manage a working capital fund installation as evidenced by comments of the senior mission commander and other tenants.

Staff presented their rudimentary Vision 2025 plan, which appeared to be mostly "home-grown." Although they are to be commended for thinking ahead, there appears to be little leadership or guidance from IMCOM on this issue.

Appendix F – Support Material for Analysis Model

The approach taken by the study team was taken from the literature of "quality functional deployment" (QFD), which is a systematic method used by industry to convert needs into process characteristics.[2] We also incorporate techniques from multiattribute decision-making.[3] In particular, both methodologies stress incorporating values from stakeholders. In the QFD process, these values are called the "voice of the customer." In the multiattribute literature, it is called "decision-maker values." Both methods also involve assessing and weighting variables based on relevant dimensions. In our case, the variables are assessed on the dimensions of importance or likelihood. The weights denote strong, moderate, and weak relationships and value strong relationships more highly than weak relationships. Analytically, the methods drive greater separation among alternatives. The weights themselves are similar to those of other weighting methods including rank-ordered centroid (ROC).[4]

In our analysis, we use calculated weights derived from rank ordering the desired outcomes from 1 to n. With nine outcomes, the highest ranked has a weight of 0.31, the fifth ranked a weight of 0.08, and the ninth ranked a weight of 0.01. The sum of the weights is 1. Figure F–1 shows the cumulative value of the weights for each ranked outcome, 1 through 9. There are increasing returns to having a higher rank.

For importance of services and influencers and for likelihood of influencers, we are using weights based on a heuristic from the QFD literature that assigns weights of a 3:1 ratio.[5] We make the assumption that only three "ranks" are plausible (highly important, important, less important). If we assume that a complete ranking from 1 to n is feasible, then ROC-assigned weights would be preferable. However, the large number of services and particularly influencers makes this assumption flawed. In practical terms, ROC weights approach 3:1 for a few attributes (and are 3:1 for two attributes), but the ratio decreases as more attributes are ranked. The QFD heuristic holds the ratio constant at 3:1 for any number of categorized attributes and does not distinguish within a category. Figure F–2 shows the cumulative value for the importance scale. (The likelihood scale is similar.) There is also an increasing value to the importance score.

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[2] See John R. Hauser and Don Clausing, "The House of Quality," *Harvard Business Review,* May–June 1988, for a description of quality function deployment. See Lai-Kow Chan and Ming-Lu Wu, "Quality Functional Deployment: A Literature Review," *European Journal of Operations Research*, Vol. 143, Issue 3, December 2002, pp. 463–497, for a more thorough review of the method.

[3] See Craig W. Kirkwood, *Strategic Decision Making: Multiobjective Decision Analysis With Spreadsheets,* Duxbury Press, Belmont, CA, 1997.

[4] See F. Hutton Barron and Bruce E. Barrett, "Decision Quality Using Ranked Attribute Weights," *Management Science*, Vol. 42, No.11, November 1996, for an empirical assessment of formula such as these in providing significant improvement in decision quality.

[5] See K. K. Ghiya, A. T. Bahill and W. L. Chapman, "QFD: Validating Robustness," *Quality Engineering,* 11(4), 593–611, 1999, for a discussion of the robustness of this weighting heuristic.

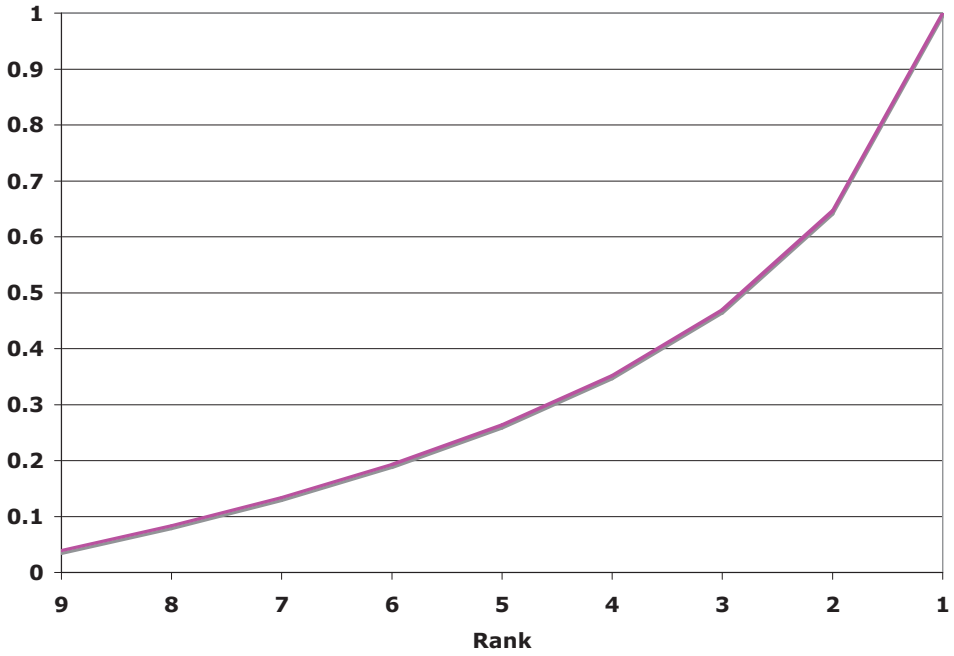


FIGURE F–1

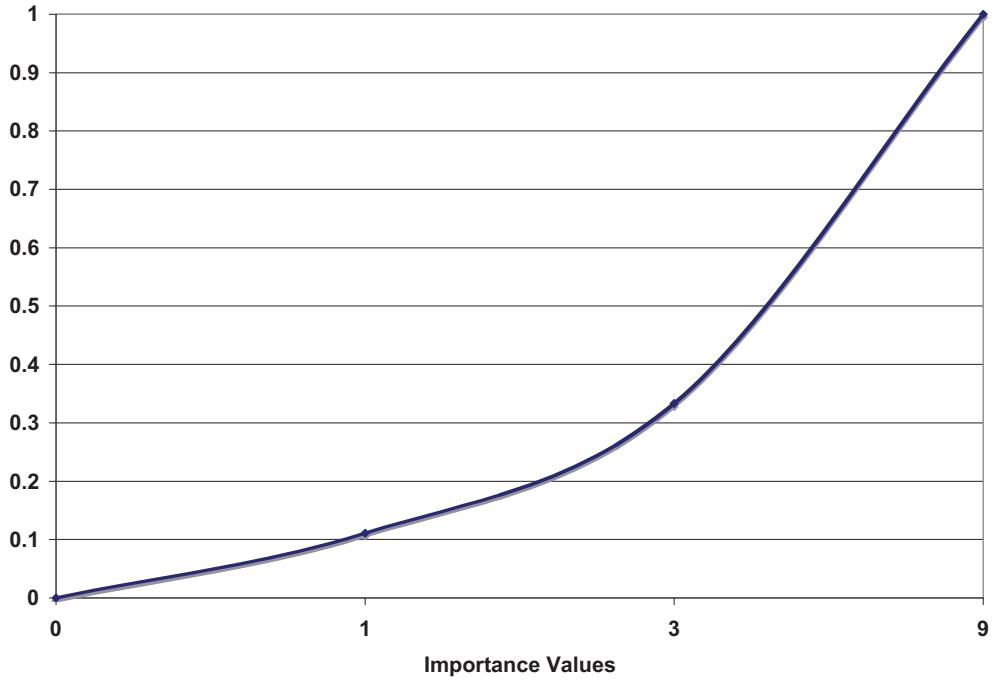


FIGURE F–2

The QFD weights are "steeper" than the ROC weights (which are steeper than other methods) and thus give more effect to the most important attributes. Ultimately, the choice of assumption about steepness of weights is behavioral. However, all studies suggest that no choice, implicitly assuming equal weights, is the worst choice.

Important Outcomes in 2025 (and likely now as well)

This portion of the report defines the end-states for IMCOM and installations for 2025.

Capacity To Generate and Project Force

The major purpose of the Army is to fight the enemies of the United States. Therefore, the most important outcome of IMCOM's mission is supporting the capacity of the Army to generate and project force, currently using the Army Force Generation (ARFORGEN) model. This outcome includes provision of facilities to train, maintain, transport, and house the force.

Ability To Support Civil Authorities as Required

Support of civil authorities in the event of a natural disaster or domestic attack is another high priority for the Army as a whole and, accordingly, also for IMCOM. A successful outcome is the provision of bases, facilities, and people enabling the Army to carry out this operation.

Needed Programs and Services for Soldiers, Families, and Employees

Installations are not merely places to work. The provision of diverse programs and services such as recreation, shopping, education, and child care is vital to the outcome of making them desirable places to work and live.

Positive Working Relationships With Local/Regional Communities

The armed forces are a part of society and, ultimately, are subordinate to civilian authority. Many of the challenges faced by an installation can only be overcome with the aid of municipal, county, or state governments or regional authorities. Maintenance of a positive relationship with local and regional communities is vital if IMCOM is to accomplish its mission in the long term.

Developed Military and Civilian Workforce

No enterprise is better than its human capital and IMCOM is no exception. If resources are invested to develop the professional skills of the civilian and military workforce available to IMCOM, the mission as a whole will benefit.

Installations Managed at the Enterprise Level

IMCOM is only one part of the Army and effective management of installations requires a close, collaborative working relationship with commands such as MEDCOM, NETCOM, the Corps of Engineers, Army Material Command, and Army Contracting Agency. Moreover, as the Army evolves its enterprise strategy, IMCOM becomes more central to its implementation.

Efficiency With Common, Consistent Standards

IMCOM is more like a traditional business than most parts of the Army, and efficiency in operations is a key hallmark of a successful business. One way to achieve effective, efficient operations is to establish clear standards for customer satisfaction, level of services delivered, and resources committed to various tasks. However, it must always be borne in mind that high standards do not necessarily mean standardization. Efficiency often requires flexibility, especially to meet unique local needs of installations.

Secure and Accessible Installations

No Army installation can operate effectively if it is not secure from attack or espionage. However, the goal of security will always be in tension with the equally important need to integrate the Army into larger society and with the American value of privacy. Further, making access to installations too difficult will directly hinder the execution of mission. Striking the right balance between these two imperatives is critical to IMCOM.

Enhanced Energy Independence/Sustainability

A current national priority is to reduce energy consumption and shift toward renewable energy sources; IMCOM has a role to play in this effort. In addition, the ability to reduce installation energy needs and to supply them from inside the installation correspondingly reduces the installation's vulnerability to attack and disruption of mission.

Potential Influencers From Now to 2025

The following definitions were used for the influencers that were assessed.

Ability To Hire, Develop, Retain Professionalized Military and Civilian Workforce

The quality and quantity of a competent, properly educated and trained workforce influences IMCOM's ability to provide virtually every service that is part of its mission. Without an alignment of the correct personnel to the mission requirements, nothing can be done. BRAC has tended to close bases with local labor force density (size and composition) while expanding bases without it. More national hiring with detailing to installations may be needed.

Predictability and Consistency of Financial Resources

Funding levels that are predictable and consistent in both the long and the short term are vital influencers on planning and eventual service delivery. Provision of large amounts of funds late in the fiscal year with directions that they quickly be expended is a recipe for waste and poor quality because of lack of planning and hasty execution. It also is impossible to deliver many vital services with the consistency that they require. Staffing an office with three people for 6 months of the year is not always superior to having one person in place for the whole year.

Adequate Level of Financial Resources

There is no question that the level of financial resources is of great influencer on all services provided by IMCOM.

Encroachment

Encroachment takes many forms. At its simplest, development near the fence line can restrict activities as neighbors complain about noise, light, and the perception of danger. Competition for radio frequencies and airspace is an additional form of encroachment. The demands of environmental regulation can also encroach on the use of installations.

State, Regional, Municipal, Installation Relationships

The relationship between the state, regional, and city governments and an installation has an enormous impact on the ability to accomplish its mission. The cooperation of local governments is often critical in preventing encroachment, providing educational and training programs for military and civilian workers and their families, building new transportation links, or supplying services such as water, sewer, and garbage disposal. Hostile relationships can completely prevent execution of the mission.

High Degree of Enterprise Ownership and Control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc.)

Cooperation with other parts of the Army is vital to the completion of the IMCOM mission. In many cases, the extent to which IMCOM controls the shared agenda will influence its ability to achieve successful outcomes.

Shift to Digital and Electronic from Analog and Mechanical Devices

The increase in digital and electronic devices influences the delivery of many services. Electronic controls for machinery and electrical systems usually provide a more sophisticated level of control at higher efficiencies and for a lower cost. On the other hand, they may also introduce new security and energy consumption risks.

Changed Social and Cultural Mores

In the past, changes in family structure and racial and gender integration altered the way the military did business. In the future, societal attitudes toward homosexuality, drug use, same-sex marriage, and partner benefits, to name several possibilities, may change, with effects on laws and military regulations.

More Choice for Soldiers and Families as "Customers"

Civil society is constantly introducing new and attractive options for services such as recreation, shopping, education, and childcare. The popularity of these new choices may cause IMCOM to drop, add, or alter its own services as the expectations of Soldiers and families change.

Changed Demographics

America in 2025 will be substantially older and more diverse than it is today, with continued slide in family size. Recruiting and retaining 18- to 25-year olds from more diverse populations will face challenges. Some installations will be more diverse but younger than surrounding

communities; others will not be as diverse as their communities. These demographics will influence services such as housing, childcare and education, and elder care.

Environmental Concerns

Species go onto and come off of endangered or threatened lists as new pollution control technologies and standards are adopted. These and similar factors influence installation operations.

Improved Information Technology

A revolution in how business and warfare are conducted was caused by improved information technology, and that revolution continues to influence IMCOM in the future. Hardware and software advances lead to better tools and data availability.

New Energy Sources

A variety of alternative energy sources are maturing. As the costs of these energy sources drop further through research and development and if the costs of current energy sources climb, new energy sources will be adopted.

Increased Transportation Congestion

The population near most Army bases continues to grow and, with it, transportation congestion grows as well. This influences the ability of military and civilians to get to and from the installation. Transportation congestion can also affect large troop movements. Congestion on the installation itself can also be an influencer.

WMD Terrorism

If New York is nuked or Ft. Bragg is hit by an anthrax attack, installations will be dramatically influenced by the altered threat environment.

High Local Threat Level

If the threat level of conventional attacks increases, installation operation will be severely impacted.

Composition of the Force: Special Operations, Light and Heavy Conventional, and Nuclear Forces

Armed forces configured to fight heavily armored opponents have different installation requirements from those configured to fight light irregular forces or those that emphasize a strategic, nuclear conflict.

Change in Army Size (Up or Down)

A bigger or smaller army will have changed installation requirements.

Wireless Proliferation

Wireless devices offer opportunities and challenges. As people and devices become more connected, the opportunities for improved installation management increase. There are also challenges to security and privacy. Moreover, demand for wireless services is unabated.

Sudden Technology Breakthroughs

Unpredictable by nature, but inventions such as the laser, integrated circuits, and antibiotics have dramatically altered society in general and the military in particular. New breakthroughs might be made in nanotechnology, molecular biology, spintronics, or some field that has not yet been imagined, let alone named.

Rampant Inflation or Deflation

Dramatic fluctuations in the value of currency will have widespread impact on the management and operation of installations.

Cyber Terrorism

The increasing adoption of networked computers into all facets of installation operation introduces new vulnerabilities.

Collapse of Electrical Grid (Permanent or Rolling Brownouts)

The lack of investment in the power grid has raised the possibility of widespread disruption to power supplies that would have a major influence on installation operation.

Pandemics

Pandemic infection would place enormous demands on installations while simultaneously preventing normal operation.

Industrial or Public Unrest

Widespread strikes or protests would affect installations.

North American Conflict (To Include Economic and Resource)

Conflict, not necessarily armed conflict, with Mexico or Canada over trade, movement of labor, or resources such as water could have an impact on installation requirements, particularly if the military is called upon to secure borders. Widespread violence in our neighbors could have similar effects.

Economic Boom

An economic boom might provide additional resources for IMCOM and would certainly increase the difficulty IMCOM would face in hiring.

More Transportation Modalities

The means of transport including routes, terminals, and modes for people and cargo are proliferating. Communities are experimenting with light rail, shared vehicles, and multimode terminals that allow efficient passenger and cargo transfer. If installations need to move from single driver transportation point-to-point modes to more integrated forms, that will require investment.

Smart Vehicles

Information technology and energy use are driving methods and standards for vehicle design and construction to become more intelligent, safer, and greener. Entire fleets at the installation level will need, or be mandated for, replacement.

Less Domestic Support for the Military

Public support of the military and its mission could weaken, which would lead to increased resistance to installation initiatives and may more generally reduce resources.

Economic Depression

An economic depression would likely reduce resources for IMCOM but would certainly ease the difficulty IMCOM would face in hiring.

Appendix G – Energy and Environmental External and Regulatory Constraints

The Army is entering into a new and unknown phase of change given the current economic and social realities of a new political administration and climate, pace of technology advancement, and realities of a post-war environment. After completing a revolutionary transformation since 9–11 resulting in a new enterprise management construct, more modular and deployable forces, global repositioning of forces, political realities, and significant culture change, an unexpected and challenging future awaits the military. The military installation must respond to these changes that will affect not only its abilities to conduct operations but the realities of the military family of the 21st century.

The study team addressed four major issues surrounding the operations of military installations. As prescribed in the TOR, the Security, Energy, Environment, and Encroachment panel was tasked with addressing considerations relative to the "islanding" of installations, to include:

- Physical security and access
- Energy security
- Environmental impact
- Encroachment issues

All of these issues can impede the ability of a military installation to not only provide a high quality of life but also affect the ability of the installation to conduct its mission.

The concept of islanding as shown in Figure G–1 is key to developing recommendations for physical and energy security. Depending on the domain, islanding can imply different things. From a purely power perspective, islanding can be defined as "the condition of a distributed generation generator continuing to power a location even though power from the electric utility is no longer present. Consider for example a building that has solar panels that feed power back to the electrical grid; in case of a power blackout, if the solar panels continue to power the building, the building becomes an 'island' with power surrounded by a 'sea' of unpowered buildings."[1] We developed our own definition of islanding as applied to military installations to be where an installation is isolated from critical external systems (power, information technology, etc.) into a sustainable family of subsystems needed to conduct the primary mission of the installation. These families of subsystems are self-contained and are isolated from external conditions that could adversely affect their operations. Figure G–1 depicts how an islanded installation might be designed.

[1] From http://en.wikipedia.org/wiki/Islanding, accessed 16 Jul 2009.

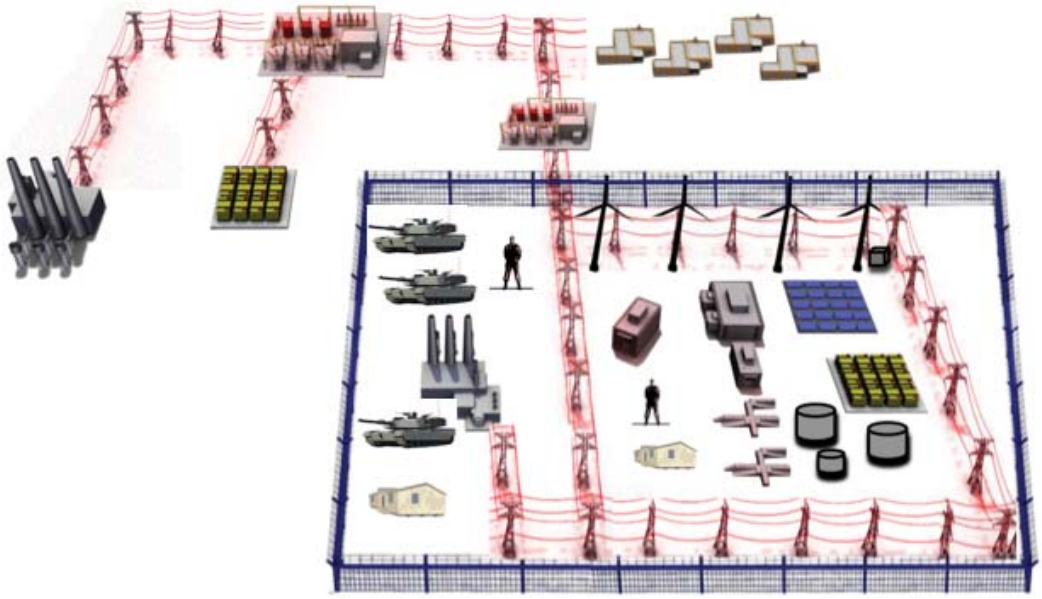


FIGURE G-1. ELEMENTS OF AN ISLANDED INSTALLATION[2]

Numerous directives, laws, etc., are being passed that make the operation of a military installation challenging. Given the current political climate, this will only become more difficult. Table G–1 was provided by Fort Bragg and is a short list of laws solely related to energy that they must comply with in the design and construction of any new facilities. Not included in this list are many, including Defense Reform Initiative Directive No. 9, "Privatizing Utility Systems"; and Defense Reform Initiative Directive No. 49, "Privatizing Utility Systems." Combined with the environmental, encroachment and other laws, the operation of a military installation is governed by a complex myriad of laws, directives, and policies at all levels.

TABLE G-1. ENERGY LAWS GOVERNING THE OPERATION OF AN ARMY INSTALLATION

Federal Building Performance Standards[3]: Minimum 30% more energy efficient than current ASHRAE or International Energy Conservation Code (IECC) standards; and sustainable design principles are applied to the siting, design, and construction of all new and replacement buildings, EPAct05, sec. 109 [Public Law 109-58]; 10 CFR 433; 10 CFR 435
High Performance and Sustainable Building Guidance: i) New construction and major renovations must comply with guidance and ii) 15% of existing building inventory by end of FY2015 incorporates outlined sustainable practices. EO 13423, sec. 2(f)
Energy Efficient Products: Federal procurement of only Energy Star or Federal Energy Management Program (FEMP)-designated products, EISA07, sec. 525 [Public Law 110-140]
Meters: Electric, natural gas, and steam meters installed, EPAct05, sec. 103 [Public Law 109-58] & EISA07, sec. 434 [Public Law 110-140]
Solar Hot Water: 30% of hot water demand must be from solar hot water heaters, EISA07, sec. 523 [Public Law 110-140]

[2] Modified from an Air Force Scientific Advisory Board study titled "Alternative Sources of Energy," 26 June 2009.

[3] Buildings must reduce by 3 percent annually the energy consumed, ending with a 30 percent reduction by 2015 using 2003 as a baseline. EO13423, sec. 2(a) & ESIA07, sec. 431.

Renewable Energy: Consumption must be a minimum of 3% in FY07–09; 5% in FY 10–12; 7.5% in FY 2013+ EPAct05, sec. 203 [Public Law 109-58]
Renewable Energy Consumed: 50% should come from new renewable sources and implement RE generation projects on the installation, EO13423, sec. 2(b)
Fossil Fuels: New buildings must reduce fossil-fuel-generated energy consumption, with 2003 as baseline, by 55% in 2010 and 100% by 2030, EISA07, sec. 433 [Public Law 110-140]
Tax Incentives are transferred to the Designer for Federal Buildings; $0.30–$1.80 per square foot, depending on technology and amount of energy reduction .http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=US40F&State=federal&currentpageid=1&ee=1&re=1, H.R. 1424: Div. B, Sec. 303 (The Energy Improvement and Extension Act of 2008); 26 USC § 179D. Energy efficient commercial buildings deduction.
Energy Efficient Light Bulbs: Establishes energy efficiency standards for general service incandescent lamps. Bans most incandescent bulbs by 2012, EISA07, sec. 321 [Public law 110-140]
Life Cost Cycle Analysis: This section amends 42 USC 8254(a)(1) to change 25 years to 40 years; EISA07 Sec. 441 [Public Law 110-140]; 10 CFR 436
Federal Building Performance Standards: Section 109 of EPAct05 required new federal buildings to be designed 30% below ASHRAE standards or IECC, to the extent that technologies employed are life-cycle cost effective and comply with sustainable design and development principles (SDDs), EPAct05, sec. 109 establishes‘‘(i) if life-cycle cost-effective for new Federal buildings— ‘‘(II) SDDs are applied to the siting, design, and construction of all new and replacement buildings;” SDDs are those outlined by the DOA, USACE, DOE, EPA, and on the Whole Building Design Guide W3 site (http://www.wbdg.org/index.php).
High Performance and Sustainable Building: EO 13423, sec 2(f), states that design principles must be applied to new and replacement buildings. All agencies must identify new building projects in their budget requests and identify those that meet or exceed the standard. To help achieve these energy reductions, new construction and major renovation of agency buildings must comply with the "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings" set forth in the *Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (2006)*, (High Performance and Sustainable Buildings Guidance, Final, 12/01/08 http://www.wbdg.org/pdfs/hpsb_guidance.pdf -) in addition to the energy goals and standards established by the federal Energy Policy Act of 2005. These building standards include a target energy use of 30% below the average building performance for new buildings, and a target that is 20% below the average for renovations.
Energy Efficient Products: Section 104 of EPAct05 directed federal agencies to purchase Energy Star and FEMP-designated products when procuring energy-consuming items covered by the Energy Star program, except when purchasing such items is not cost effective or does not meet functional requirements of the agency. Agencies must also incorporate energy-efficient specifications in procurement bids and evaluations, and must only purchase premium efficient electric motors, air conditioning, and refrigeration equipment. EPAct05 also instructed GSA and DoD to clearly identify and display Energy Star and FEMP-designated products in any inventory, catalog, or product listing.
Meters: EPAct05, sec 103, ‘‘(e) METERING OF ENERGY USE.—‘‘(1) DEADLINE.—By October 1, 2012, in accordance with guidelines established by the Secretary under paragraph (2), all federal buildings shall, for the purposes of efficient use of energy and reduction in the cost of electricity used in such buildings, be metered. Each agency shall use, to the maximum extent practicable, advanced meters or advanced metering devices that provide data at least daily and that measure at least hourly consumption of electricity in the federal buildings of the agency.
Solar Hot Water: Section 523 of the EISA07 requires that at least 30% of the hot water demand for each new federal building or existing federal buildings undergoing a major renovation be met through the use of solar hot water heating, if it is determined to be life-cycle cost effective.
Renewable Energy Consumption: The Energy Policy Act of 2005 established green power purchasing goals for the federal government, whereby the 7.5% of electricity used by federal agencies must be obtained from renewable sources by 2013, 3% in FY07–09, and 5% in FY10–12. Executive Order 13423 now requires at least 50% of the required renewable energy consumed by an agency in a fiscal year to come from sources placed in service in 1999 or later and, to the extent possible, the agency implements renewable power generation projects on agency property for agency use.
Fossil Fuels: EISA07, sec. 433. For new buildings or buildings undergoing major renovations requiring a GSA prospectus to Congress or at least $2.5 million, fossil fuel use to be reduced as compared to a similar building’s use in FY 2003; percentages may be adjusted downward and sustainable design principles shall be applied. 55% by 2010; 65% by 2015; 80% by 2020; 90% by 2025; and 100% by 2030.

Tax Incentives: H.R. 1424: Div. B, Sec. 303 (The Energy Improvement and Extension Act of 2008); 26 USC § 179D. Energy-efficient commercial buildings deduction. A tax deduction of $1.80 per square foot is available to owners of new or existing buildings who install (1) interior lighting, (2) building envelope, or (3) heating, cooling, ventilation, or hot water systems that reduce the building's total energy and power cost by 50% or more in comparison to a building meeting minimum requirements set by ASHRAE Standard 90.1-2001. Energy savings must be calculated using qualified computer software approved by the IRS. *In the case of energy efficient systems installed on or in government property, tax deductions will be given to the person primarily responsible for the systems' design.* Deductions are taken in the year when construction is completed.
Energy Efficient Lighting: EISA07, sec. 321, Subtitle B—Lighting Energy Efficiency, Sec. 321. Efficient Light Bulbs. The act establishes energy efficiency standards for general service incandescent lamps by modifying applicable sections of the Energy Policy and Conservation Act. Starting January 1, 2012, all general-service lamps must prove a minimum CRI, general service incandescent lamps must prove a minimum efficiency, and some incandescent lamps cannot exceed a maximum wattage.
Life-Cost Cycle Analysis: [EISA07 sec. 441**.** Public Building Life-Cycle Costs**.** Section 544(a)(1) of the National Energy Conservation Policy Act (42 U.S.C. 8254(a)(1)) is amended by striking ''25'' and inserting ''40''. Establishment of life-cycle cost methods and procedures – The Secretary, in consultation with the Director of the Office of Management and Budget, the Secretary of Defense, the Director of the National Institute of Standards and Technology, and the Administrator of the General Services Administration, shall– (1) establish practical and effective present value methods for estimating and comparing life-cycle costs for federal buildings, using the sum of all capital and operating expenses associated with the energy system of the building involved over the expected life of such system or during a period of 40 years, whichever is shorter, and using average fuel costs and a discount rate determined by the Secretary; and (2) develop and prescribe the procedures to be followed in applying and implementing the methods so established.

Appendix H – Final Briefing

Army Science Board

Installations 2025

A Strategic Assessment for the Installation Management Command (IMCOM)

ASB Summer Study

September 15, 2009

David Swindle, Co-Chair
Dean Ertwine, Co-Chair
Michael Landrum, Co-Chair

1

Briefing Outline

- Background
- Study Scope and Deliverables
- Study Organization and Approach
- Future Influencers Assessment
- Evaluation of Selected Areas of Concern
- Principal Conclusions and Recommendations

2

Background – What is IMCOM?

New command (*activated 24 Oct 2006*)

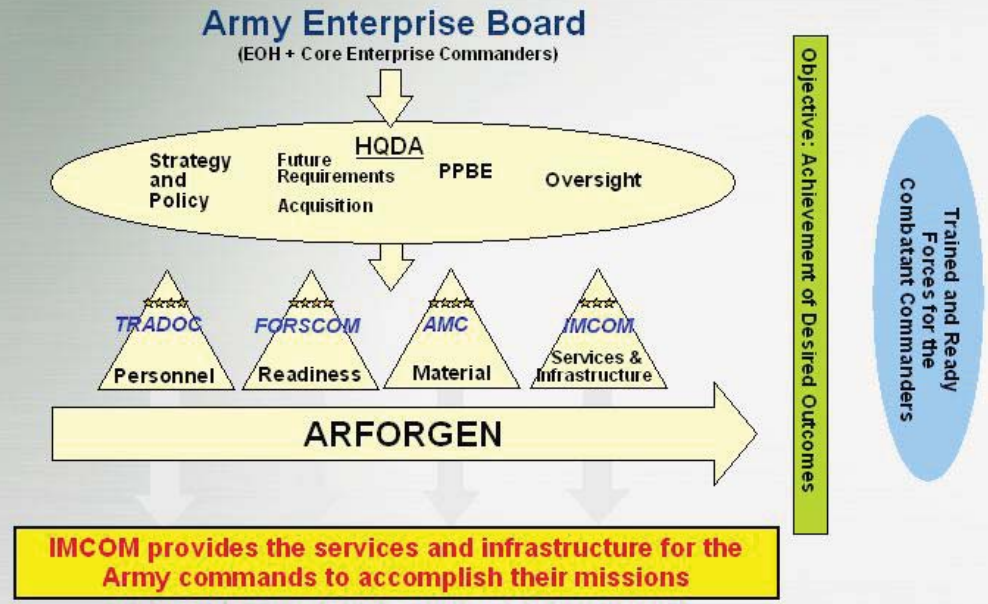
Consolidated three organizations under a single command as a direct reporting unit: the former ***Installation Management Agency***; the former ***Community and Family Support Center*** and the former ***Army Environmental Center***.

IMCOM Responsibilities and Capabilities

- ***Command Garrisons***
  - Evaluate; assess
  - Plan; develop
  - Decide; Prioritize; Communicate, Deliver
  - Coordinate; synchronize; integrate
  - Business Transformation
  - Liaise
  - Community Partnerships and outreach
  - Provide Commons Levels of Support
- ***Provide Soldier and Family Programs and Services*** (Including geographically dispersed)
  - Family, Morale, Welfare, and Recreation (FMWR)
    - AFRC
  - Employment Services
  - Education Services
  - Access to Health Care
  - Housing, barracks
  - Religious Support
- ***Provide Facility Services***
  - Public Works
  - Real Property
    - Land
    - Buildings
    - Utilities
  - Ranges & Training Facilities
- ***Provide Installation Support***
  - Human Resources
  - Information Management
  - Resource Management Office
  - Emergency Services
  - Plans, Training, Mobilization, and Security
  - Logistics
  - Public Affairs
  - Safety
  - Legal
  - IG Support
  - EEO
    - Internal Review
- ***Provide Environmental/ Energy Sustainability***
  - Stewardship of natural resources
  - Environmental Programs
  - Environmental restoration (clean-up) program .
  - Environmental planning
  - Energy Management
  - Managing historic properties

3

Army Enterprise Model – IMCOM's Mission Today



4

Study Scope

- **Sponsor**: *ACSIM/IMCOM CG – LTG Robert Wilson*
- **Scope***
  - Provide *data for shaping* Army Installation Management capabilities and service delivery *through 2025*
  - Support IMCOM *strategy development* for efficient & effective installation management, improved facilities, standardized products & services, and strengthen soldier & family readiness
  - Provide recommendations on *policy and resourcing*
- **Deliverables**
  - *Recommendations* to mitigate risks and exploit opportunities
  - *Methodology/Process* to assess and prioritize the impact of future influencers

* Signed TOR from LTG Wilson to F. Akers (ASB) – Dated 10 April 2009

5

Study Team and Information Sources

- **ASB Members/Consultants**
  - Mr. Dave Swindle, Co-Chair
  - BG Dean Ertwine USA (ret), Co-Chair
  - COL Michael Landrum USA (ret) Co-Chair
  - Mr. Buddy Beck
  - Ms. Ruby DeMesme
  - MG Joe Ernst USA (ret)
  - Dr. John Farr
  - MG Paul Greenberg USA (ret)
  - Dr. Jeanette Jones
  - Dr. Ivan Somers
  - Dr. Wesley Stites
  - Dr. Harry Thie
  - Dr. Harry West
- **FFRDC**
  - Ms. Beth Lachman, RAND
- **Government Participants**
  - LTC Andrew Miller, ACSIM
  - Ms. Karen Baker, IMCOM
- **ASB Study Managers**
  - Deborah Konopko
  - Vivian Baylor
- **Literature Search**
- **Primary Source Interviews**
  - IMCOM/ACSIM HQ
  - AAFES
  - ASA/I&E
  - TRADOC
  - OEMA/USMA
  - Assoc of Defense Communities
  - American Planning Association
  - Air Force Studies Board / NRC
  - USACE
  - AFSAB
  - Army G8 / PAE
  - JFCOM
  - Army G3
- **Installation Site Visits**
  - USAG Humphreys
  - Ft. Bliss
  - Rock Island Arsenal
  - Ft. Belvoir
  - Ft Irwin
  - Ft Bragg
  - Ft Lee
  - Aberdeen Proving Ground

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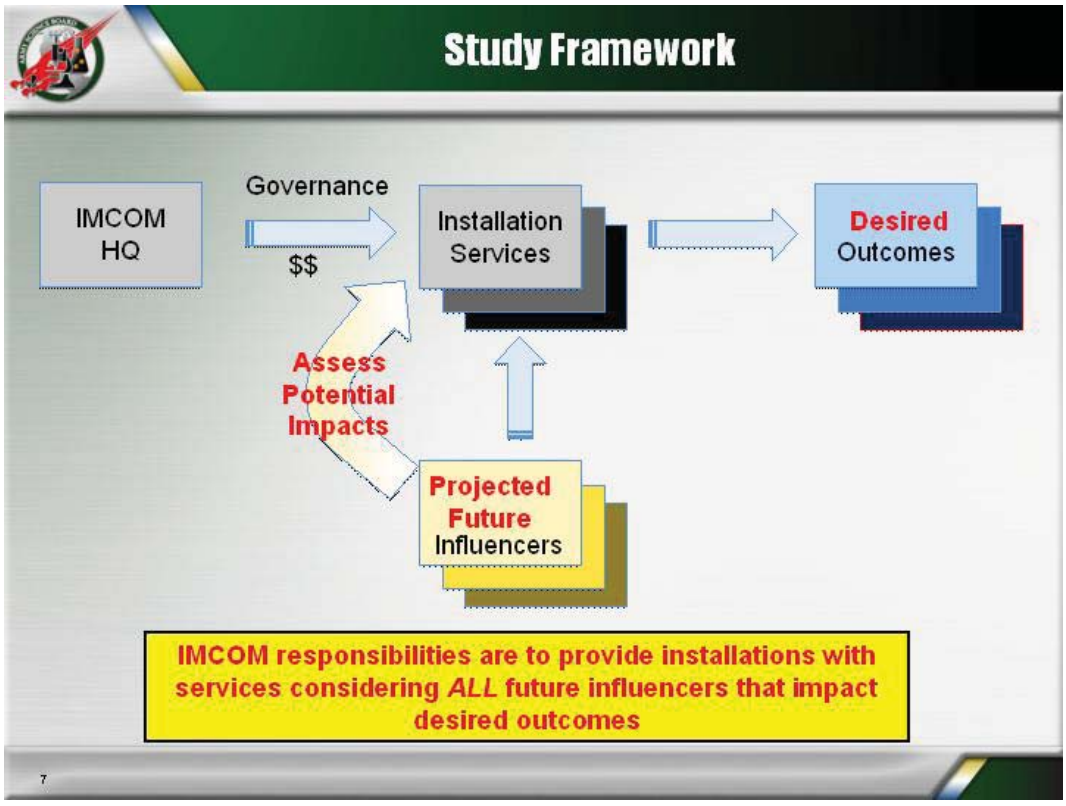
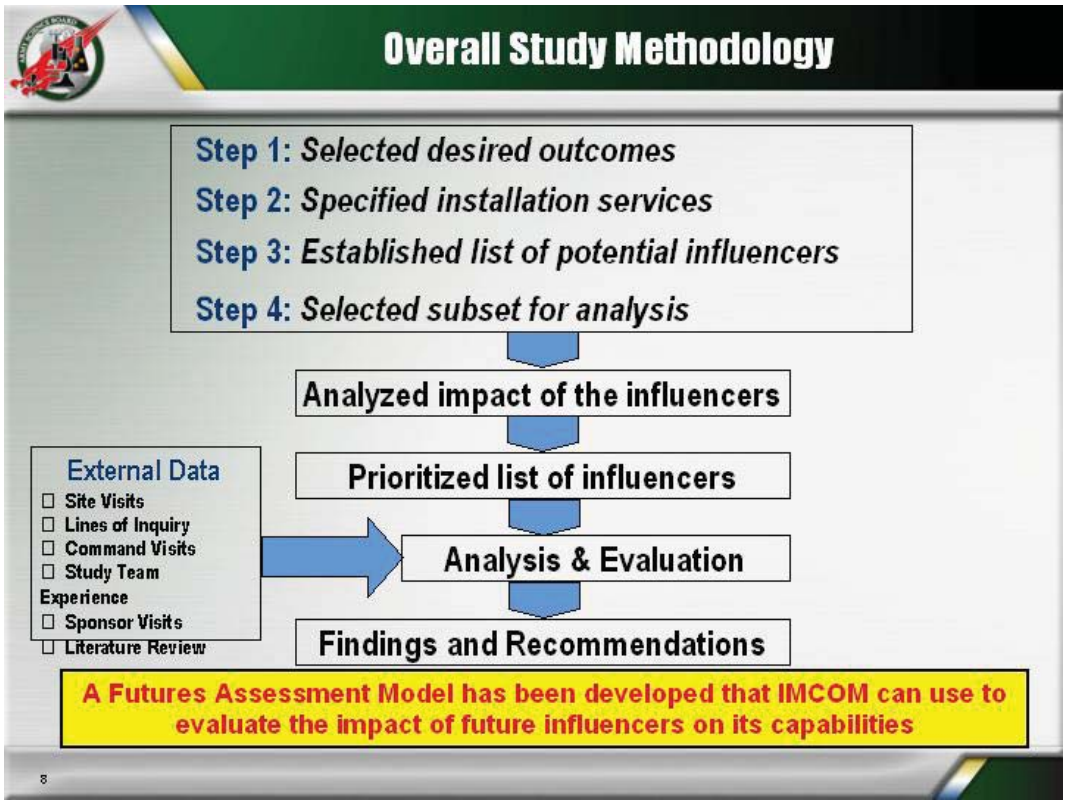
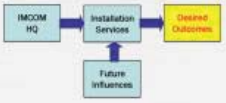

Study Framework
IMCOM HQ
Governance
$$
Installation Services
Desired Outcomes
Assess Potential Impacts
Projected Future Influencers
IMCOM responsibilities are to provide installations with services considering ALL future influencers that impact desired outcomes
7


Overall Study Methodology
Step 1: Selected desired outcomes
Step 2: Specified installation services
Step 3: Established list of potential influencers
Step 4: Selected subset for analysis
Analyzed impact of the influencers
Prioritized list of influencers
Analysis & Evaluation
Findings and Recommendations
External Data
Site Visits
Lines of Inquiry
Command Visits
Study Team Experience
Sponsor Visits
Literature Review
A Futures Assessment Model has been developed that IMCOM can use to evaluate the impact of future influencers on its capabilities
8

Desired Outcomes

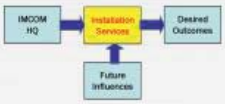


- To accomplish IMCOM's mission in 2025, installations must be capable of providing the following:
  - Capacity to generate and project forces
  - Ability to support civil authorities as required
  - Energy independence/sustainability
  - Programs and services for soldiers, families, and employees
  - Secure and accessible installations
  - Positive working relationships with local/regional communities
  - Installations managed at the enterprise level
  - Developed military and civilian workforce
  - Efficiency with common, consistent standards

These 9 desired outcomes represent the *End-State* of capabilities and abilities of IMCOM in 2025

9

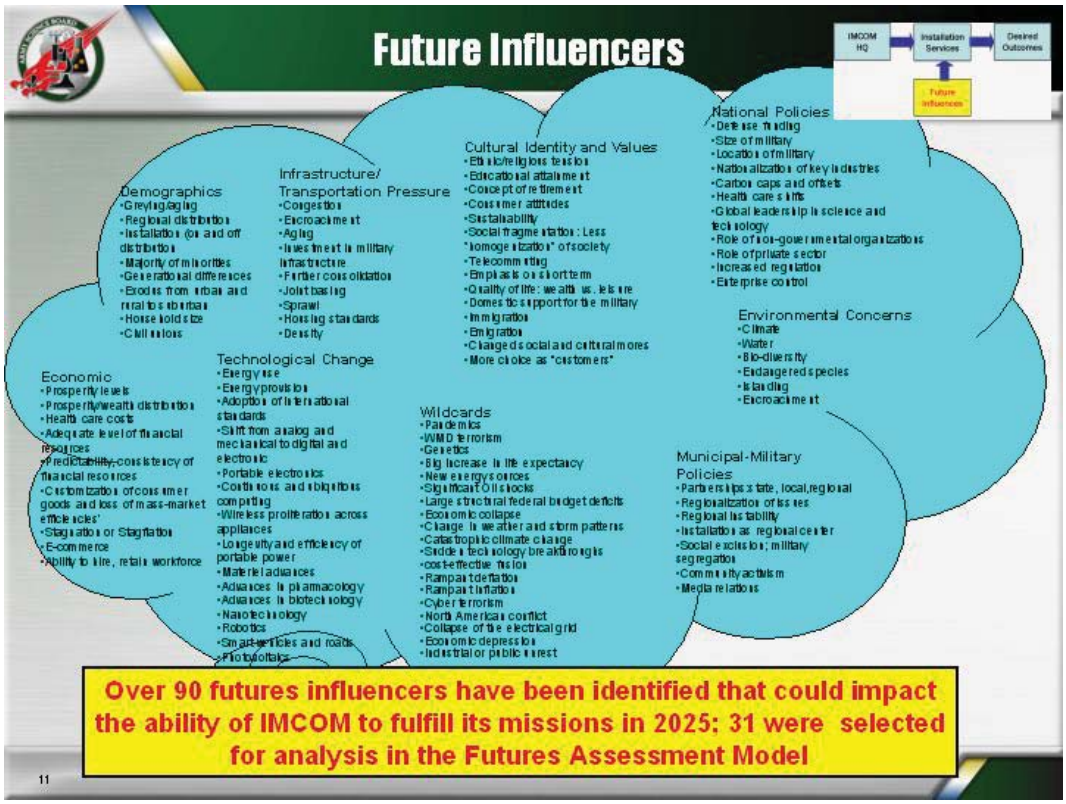
Installation Services

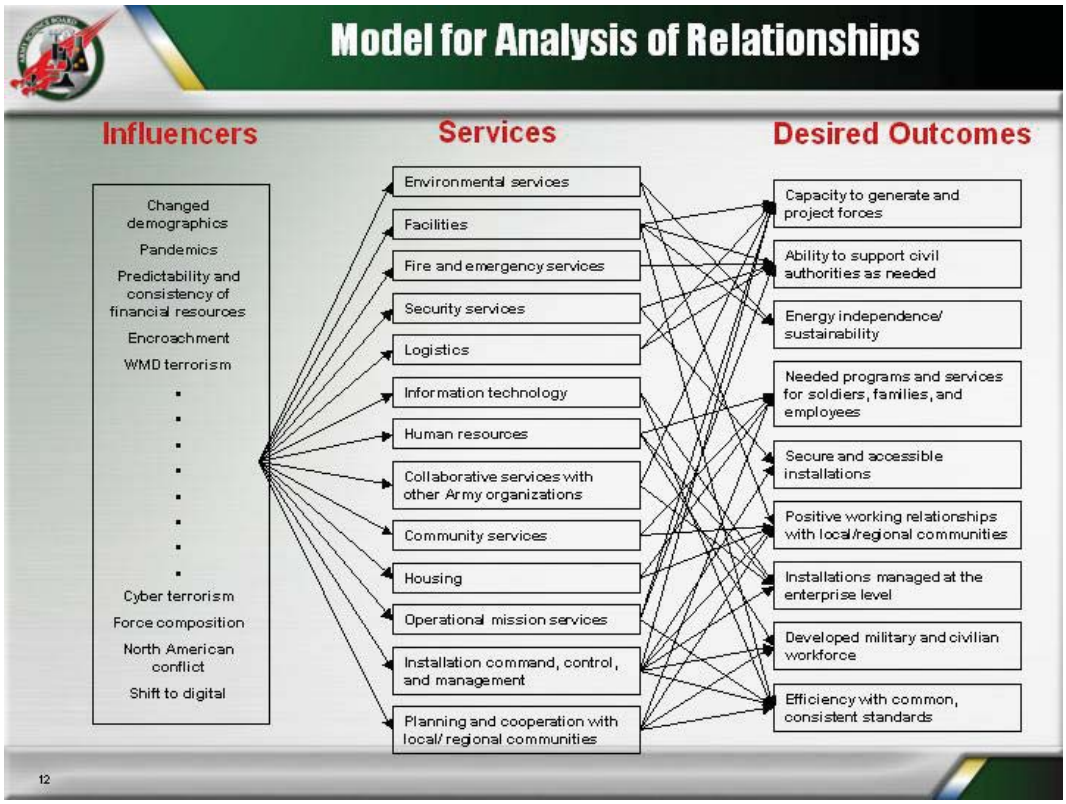


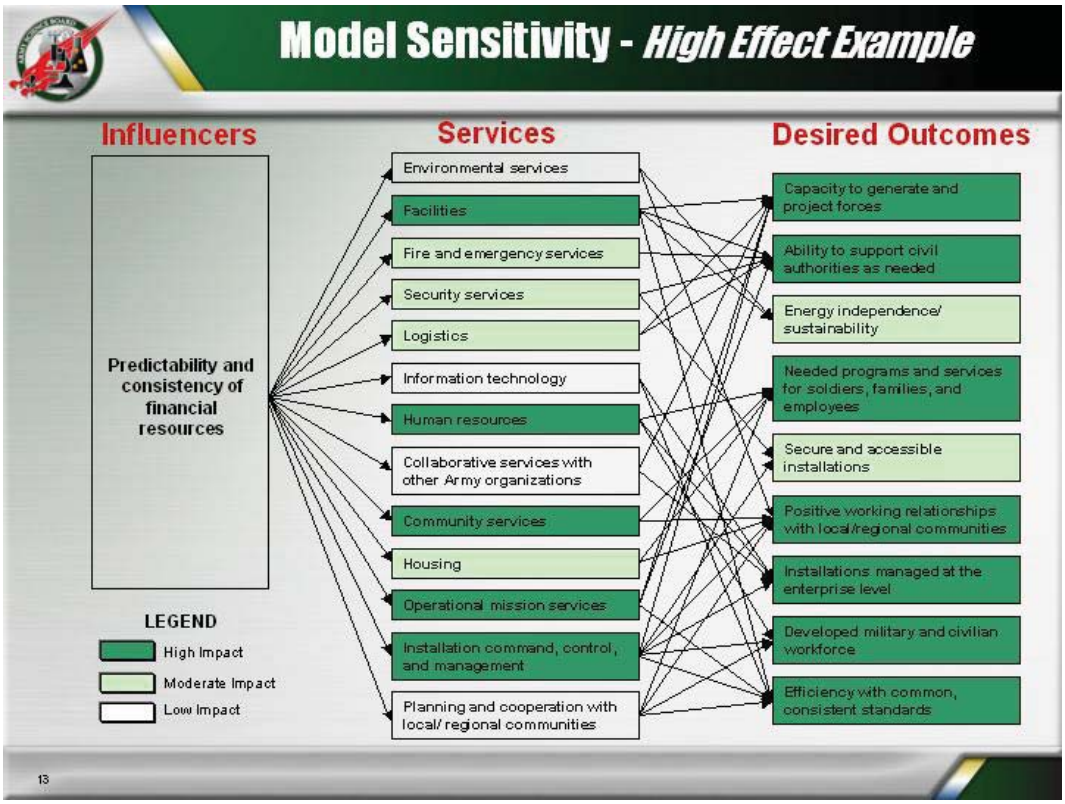
- **To accomplish IMCOM Missions in 2025, the following *consolidated service areas* must be provided:**
  - Environmental services (Compliance, conservation)
  - Facilities (Utilities, maintenance, SRM, demolition, investment)
  - Fire and Emergency Services
  - Security services (Law enforcement, anti-terrorism, patrols)
  - Logistics (Food/dining, movement, supply, storage, distribution)
  - Information technology (Fixed voice, wireless, Info assurance)
  - Human resources (Military, civilian garrison)
  - Collaborative functions with other Army organizations (e.g., MEDCOM, NETCOM, ACOE)
  - Community services (Child care, temporary lodging, MWR)
  - Housing (Family, unaccompanied)
  - Operational mission services (Airfields, ranges)
  - Installation command, control, and management (Chaplain, finance, legal, IG, public affairs)
  - Planning and cooperation with local/regional communities

Over 200 service category areas have been identified that IMCOM needs to provide to fully meet its mission in 2025

10


Future Influencers
IMCOM HQ
Installation Services
Desired Outcomes
Future Influences
Demographics
•Greying/aging
•Regional distribution
•Installation (on and off
distribution
•Majority of minorities
•Generational differences
•Erosion from urban and
rural to suburban
•Household size
•Civilian loss
Infrastructure/ Transportation Pressure
•Congestion
•Encroachment
•Aging
•Investment in military
infrastructure
•Further consolidation
•Joint basing
•Sprawl
•Housing standards
•Density
Cultural Identity and Values
•Ethnic/religious tension
•Educational attainment
•Concept of retirement
•Consumer attitudes
•Sustainability
•Social fragmentation: Less
"homogenization" of society
•Telecommuting
•Emphasis on short term
•Quality of life: wealth vs. leisure
•Domestic support for the military
•Immigration
•Emigration
•Changed social and cultural mores
•More choice as "customers"
National Policies
•Defense funding
•Size of military
•Location of military
•Nationalization of key industries
•Carbon caps and offsets
•Health care shifts
•Global leadership in science and
technology
•Role of non-governmental organizations
•Role of private sector
•Increased regulation
•Enterprise control
Environmental Concerns
•Climate
•Water
•Bio-diversity
•Endangered species
•Islanding
•Encroachment
Economic
•Prosperity levels
•Prosperity/wealth distribution
•Health care costs
•Adequate level of financial
resources
•Predictability/consistency of
financial resources
•Customization of consumer
goods and loss of mass-market
efficiencies'
•Stagnation or Stagflation
•E-commerce
•Ability to hire, retain workforce
Technological Change
•Energy use
•Energy provision
•Adoption of international
standards
•Shift from analog and
mechanical to digital and
electronic
•Portable electronics
•Contributions and obligations
computing
•Wireless proliferation across
appliances
•Longevity and efficiency of
portable power
•Materiel advances
•Advances in pharmacology
•Advances in biotechnology
•Nanotechnology
•Robotics
•Smart vehicles and roads
•Photovoltaics
Wildcards
•Pandemics
•WMD terrorism
•Genetics
•Big increase in life expectancy
•New energy sources
•Significant Oil shocks
•Large structural federal budget deficits
•Economic collapse
•Change in weather and storm patterns
•Catastrophic climate change
•Sudden technology breakthroughs
•cost-effective fusion
•Rampant deflation
•Rampant inflation
•Cyber terrorism
•North American conflict
•Collapse of the electrical grid
•Economic depression
•Industrial or public unrest
Municipal-Military Policies
•Partnerships: state, local,regional
•Regionalization of issues
•Regional instability
•Installation as regional center
•Social exclusion; military
segregation
•Community activism
•Media relations
Over 90 futures influencers have been identified that could impact the ability of IMCOM to fulfill its missions in 2025; 31 were selected for analysis in the Futures Assessment Model
11


Model for Analysis of Relationships
Influencers
Changed demographics
Pandemics
Predictability and consistency of financial resources
Encroachment
WMD terrorism
Cyber terrorism
Force composition
North American conflict
Shift to digital
Services
Environmental services
Facilities
Fire and emergency services
Security services
Logistics
Information technology
Human resources
Collaborative services with other Army organizations
Community services
Housing
Operational mission services
Installation command, control, and management
Planning and cooperation with local/ regional communities
Desired Outcomes
Capacity to generate and project forces
Ability to support civil authorities as needed
Energy independence/ sustainability
Needed programs and services for soldiers, families, and employees
Secure and accessible installations
Positive working relationships with local/regional communities
Installations managed at the enterprise level
Developed military and civilian workforce
Efficiency with common, consistent standards
12


Model Sensitivity - High Effect Example
Influencers
Services
Desired Outcomes
Predictability and consistency of financial resources
Environmental services
Facilities
Fire and emergency services
Security services
Logistics
Information technology
Human resources
Collaborative services with other Army organizations
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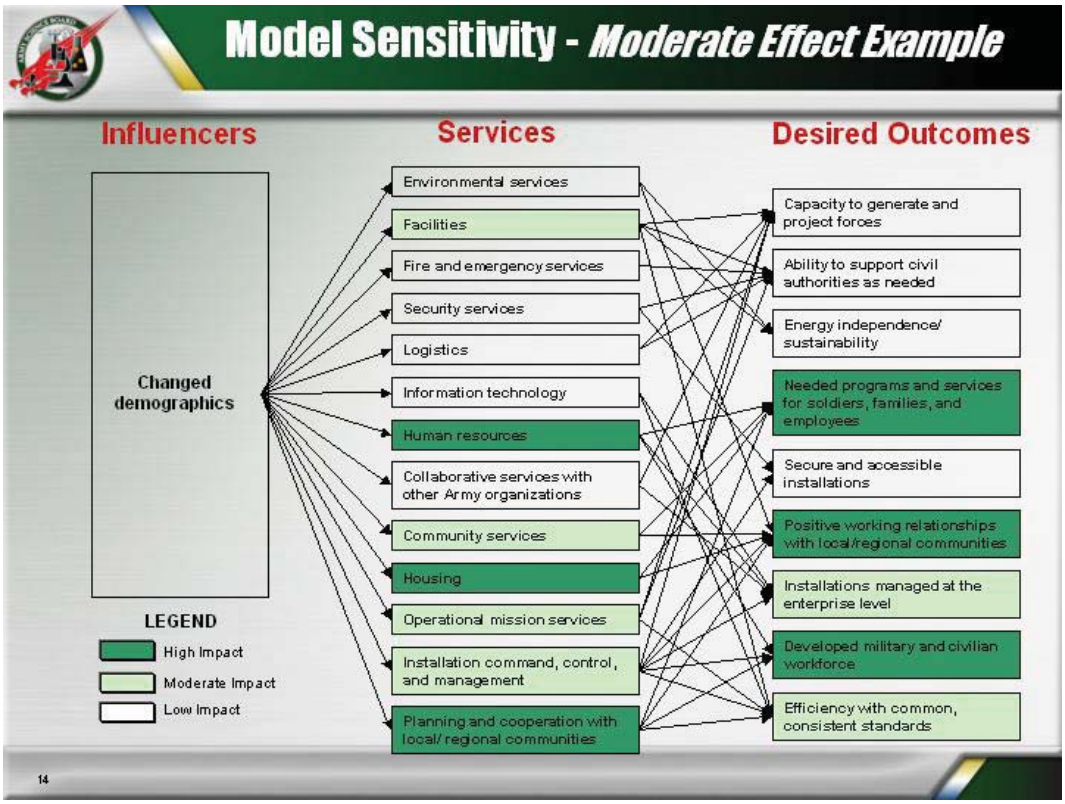
Efficiency with common, consistent standards
LEGEND
High Impact
Moderate Impact
Low Impact
13


Model Sensitivity - Moderate Effect Example
Influencers
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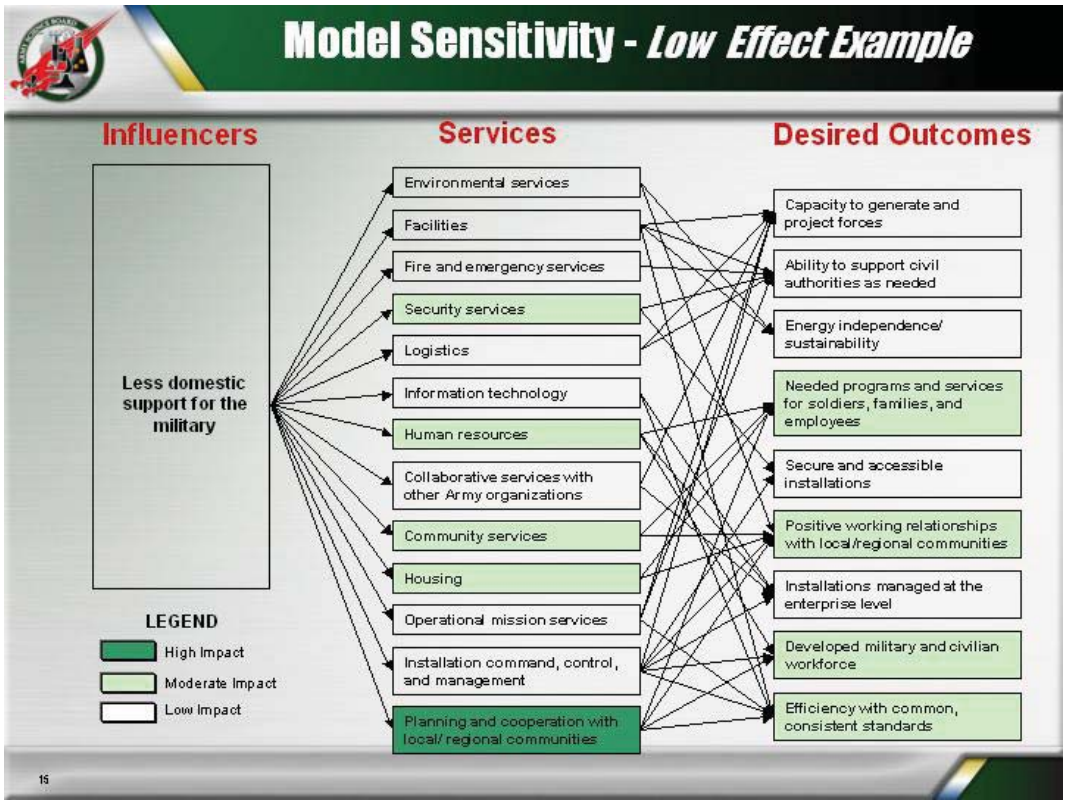
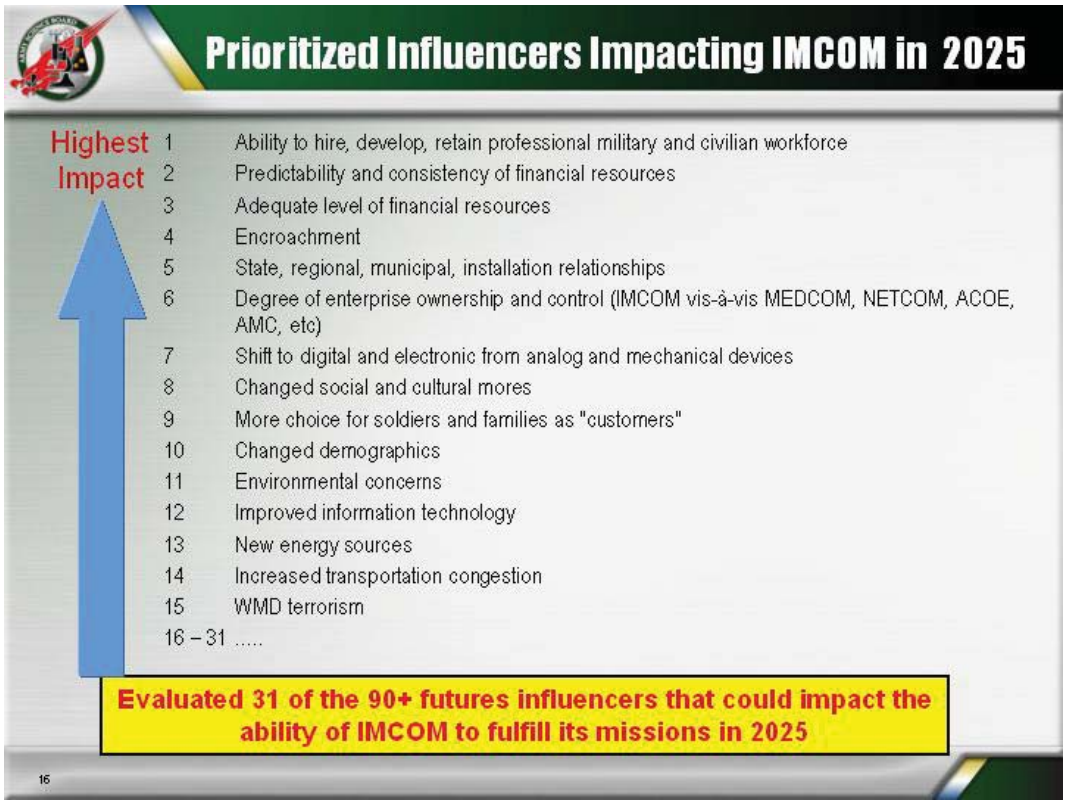
LEGEND
High Impact
Moderate Impact
Low Impact
14


Model Sensitivity - Low Effect Example
Influencers
Services
Desired Outcomes
Less domestic support for the military
Environmental services
Facilities
Fire and emergency services
Security services
Logistics
Information technology
Human resources
Collaborative services with other Army organizations
Community services
Housing
Operational mission services
Installation command, control, and management
Planning and cooperation with local/ regional communities
Capacity to generate and project forces
Ability to support civil authorities as needed
Energy independence/ sustainability
Needed programs and services for soldiers, families, and employees
Secure and accessible installations
Positive working relationships with local/regional communities
Installations managed at the enterprise level
Developed military and civilian workforce
Efficiency with common, consistent standards
LEGEND
High Impact
Moderate Impact
Low Impact
15


Prioritized Influencers Impacting IMCOM in 2025
Highest Impact
1 Ability to hire, develop, retain professional military and civilian workforce
2 Predictability and consistency of financial resources
3 Adequate level of financial resources
4 Encroachment
5 State, regional, municipal, installation relationships
6 Degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7 Shift to digital and electronic from analog and mechanical devices
8 Changed social and cultural mores
9 More choice for soldiers and families as "customers"
10 Changed demographics
11 Environmental concerns
12 Improved information technology
13 New energy sources
14 Increased transportation congestion
15 WMD terrorism
16 – 31 .....
Evaluated 31 of the 90+ futures influencers that could impact the ability of IMCOM to fulfill its missions in 2025
16


Area of Concern: Manpower and Financial Resources
Highest Impact
1 Ability to hire, develop, retain professional military and civilian workforce
2 Predictability and consistency of financial resources
3 Adequate level of financial resources
4 Encroachment
5 State, regional, municipal, installation relationships
6 Degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7 Shift to digital and electronic from analog and mechanical devices
8 Changed social and cultural mores
9 More choice for soldiers and families as "customers"
10 Changed demographics
11 Environmental concerns
12 Improved information technology
13 New energy sources
14 Increased transportation congestion
15 WMD terrorism
16 – 31 .....
The top 3 influencers as determined by our Futures Assessment Model all relate to "Manpower and Financial Resources"
17


Area of Concern: Manpower and Financial Resources
ISSUE: Sufficient manpower, properly trained personnel, and adequate financial resources are required to fulfill IMCOM missions in Army Enterprise Model.
Findings
The absence of a defined training and a workforce development program for all of IMCOM impedes its ability to successfully recruit, retain, and achieve its missions
Manpower requirements are based on out of date TAADS documentation.
Workload metrics are not being used for funding allocation
Annual resource allocation and the apportionment of funds is not timely
Current IMCOM doctrine is inadequate to meet mission commanders' needs
Recommendations
IMCOM and ACSIM must staff, train, organize and coordinate to justify and defend the budget and resource requirements for IMCOM to deliver its multiple mission responsibilities
IMCOM must better integrate its enterprise planning capability into the Army TAA, POM and enterprise management processes
IMCOM should fully implement the Army's Resource Management Tool to balance the civilian force with mission related civilian manpower equivalents (CME) requirements.
18

Area of Concern: *Encroachment*

Highest Impact

1. Ability to hire, develop, retain professional military and civilian workforce
2. Predictability and consistency of financial resources
3. Adequate level of financial resources
4. **Encroachment**
5. **State, regional, municipal, installation relationships**
6. Degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7. Shift to digital and electronic from analog and mechanical devices
8. Changed social and cultural mores
9. More choice for soldiers and families as "customers"
10. Changed demographics
11. Environmental concerns
12. Improved information technology
13. New energy sources
14. Increased transportation congestion
15. WMD terrorism

16 – 31 .....

Multiple prioritized influencers as determined by our Futures Assessment Model relate to "Encroachment"

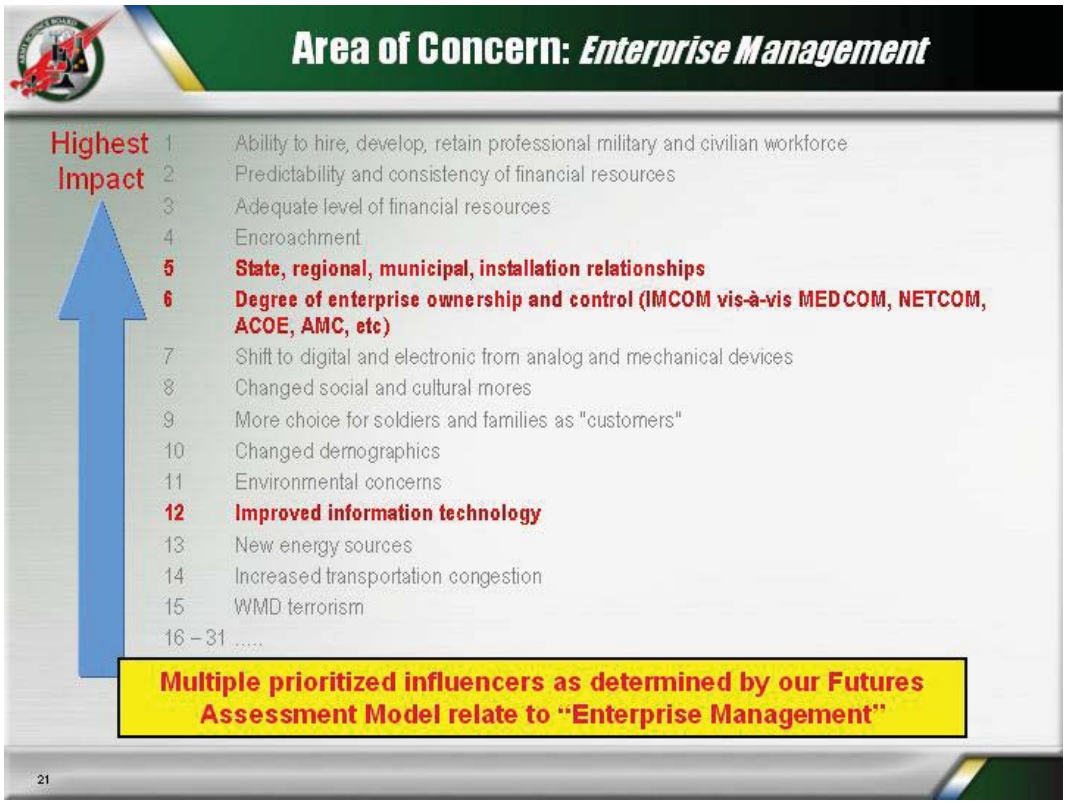
19

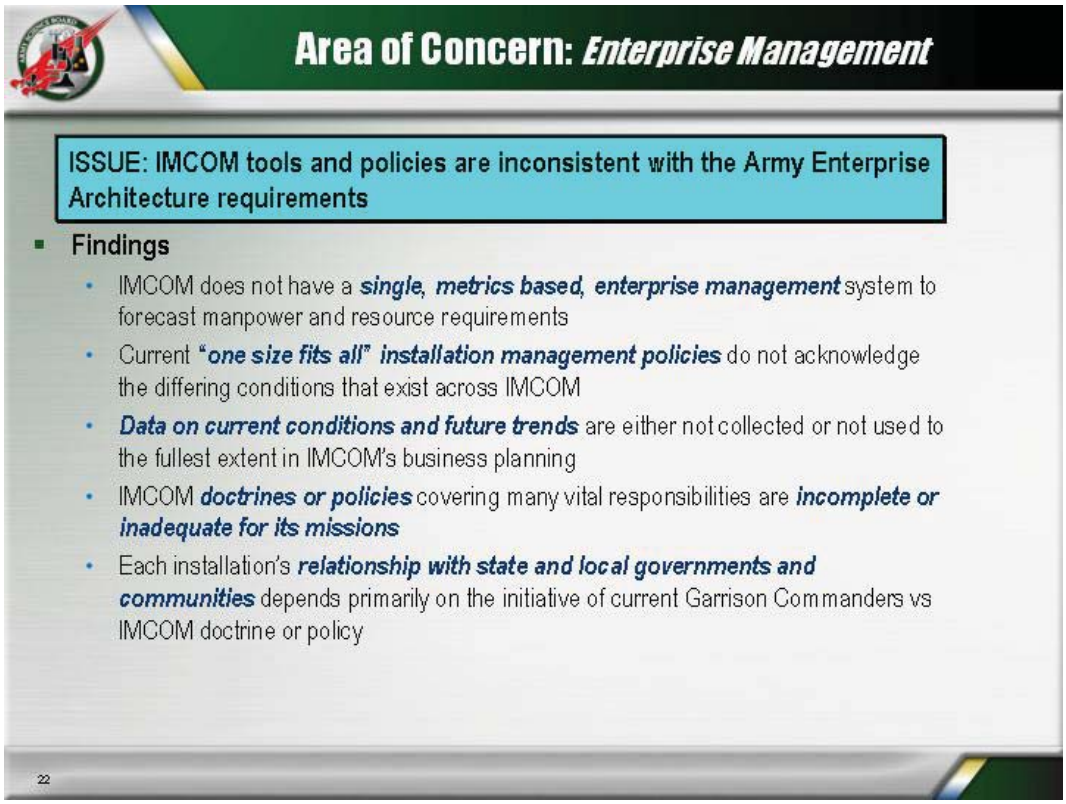
Area of Concern: *Encroachment*

ISSUE: Encroachment is occurring at an increasing pace at Army Installations world-wide and if not anticipated and mitigated, will impact mission delivery

- Findings
  - Encroachment already has a ***significant impact*** on many installations and ***will worsen by 2025***
  - ***Strategic actions are required now*** to mitigate future encroachment concerns
  - ***Regional growth management and collaborative ecosystem management*** with other federal, state, and local governments, as well as NGOs, will be required
- Recommendations
  - IMCOM should direct Garrison Commanders to immediately ***develop a regional growth plan*** in collaboration with the surrounding communities
  - IMCOM should immediately make further investments in the ***Army Compatible Use Buffer (ACUB) program*** to provide permanent protections needed in 2025

20


Area of Concern: Enterprise Management
Highest Impact
1 Ability to hire, develop, retain professional military and civilian workforce
2 Predictability and consistency of financial resources
3 Adequate level of financial resources
4 Encroachment
5 State, regional, municipal, installation relationships
6 Degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7 Shift to digital and electronic from analog and mechanical devices
8 Changed social and cultural mores
9 More choice for soldiers and families as "customers"
10 Changed demographics
11 Environmental concerns
12 Improved information technology
13 New energy sources
14 Increased transportation congestion
15 WMD terrorism
16 – 31 .....
Multiple prioritized influencers as determined by our Futures Assessment Model relate to "Enterprise Management"
21


Area of Concern: Enterprise Management
ISSUE: IMCOM tools and policies are inconsistent with the Army Enterprise Architecture requirements
Findings
IMCOM does not have a single, metrics based, enterprise management system to forecast manpower and resource requirements
Current "one size fits all" installation management policies do not acknowledge the differing conditions that exist across IMCOM
Data on current conditions and future trends are either not collected or not used to the fullest extent in IMCOM's business planning
IMCOM doctrines or policies covering many vital responsibilities are incomplete or inadequate for its missions
Each installation's relationship with state and local governments and communities depends primarily on the initiative of current Garrison Commanders vs IMCOM doctrine or policy
22

Area of Concern: *Enterprise Management* (Continued)

- **Recommendations**
  - IMCOM should ***further develop enterprise models and metrics*** that identify, justify, and manage resource requirements with embedded functions to provide feedback on how effectively resources are being used
  - IMCOM should ***collaborate with TRADOC to update current doctrines*** for the management and delivery of services for soldiers, families, and commanders
  - IMCOM should ***establish specific requirements for direct Garrison Commanders to expand and strengthen relationships*** with state, county, and municipal governments and the civilian community

28

Area of Concern: *Information Technology*

Highest Impact

1	Ability to hire, develop, retain professional military and civilian workforce
2	Predictability and consistency of financial resources
3	Adequate level of financial resources
4	Encroachment
5	State, regional, municipal, installation relationships
6	High degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7	**Shift to digital and electronic from analog and mechanical devices**
8	Changed social and cultural mores
9	More choice for soldiers and families as "customers"
10	Changed demographics
11	Environmental concerns
12	**Improved information technology**
13	New energy sources
14	Increased transportation congestion
15	WMD terrorism
16 – 31	.....

Multiple prioritized influencers as determined by our Futures Assessment Model relate to "Information Technology"

24

Area of Concern: *Information Technology*

ISSUE: Information Technology and Cyber-Security are critical to the operation of Installations during peacetime and wartime

- **Findings**
  - IMCOM has ***multiple independent IT systems*** that cannot communicate at the ***Enterprise level***
  - Improving and integrating ***IMCOM's IT services and infrastructure*** offers great potential for savings and operational efficiency.
  - IMCOM's increasing ***reliance on multiple independent and enterprise-level systems*** increase their ***vulnerability to cyber attacks***
- **Recommendation**
  - IMCOM should ***establish an Enterprise approach*** to reviewing, planning and operating its IT systems and services. This includes:
    - Implementing a ***"Service Oriented Architecture" (SOA)*** for enterprise management and incorporating cybersecurity protection I
    - ***Collaborating with G-6/DoD CIO*** to assure conformance with the ***world-wide Global Network Enterprise Construct (GNEC)***
    - Determining which ***decision making IT systems are required*** and ***sunset the remaining legacy systems***

26

Area of Concern: *Physical Security & Access*

Highest Impact

1	Ability to hire, develop, retain professional military and civilian workforce
2	Predictability and consistency of financial resources
3	Adequate level of financial resources
4	Encroachment
5	State, regional, municipal, installation relationships
6	Degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7	**Shift to digital and electronic from analog and mechanical devices**
8	Changed social and cultural mores
9	More choice for soldiers and families as "customers"
10	Changed demographics
11	Environmental concerns
12	**Improved information technology**
13	New energy sources
14	Increased transportation congestion
15	**WMD terrorism**
16 – 31	**.....**

Multiple prioritized influencers as determined by our Futures Assessment Model relate to "Physical Security & Access"

26

Area of Concern: *Physical Security & Access*

ISSUE: IMCOM authorities over installation security countermeasures, access policies Technology and systems solutions are inadequate with their mission responsibilities

- **Findings**
  - ***Multiple organizations*** in OSD and Army (e.g. OPMG) provide policy direction, guidance, technology and requirements ***without sufficient IMCOM involvement*** resulting in lack of effective installation command and control at the Garrison level
  - IMCOM's ***roles and responsibilities in setting and prioritizing policy and technology solutions for installation security and access is inadequate***
- **Recommendations**
  - IMCOM should take the ***lead in implementing HSPD 12*** (Common Access Card) utilization for all Army Installations vs the multiple credential systems now in use
  - Army needs to ***reexamine the doctrine and policies for installation access control and physical security*** to establish clear roles and responsibilities to permit IMCOM to control its ability to meet its missions in 2025

27

Area of Concern: *Environment*

Highest Impact

1. Ability to hire, develop, retain professional military and civilian workforce
2. Predictability and consistency of financial resources
3. Adequate level of financial resources
4. **Encroachment**
5. State, regional, municipal, installation relationships
6. High degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7. Shift to digital and electronic from analog and mechanical devices
8. Changed social and cultural mores
9. More choice for soldiers and families as "customers"
10. Changed demographics
11. **Environmental concerns**
12. Improved information technology
13. **New energy sources**
14. Increased transportation congestion
15. WMD terrorism
16 – 31 .....

Multiple prioritized influencers as determined by our Futures Assessment Model relate to "Environment"

28

Area of Concern: *Environment*

ISSUE: Environmental issues threaten readiness and will likely increase in the future given current and future environmental and political trends

- **Findings**
  - Planning for ***water's increasing scarcity/availability*** at installations is inadequate
  - ***Continued loss of biodiversity*** will cause more threatened and endangered species problems, which likely ***will result in more restrictions on training, building, and other installation activities***
- **Recommendations**
  - IMCOM needs to ***continue and expand its strategic collaborative environmental management activities***
  - IMCOM should take the ***leadership role in building stronger strategic relationships*** with other Army and DOD organizations (DASA-ESOH, SACE CERL, etc), other government agencies (DOI, USDA, etc), NGOs, and communities to ***mitigate environmental issues from constraining operations in 2025***

29

Area of Concern: *Energy Security*

Highest Impact

1. Ability to hire, develop, retain professional military and civilian workforce
2. Predictability and consistency of financial resources
3. Adequate level of financial resources
4. Encroachment
5. **State, regional, municipal, installation relationships**
6. Degree of enterprise ownership and control (IMCOM vis-à-vis MEDCOM, NETCOM, ACOE, AMC, etc)
7. Shift to digital and electronic from analog and mechanical devices
8. Changed social and cultural mores
9. More choice for soldiers and families as "customers"
10. Changed demographics
11. **Environmental concerns**
12. Improved information technology
13. **New energy sources**
14. Increased transportation congestion
15. WMD terrorism

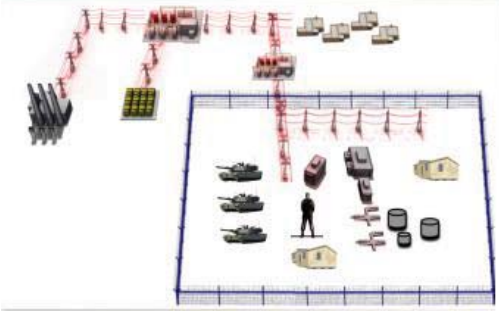
16 – 31 .....

Multiple prioritized influencers as determined by our Futures Assessment Model relate to "Energy Security"

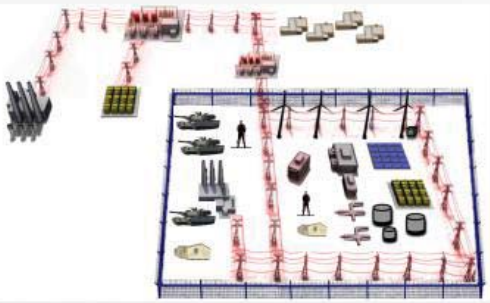
30

Area of Concern: *Energy Security*

ISSUE: Army Installation Energy services and supplies are heavily reliant on access to local energy sources and are vulnerable to cyber, physical attacks and natural disasters



We Need Hardened, Agile, Resilient, and Redundant Power Systems



Current Installation Energy Services Are Vulnerable From Cyber And Physical Attacks, And Natural Disasters

31

Area of Concern: *Energy Security* *(continued)*

- **Findings**
  - ***New laws and requirements*** regarding alternative energy sources ***will affect installation operations*** and will require an integrated systems approach
  - There is little or no policy on ***physical and cyber security standards*** for installation ***energy sources or distribution systems***
  - ***No consensus*** exists on whether ***future installations use redundant and resilient infrastructure or island***

- **Recommendations**
  - IMCOM should ***lead the development of an Army enterprise approach for compliance*** with the laws and requirements affecting energy generation, usage, and management
  - IMCOM should ***lead the development and implementation of a systems approach for physical and cyber security of energy sources and distribution elements***
  - Army needs to drive establishing a ***consensus within DOD on whether islanding installations is a viable approach for installation energy security*** with IMCOM input to affect needed planning now for 2025

32

Principal Conclusions

IMCOM Commander today, has inadequate authorities commensurate with his Responsibilities to fulfill mission requirements in 2025

- IMCOM mission is ***one of four pillars of the Army Enterprise Model*** — a DRU, side-by-side with 3 Army commands — ***all are essential to successful ARFORGEN***
- IMCOM ***does not have the necessary authority or strategic relationships*** to deliver all of its mission areas
- IMCOM is ***not resourced commensurate with the scope and scale of its responsibilities***
- ***Seven top areas of concern*** have been evaluated and ***actions identified to mitigate risks*** to support IMCOM's ability to deliver all of its missions requirements in 2025

33

Principal Recommendations

- ***The Secretary of the Army should establish the necessary authorities in the IMCOM Commander in order that IMCOM missions can be accomplished***
- Army must ***better integrate*** IMCOM's ***enterprise planning capability*** into the Army TAA, POM, and enterprise management processes
- IMCOM ***needs to adopt and regularly use a standard "Future Assessment Model"*** *(or similar)* for assessing the impact of future influencers
- IMCOM should ***collaborate with TRADOC to update doctrines, design a training program, and establish career paths*** for IMCOM's military and civilian workforce
- IMCOM should direct Garrison Commanders to immediately ***develop a regional growth plan*** in collaboration with the surrounding communities

34

Principal Recommendations (continued)

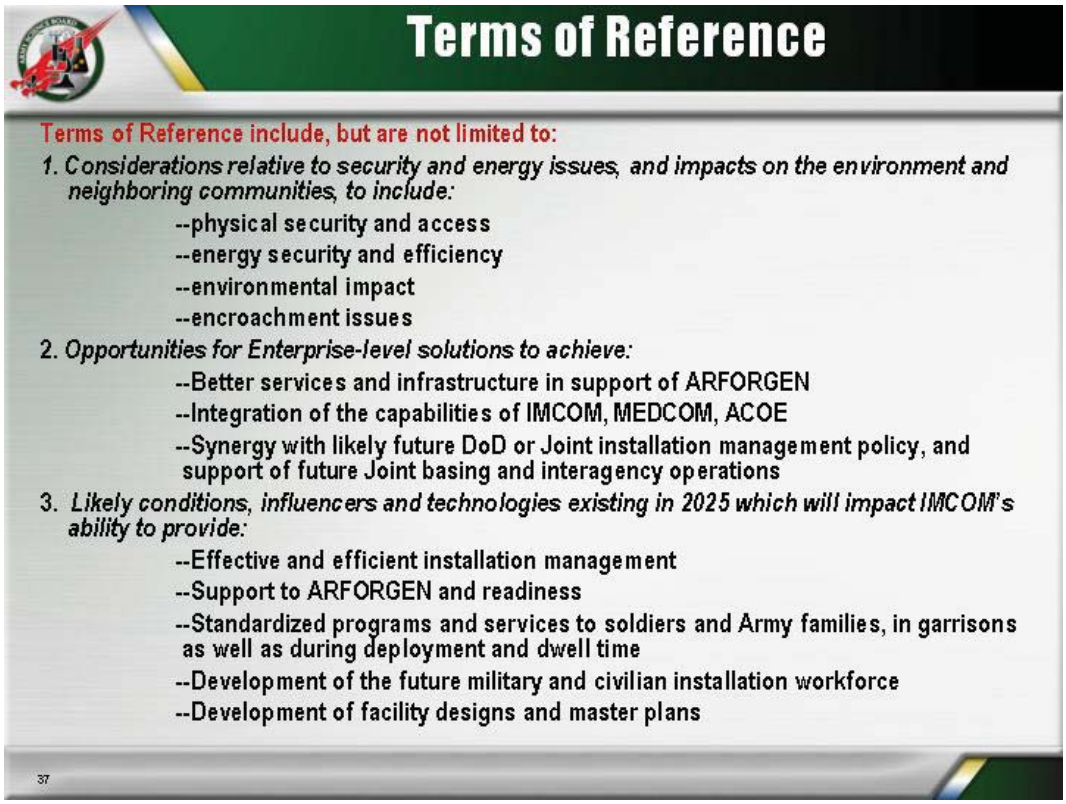
- Army needs to take the lead in establishing a ***consensus within DOD on whether islanding installations is a viable approach for installation energy security*** looking to 2025
- Army needs to ***reexamine the doctrine and policies for installation access control, physical security and force protection*** to establish clear roles and responsibilities so IMCOM to control its ability to meet its missions in 2025
- IMCOM should ***establish an Enterprise approach*** to reviewing, planning and operating its IT systems and services
- IMCOM must ***take the leadership role in*** with other Army and DOD organizations (DASA-ESOH, USACE CERL, etc), other government agencies (DOI, USDA, etc), NGOs, and communities to ***mitigate environmental issues from constraining operations in 2025***
- IMCOM and ACSIM must ***staff, train, organize, and coordinate*** to justify and defend the ***budget and resource requirements*** for IMCOM's multiple missions

36

Installation 2025

Backup

36


Terms of Reference
Terms of Reference include, but are not limited to:
1. Considerations relative to security and energy issues, and impacts on the environment and neighboring communities, to include:
--physical security and access
--energy security and efficiency
--environmental impact
--encroachment issues
2. Opportunities for Enterprise-level solutions to achieve:
--Better services and infrastructure in support of ARFORGEN
--Integration of the capabilities of IMCOM, MEDCOM, ACOE
--Synergy with likely future DoD or Joint installation management policy, and support of future Joint basing and interagency operations
3. Likely conditions, influencers and technologies existing in 2025 which will impact IMCOM's ability to provide:
--Effective and efficient installation management
--Support to ARFORGEN and readiness
--Standardized programs and services to soldiers and Army families, in garrisons as well as during deployment and dwell time
--Development of the future military and civilian installation workforce
--Development of facility designs and master plans
37

Appendix I – Abbreviations

A

AAFES	Army and Air Force Exchange Service
ACOE	Army Communities of Excellence
ACSIM	Assistant Chief of Staff for Installation Management
ACUB	Army Compatible Use Buffer (program)
ADC	Association of Defense Communities
AEA	Army Enterprise Architecture
AIE	Army installation entry (program)
AMC	Army Materiel Command
APG	Aberdeen Proving Ground
ARFORGEN	Army Force Generation (model)
ASA(M&RA)	Assistant Secretary of the Army for Manpower and Reserve Affairs
ASB	Army Science Board
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers

B

BRAC	Base Realignment and Closure

C

CBRNE	Chemical, Biological, Radiological, Nuclear, Explosives
CECOM	Communications-Electronics Command
CERL	Construction Engineering Research Laboratory
CFIS	Center for Future Installation Studies
CFR	Code of Federal Regulations
CIO	Chief Information Officer
CLS	common levels of support
CONUS	Continental United States
CSP	Central Shortgrass Prairie

D

DASA–ESOH	Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOIM	Directorate of Information Management

E

EISA07	Energy Independence and Security Act of 2007
EPA	Environmental Protection Agency

F

FORSCOM	Forces Command

G

G–3	Deputy Chief of Staff for Operations
G–6/CIO	Army Chief Information Officer
G–8	Deputy Chief of Staff for Programs
GAO	Government Accountability Office
GFEBS	General Fund Enterprise Business System
GNEC	Global Network Enterprise Construct

H

HQ	Headquarters
HQDA	Headquarters, Department of the Army

I

IECC	International Energy Conservation Code
IMCOM	Installation Management Command
IPB	installation planning board
IRS	Internal Revenue Service
ISP	Installation Sustainability Plan
IT	information technology

M

MAR	Managerial Accounting Report
MEDCOM	Medical Command
MWR	morale, welfare, and recreation

N

NETCOM	Network Enterprise Technology Command
NGO	nongovernmental organization
NIC	National Intelligence Council

O

OCONUS	Outside the Continental United States
OEA	Office of Economic Adjustment
OPMG	Office of the Provost Marshal General
OSD	Office of the Secretary of Defense

Q

QFD	Quality Functional Deployment

R

RIA	Rock Island Arsenal
ROC	rank-ordered centroid

S

SDD	sustainable design and development
SIG	Strategic Initiatives Group
SOA	service-oriented architecture
SRM	sustainment, restoration, and modernization

T

T&ES	threatened and endangered species
TAA	Total Army Analysis
TAADS	The Army Authorization Document System
TOR	Terms of Reference
TRADOC	Training and Doctrine Command

U

USACE	U.S. Army Corps of Engineers
USAFMSA	U.S. Army Force Management Support Agency
USAG	U.S. Army Garrison
USDA	U.S. Department of Agriculture

W

WBDG	Whole Building Design Guide
WTU	Warrior Transition Unit