

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

AIR FORCE INSTRUCTION 65-501

29 AUGUST 2011

Financial Management

ECONOMIC ANALYSIS



COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available for downloading or ordering on the e-Publishing website at www.e-Publishing.af.mil

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: SAF/FMCEE

Certified by: SAF/FMC
(Mr. Richard K. Hartley)

Supersedes: Supersedes: AFI65-501,
10 November 2004

Pages: 25

This Instruction implements AFD 65-5, *Cost and Economics*, and DoD Instruction 7041.3, *Economic Analysis for Decision Making*. It gives specific instructions on Economic Analysis (EA) for Air Force (AF) management and financial decisions. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, Management of Records, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afrims/afrims/afrims/rims.cfm>. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using AF Form 847, Recommendation for Change of Publication; route AF Form 847s from the field through the appropriate functional's chain of command. This publication may be supplemented at any level, but all direct Supplements must be routed to the OPR of this publication for coordination prior to certification and approval.

This publication applies to Air Force Reserve Command and Air National Guard units.

SUMMARY OF CHANGES

This document is substantially changed and must be reviewed in its entirety. The threshold for when an EA is required changed to investment costs of \$2M or annual recurring costs of \$500K for at least four years, and indexes these amounts to FY2011 constant dollars. All EA waiver requests must now be approved by SAF/FMCEE, after Headquarters Air Force (HAF)/Secretary of the Air Force (SAF) functional approval. Includes Center of Expertise (CoE) responsibilities. Clarifies the responsibility of installation functional offices to determine the need for an EA, and to request an EA from FM when one is needed. EA Certification: Explicitly states what FM is

attesting to and what the functional is attesting to. States that FM is now solely responsible for determining the recommendation in an EA. Includes a new section on the EA administrative process, reporting, and review procedures, tying together and clarifying what's in the Responsibilities section. Changes the responsibility for preparing EA waiver requests from FM to functional offices. Explicitly requires information technology (IT) EAs to include often-overlooked, centrally-funded network and circuit bandwidth requirements and costs. Takes the subparagraph about Preliminary EAs from under the MILCON paragraph in Chapter 2, and makes it a stand-alone paragraph. A shortened paragraph on MILCON, MFH, and Real Property Maintenance Projects was moved to paragraph 2.10. Includes new guidance on cost responsibilities in OMB Circular A-76 commercial activity cost comparison studies, since AFI 65-504, *Commercial Activity Cost Comparisons*, and AFMAN 65-507, *Comptroller Support of Commercial Activity Cost Comparisons*, were published after the previous publication of this instruction. No longer contains the restriction against considering special tax benefits when analyzing lease-purchase decisions for energy projects. No longer contains a requirement to perform an EA for Productivity Investment Fund (PIF) requests that do not meet the dollar thresholds in paragraph 1.2.1. For proposed PIF projects above the \$2M threshold or that otherwise meet the requirements of paragraph 1.2.1, an EA is still required. Updates references and clarifies guidance on Major Weapon System Warranty Cost-Benefit Analysis. Adds a paragraph describing Business Case Analysis and how it differs from Economic Analysis. Adds a new chapter implementing and describing the Office of the Secretary of Defense-Cost Assessment and Program Evaluation (OSD-CAPE) Directive-Type Memorandum (DTM) 07-009 on Estimating and Comparing the Full Costs of Civilian and Military Manpower and Contract Support.

Chapter 1—ECONOMIC ANALYSIS	4
1.1. Definition.	4
1.2. Requirements.	4
1.3. Responsibilities:	5
1.4. Certification.	8
1.5. EA Process, Reporting and Review Procedures.	9
1.6. Documentation Requirements:	10
Chapter 2—SPECIAL ANALYSIS	11
2.1. Network and Information Systems:	11
2.2. Preliminary EAs.	11
2.3. Energy Projects.	12
2.4. Lease-Purchase Decisions.	13
2.5. Commercial Activities (OMB Circular A-76, Performance of Commercial Activities) Cost Comparisons.	14
2.6. Major Weapon System Warranty Cost-Benefit Analysis.	14
2.7. Economic Analyses of Overseas Activities.	15

2.8.	Analysis of Alternatives (AoAs).	16
2.9.	Program Evaluation (PE).	16
2.10.	MILCON, MFH, and Real Property Repair Projects.	16
2.11.	Business Case Analysis (BCA).	17
Chapter 3—ESTIMATING AND COMPARING THE FULL COSTS OF CIVILIAN AND MILITARY MANPOWER AND CONTRACT SUPPORT		18
3.1.	Introduction:	18
3.2.	General:	18
Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION		21
Attachment 2—MATRIX OF RESPONSIBILITIES FOR MILITARY CONSTRUCTION PROGRAM (MCP) AND MFH EAS		25

Chapter 1

ECONOMIC ANALYSIS

1.1. Definition. An Economic Analysis (EA) helps us make rational choices among competing alternatives. Similar to a Cost-Benefit Analysis, it's an objective analysis of competing alternative ways of meeting an objective, and weighs the costs, benefits and risks of each alternative. It does not replace the judgment of the decision maker, but rather aids that judgment. This systematic approach reduces the incidence of serious omissions or the introduction of personal bias.

1.2. Requirements.

1.2.1. The Air Force requires an EA when:

1.2.1.1. Deciding whether to commit resources to a new project or program when total investment costs equal or exceed \$2,000,000 in fiscal year (FY) 2011 constant dollars or annual recurring costs over \$500,000 in fiscal year (FY) 2011 constant dollars for at least four years. These dollar thresholds also apply to a group of projects which are so closely related that they are logically considered a single entity. **Note:** Functional offices of primary responsibility (OPRs) for programs may specify alternative thresholds for projects for which they are responsible.

1.2.1.1.1. When computing total investment or annual recurring costs to apply to established EA thresholds, costs must include projected Defense Information Systems Network (DISN) cost increases that will result from the project or program. DISN costs are location, IT service, and bandwidth dependent. Depending upon the base or site, even minor changes by programs and projects at a location may result in significant, recurring annual cost increases for the Air Force DISN bill. These costs are often overlooked by programs because the bill is centrally funded by the Air Force but must be taken into account when determining whether or not an EA is required.

1.2.1.1.2. Real Property repair projects only require EAs if the repair costs equal or exceed 75 percent of the facility replacement cost. An economic analysis must be submitted with all relocatable facility acquisition requests in accordance with AFI 32-1021, Planning and Programming Military Construction (MILCON) Projects.

1.2.1.2. Proposed changes to an ongoing project will push project investment costs over \$2,000,000 or annual recurring costs over \$500,000 for at least four years (if no EA was previously performed).

1.2.1.3. Proposing a housing or utilities privatization project, regardless of the amount of the investment cost. (Consult the SAF/FMC home page for special guidance.)

1.2.1.4. A functional user or program office is procuring, modernizing or upgrading a material solution for a Major Automated Information System (MAIS), Automated Information System, National Security System (NSS), Weapon Systems with embedded IT and or Command and Control Systems that are not themselves IT systems to support the Clinger-Cohen Act.

1.2.1.5. Directed by Secretariat or Air Staff, or a commander of field units. Functional Offices of Primary Responsibility (OPRs) must coordinate any new requirement for recurring EAs with SAF/FMC.

1.2.1.6. Otherwise directed by law or superseding regulation.

1.2.1.7. Considering Productivity-Enhancing Capital Investment (PECI) proposals that meet the thresholds in 1.2.1.1 and 1.2.2.2 above.

1.2.2. An EA is not required if:

1.2.2.1. The costs of conducting the analysis clearly outweigh the potential informational benefits accruing to the decision maker. This does not apply to military family housing (MFH) projects.

1.2.2.2. There is only one method possible to accomplish the objective. If this criterion is used, the justification must describe any possible alternatives and why they were not viable.

1.2.2.3. The Office of the Secretary of Defense (OSD) or higher authority directs a new or modified program and specifies how to accomplish program goals.

1.2.2.4. Legislation specifically exempts the project from an EA, or specifically directs the method of accomplishment.

1.2.2.5. The project corrects problems or violations involving health, safety, fire protection, pollution, or security which are serious, urgent and hazardous.

1.2.3. Waivers:

1.2.3.1. When an activity does not conduct an EA for reasons in 1.2.2, a waiver from the requirement to do an EA must be requested. Waiver requests must adequately explain and document the reason why an EA is not necessary. The activity must coordinate the waiver with the comptroller office responsible for EAs.

1.2.3.2. While OSD Comptroller is the final authority to grant waivers from EA requirements within DoD, waiver approval authority in the Air Force resides in SAF/FMCE. All EA waiver requests must be approved by SAF/FMCE. The MAJCOM functional OPR and MAJCOM Financial Management (FM) must both concur with EA waiver requests prior to submission to SAF/FMCE. HAF-level (which includes both the Secretariat and Air Staff) functional offices must also concur with waiver requests prior to submission to SAF/FMCE for approval.

1.2.3.3. Functional offices will prepare EA waiver requests based on the criteria in paragraph 1.2.2. Use the format in AFMAN 65-506, *Economic Analysis*, Attachment 2.

1.3. Responsibilities:

1.3.1. **The Deputy Assistant Secretary of the Air Force for Cost and Economics (SAF/FMC)** is the office of primary responsibility (OPR) for Air Force economic analysis. This office:

1.3.1.1. Provides Air Force-wide guidance on EA policy and procedures.

1.3.1.2. Coordinates on EA instructions developed by Secretariat or Air Staff functional offices.

1.3.1.3. Reviews analyses for weapons systems that require Defense Acquisition Board (DAB) or Air Force Systems Acquisition Review Council (AFSARC) approval.

1.3.1.4. Reviews Air Force Productivity Investment Fund (PIF) requests, as requested by AF/A1M.

1.3.1.5. Reviews, as requested by AF/A1S, non-appropriated fund construction and equipment analyses for projects presented for Air Force Services Board approval and funding.

1.3.1.6. Reviews EAs at the direction of the Secretary of the Air Force, SAF/FM or the Chief of Staff of the Air Force. Reviews all EAs forwarded to SECAF or CSAF.

1.3.1.7. Reviews EAs in support of Major Automated Information Systems (MAIS). (Air Force Cost Analysis Agency, a Field Operating Agency (FOA) to SAF/FMC, is responsible for this.)

1.3.1.8. Reviews EAs requiring Office of the Secretary of Defense (OSD) or SAF/AQ approval.

1.3.1.9. Promotes and monitors economic analysis training.

1.3.1.10. Maintains the SAF/FMC page on the Air Force Portal, which provides cost factor updates and other useful cost and economic analysis information.

1.3.1.11. Reviews and approves/disapproves all requests for waivers from EA requirements.

1.3.2. Other Secretariat and Air Staff Functional Offices. Offices serving as program OPRs:

1.3.2.1. Decide if an EA is required or advisable before approving any proposal.

1.3.2.2. Issue special guidance, coordinated with SAF/FMC, for EAs in their functional area.

1.3.2.3. Receive EAs from major commands (MAJCOMs), review them from their functional perspective, and decide whether the EAs need SAF/FMC review.

1.3.2.3.1. When the EAs need SAF/FMC review, forward the request along with a functional evaluation of the project, including evaluation of the reasonableness of cost and benefit estimates.

1.3.2.3.2. If functional or SAF/FMC review results in questions, forward these questions to the MAJCOM office proposing the project. Coordinate all correspondence between SAF/FMC and MAJCOM.

1.3.2.4. Review and concur/non-concur, as appropriate, with MAJCOM requests for waivers from EA requirements. Forward all waiver requests to SAF/FMCE, who will review and approve/disapprove all EA waiver requests in the Air Force.

1.3.3. Air Force Financial Management Center of Expertise (CoE), a field operating agency (FOA) under the Air Force Cost Analysis Agency:

1.3.3.1. Provides assistance in completing EAs and similar analyses for FM offices at AF installations and MAJCOM headquarters.

1.3.3.2. Provides EA training, as requested, to individuals at installation and MAJCOM FM offices.

1.3.3.3. All requests for CoE support must come from or through installation or MAJCOM financial analysis offices.

1.3.4. **MAJCOM/FM.** The Comptroller will designate an EA OPR (typically the financial analysis office) responsible for EAs within the command. The OPR:

1.3.4.1. Manages the command's EA program, including monitoring the training of analysts, providing command guidance to installations preparing EAs, and all liaison with SAF/FMC.

1.3.4.2. Reviews and certifies, as appropriate, all EAs forwarded from MAJCOM functional offices, including those to be forwarded to the Secretariat or Air Staff.

1.3.4.3. MAJCOM FM offices may provide a representative as a nonvoting member on the MAJCOM Facilities Board. This allows MAJCOM FM offices to be aware of projects as they are developed and proceed through the chain of command from base level to MAJCOM headquarters. It also facilitates the accumulation of costs and preparation for possible future workload.

1.3.4.4. Reviews and concurs/non-concurs, as appropriate, with requests for waivers from EA requirements.

1.3.4.5. Requests training and assistance from the CoE, if desired and as appropriate, for EAs and similar analyses needing to be performed at installation or MAJCOM level. The existence of the CoE, and the availability of any assistance they may provide, does not in any way diminish the MAJCOM FM's staff responsibility for producing or reviewing any of these analytical products or for any analytical support provided their MAJCOM staff or leadership. The MAJCOM FM retains the responsibility for accomplishing any necessary EA, regardless of any assistance, or lack thereof, that may be provided by the CoE.

1.3.5. **MAJCOM Functional Offices:**

1.3.5.1. Review EAs and concur/non-concur with the Certificate of Satisfactory Economic Analysis.

1.3.5.2. Forward the EA to the MAJCOM financial analysis office for certification.

1.3.5.3. Forward the EA to their counterparts at Secretariat or Air Staff (if and when those counterparts require it) after certification by the MAJCOM financial analysis office.

1.3.5.4. Review and concur/non-concur on requests for waivers from EA requirements and forward the request to Secretariat or Air Staff counterparts for routing to SAF/FMCE for approval.

1.3.6. **Installation Functional Offices.** Base or wing level functional offices:

1.3.6.1. Determine the need for an EA based on criteria in paragraph 1.2.

1.3.6.2. Request an EA from the financial analysis office in writing when an EA is required. To allow time for accumulation of data, notify as soon as possible after the requirement is determined.

1.3.6.2.1. Document in the request a definition of the objective of the EA, the scope of the proposed project (quantified to the extent possible), a description of all feasible alternatives to achieve the objective, and a description of any possible sources of costs, including databases, records or manuals.

1.3.6.2.2. If any alternatives are considered infeasible, provide the rationale in writing.

1.3.6.3. Serve as the office of collateral responsibility (OCR) for preparing the EA. EXCEPTION: The Force Support Squadron is OPR for preparing NAF EAs.

1.3.6.4. Review EAs and coordinate on the Certificate of Satisfactory Economic Analysis.

1.3.6.5. Provide support to the EA preparation process, to include providing needed data and evaluating the reasonableness of estimated costs and benefits.

1.3.6.6. Prepare a request for waiver from the EA requirement when needed.

1.3.6.7. Send written requests for waivers from EA requirements to the base level financial analysis office. Waiver requests must adequately explain and document the reason why an EA is not necessary according to paragraph 1.2.2.

1.3.6.8. Once the base financial analysis office concurs with the waiver request, the base functional office forwards the request for a waiver to their MAJCOM functional counterparts, who, if they concur, will seek MAJCOM financial analysis concurrence prior to submission to SAF/FMCE for approval.

1.3.6.9. Retain the approved waiver on file until the project is completed.

1.3.7. Installation Financial Analysis Offices. Base or wing level financial analysis offices:

1.3.7.1. Are OPR for preparing the EA. EXCEPTION: See paragraph 1.3.6.3.

1.3.7.2. With the requesting functional office, name as OCRs those offices necessary to formulate alternatives, make assumptions, and provide operational or cost data.

1.3.7.3. Ensure that the base or installation comptroller certifies the completed EA.

1.3.7.4. Financial analysis offices may, at their option, send a nonvoting representative to installation Facilities Boards. This representative keeps financial analysis offices aware of projects as they develop, prepares them for future EAs, and lets functional offices know when they need to collect data on historical costs, operational workload or other data.

1.3.7.5. Review and concur/non-concur on requests for waivers from an EA requirement.

1.4. Certification. Every completed EA must have a Certificate of Satisfactory Economic Analysis. Certifying officials include the Comptroller and the program office equivalent at base level and the financial analysis and program office equivalent at MAJCOM level. Other base

level or MAJCOM offices which have provided significant inputs should also coordinate on the Certificate of Satisfactory Economic Analysis.

1.4.1. Every Certification should follow the format in AFMAN 65-506, Attachment 4, and at a minimum include all statements and information included in that attachment.

1.4.2. Certification by comptroller personnel means that an EA has been prepared in accordance with this instruction and AFMAN 65-506. Certification by comptroller personnel attests to the accuracy of the data in the EA, the proper use of economic principles in the analysis and to the adequacy of documentation such that the EA is a stand-alone document. Financial management officials are solely responsible for determining the recommendation in the EA. If these officials do not recommend the lowest-cost alternative, they must provide the rationale for their recommendation in the Comparison of Alternatives section of the EA (see Chapter 6, AFMAN 65-506).

1.4.3. Certification by functional personnel attests that the assumptions, reasoning and functional technical assessments in the EA are sound and are in accordance with all Air Force Instructions and Manuals applicable to their area of technical expertise.

1.4.4. Functional managers and Financial Analysis reviewers at each stage of the review process must sign the Certificate of Satisfactory Economic Analysis. EAs forwarded to Air Staff or Secretariat must give evidence of MAJCOM certification.

1.4.5. AFMAN 65-506, *Economic Analysis*, contains an EA Certification Checklist as well as an EA Review Guide.

1.4.6. If an office non-concurs with an EA, they must provide a statement of non-concurrence to all other OCRs and the OPR.

1.4.7. Do not forward an EA outside the Air Force without MAJCOM certification and the concurrence of SAF/FMCE.

1.5. EA Process, Reporting and Review Procedures. The origin, development and approval cycle of an EA will follow this general pattern:

1.5.1. An installation functional OPR recognizes the need for an EA for a project and requests the installation financial analysis office accomplish it.

1.5.2. The installation financial analysis office accomplishes the EA with the help of the requestor (and possibly with the help of their MAJCOM EA OPR or the CoE), includes all relevant functional input, certifies it, and gives it to the functional who requested it.

1.5.3. The functional office reviews and certifies the EA, then forwards it to their MAJCOM counterpart.

1.5.4. The MAJCOM functional office reviews and certifies the EA, then forwards it to the MAJCOM FM EA OPR for certification.

1.5.5. The MAJCOM FM EA OPR reviews and certifies the EA and returns it to the MAJCOM functional office.

1.5.6. The MAJCOM functional office then forwards the EA and certifications, as appropriate, to their Secretariat or Air Staff counterparts, who review the EA and decide if SAF/FMCE needs to review it. If higher level review is not required, the MAJCOM

functional office retains a copy of the completed EA and sends the original to the submitting organization as completed. Paragraph 1.3.1 describes those circumstances in which EAs go to SAF/FMCE for review.

1.5.7. If SAF/FMCE reviews it, they return it to the functional office that sent it. If they have any questions or issues with it, SAF/FMCE will send those questions/issues to the functional office that requested their review. In cases of tight deadlines, and if the EA is to be provided to senior Air Force or higher officials, SAF/FMCE may, in consultation with HAF functional offices, request revisions to EAs directly from MAJCOM financial analysis offices.

1.6. Documentation Requirements:

1.6.1. Thoroughly document your EA so reviewers can replicate it. Reviewers must be able to trace costs from the most basic inputs and units of measure. Cite sources and dates, show rates, factors, and the source of estimates. Include publications, memos, and letters, and show all calculations. For estimates based on expert opinion, include the individual's office symbol, email address, and phone number.

1.6.2. Be sure that you document your analysis well enough that it will be able to withstand close scrutiny by a reviewer or other independent authority not familiar with the project. To facilitate review, number all pages in an EA, including attachments. Also, number all paragraphs, subparagraphs, tables and figures. Thoroughly cite and cross-reference data and information contained in supporting attachments.

Chapter 2

SPECIAL ANALYSIS

2.1. Network and Information Systems: AFI 63-101, *Acquisition and Sustainment Life Cycle Management*, explains procedures for validating and approving network and information system programs. When a project needs an EA based on paragraph 1.2, the EA will include a Cyberspace Infrastructure Planning System (CIPS) number, Information Support Plan (ISP), Life Cycle Management Plan or Initial Capability Document.

2.1.1. If the project involves Information Technology, the EA must include network and/or circuit bandwidth requirements and costs. Except in the case of stand-alone systems, there will always be a direct or indirect cost associated with data network, circuit, and/or Defense Information Systems Network (DISN) connectivity and bandwidth.

2.1.1.1. Interbase bandwidth costs. In nearly all cases, data connectivity between fixed bases/locations is provided through the DISN. DISN services include voice (Defense Switched Network (DSN), Defense Red Switched Network (DRSN)), video (video teleconferencing), and data (Non-Secure Internet Protocol Router Network (NIPRNet), Secret Internet Protocol Router Network (SIPRNet), Joint Worldwide Intelligence Communication System (JWICS)), and point-to-point data transport. The AF DISN bill is centrally funded and managed through the Air Force Network Integration Center (AFNIC). Since DISN costs are location, bandwidth, and data-service dependent, coordinate development of interbase bandwidth costs through AFNIC/ESL who will provide current cost information.

2.1.1.2. Intrabase bandwidth costs. In some cases, networked IT systems bandwidth requirements may be limited to a location or base with no external connectivity or communications requirements. Impacts to base network infrastructure must be assessed to ensure it can support project bandwidth requirements. Any costs to improve/upgrade the intrabase network infrastructure must be included in the EA.

2.1.2. Major Automated Information System (MAIS), Automated Information System, National Security System (NSS), Weapon Systems with embedded IT and or Command and Control Systems that are not themselves IT programs require an EA based on the Clinger-Cohen Act of 1996 (40 USC 1401 et seq).

2.1.2.1. Notify the Air Force Cost Analysis Agency, FMI division, and AF CIO (Chief Information Officer) six months prior to a milestone decision requiring Clinger-Cohen confirmation.

2.1.2.2. Prepare the EA in accordance with the guidance provided by OSD Cost Assessment & Program Evaluation (CAPE) office regarding MAIS return on investment calculations.

2.1.2.3. The Air Force Cost Analysis Improvement Group (AFCAIG) will approve the EA and the resulting Return on Investment (ROI) that will be included in the Clinger-Cohen confirmation to the AF CIO.

2.2. Preliminary EAs.

2.2.1. Financial analysis must be part of program planning when a project is first considered. A preliminary EA is a first effort at the elements of economic analysis, including: statement of the problem or objective, assumptions, alternatives, determination of feasible or infeasible alternatives, an estimate of the benefits and costs of each feasible alternative, and consideration of the riskiness of the recommendation relative to key variables. The Air Force does preliminary EAs because it is not practical to do a complete EA for projects that are only being considered. "Fully developed" EAs must meet the requirements of this instruction and AFMAN 65-506.

2.2.2. Use professional judgment when deciding the extent of a preliminary EA. Remember the goal is to facilitate good management decisions among possible alternatives within a project, as well as among competing projects. AFMAN 65-506 contains a suggested format for a preliminary EA.

2.3. Energy Projects. Special instructions apply to energy projects:

2.3.1. Evaluate all energy projects in constant dollars, including lease-purchase decisions. Since energy price changes in energy sectors are apt to differ from price changes in other sectors, use Department of Energy (DoE) indices, published annually (NISTIR 85-3273-xx).

2.3.2. Use the following guidelines for Energy Conservation Investment Program (ECIP) EAs of retrofits to existing energy systems:

2.3.2.1. Base all analyses on an economic life of 25 years or the life of the retrofit or of the facility, whichever is less.

2.3.2.2. Use the DoE published escalation rates for energy.

2.3.2.3. ECIP projects will use the published discount rates in the annual supplement to National Institute of Science and Technology (NIST) handbook 135 "Energy Price Indices and Discount Factors for Life-Cycle Cost Analysis" NISTIR 85-3273-xx (check with your engineering office).

2.3.3. Analyze lease-purchase decisions and private sector financed leases or service contracts involving energy projects using the following guidance:

2.3.3.1. Use the ECIP-approved discount rate for lease-purchase EAs.

2.3.3.2. Escalate the government Military Construction Program (MCP) alternative estimate using DoE rates for comparison with private sector financed (e.g., lease, service contract) alternatives. Take the lessor or contractor bid at face value (i.e., not escalated, since this constitutes the actual commercial bid).

2.3.3.3. ECIP projects will have a Simple Payback (SPB) of 10 years or less with a minimum Savings Investment Ratio (SIR) of 1.25 to meet DoD criteria. (Estimated SPB time is the number of years required for the cumulative value of energy cost savings less future non-fuel costs to equal the investment costs of the building system without consideration of future price changes or discount rates. For example, invest \$100,000 at an annual savings of \$20,000. SPB is investment divided by savings, so the SPB would be 5 years. SPB does not take into account the time value of money.)

2.3.4. Analyze energy plant conversion projects using the following guidelines:

2.3.4.1. Discount projects using a renewable energy source at the rate for ECIP.

2.3.4.2. Discount projects using fossil (nonrenewable) fuel at the rate published by the Office of Management and Budget (OMB).

2.3.4.3. Use DoE energy indexes.

2.3.5. Additional analytical tools can be found at the Federal Energy Management Program's website: (http://www1.eere.energy.gov/femp/information/access_tools.html) NOTE: EAs which are not specifically energy projects are not required to use DoE energy indexes.

2.4. Lease-Purchase Decisions. OMB Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, distinguishes two types of decisions regarding lease-purchase:

2.4.1. The decision to acquire an asset. This involves cost-benefit analysis to show that acquiring the asset is the best economic alternative.

2.4.2. The decision to lease or purchase the asset. In this lease-purchase type of analysis, benefits are often essentially the same. In many Air Force analyses, mission need has already determined the requirement. In this situation, only a lease-purchase analysis would be required (i.e., an EA with two alternatives, lease and purchase).

2.4.3. When estimating for major facilities, the Air Force normally does not have authority to solicit bids both for a lease or service contract alternative and for a purchase alternative. Under these circumstances, one estimation method is:

2.4.3.1. Estimate a life-cycle flow of funds for the purchase alternative.

2.4.3.2. Compare the present value (i.e., discounted dollars) of contractor bids for the lease or service contract with the present discounted value of the purchase alternative. **IMPORTANT:** Work with contracting offices to develop such bids, since it must be made clear that the government's request for information may not lead to an offer.

2.4.4. All EAs involving lease-purchase analysis follow special guidance outlined below. Consult AFMAN 65-506 for more detailed guidance on lease-purchase analysis.

2.4.4.1. Leases are often "level term." Their cost is set per month or year over a number of months or years. The lease terms are in effect stated in nominal (i.e., inflated) dollars. For this reason, EAs involving lease-purchase analysis are often accomplished in nominal dollars. Discount these nominal dollars using the nominal Treasury borrowing rate on marketable securities of comparable maturity to the term of the lease. The rates are updated annually when the President presents his Budget, and are found on the SAF/FMC page of the AF Portal.

2.4.4.2. If lease costs are stated in constant dollars, use constant dollars in the EA and discount at the real rate.

2.4.4.3. When the term of a lease or service contract differs from the economic life of the asset under the purchase option, estimate asset terminal value and include it in the purchase alternative as a benefit (negative cost) in the final period of the analysis.

2.4.4.4. Add to the cost of the lease the cost to the Treasury of any special tax benefits associated with a lease. Examples: highly accelerated depreciation allowances or tax-free financing. Consider current tax laws applicable to a lessor to determine whether or not an adjustment is appropriate in a particular EA. Because tax laws change, consult with legal

and contracting staff. If a particular leased asset enables a lessor to take advantage of accelerated depreciation tax benefits, increase the contract bid to offset these losses to the Treasury. In most accelerated depreciation schedules, the amount of the special tax advantage is only the portion of the total allowance for depreciation in excess of "normal" economic depreciation. In such cases, the calculation of normal economic depreciation is an annual amount equaling acquisition price divided by economic life.

2.5. Commercial Activities (OMB Circular A-76, *Performance of Commercial Activities*) Cost Comparisons. The Air Force conducts cost comparisons in accordance with AFI 38-203, *Commercial Activities Program*, between in-house or commercial (contract) performance.

2.5.1. Comptroller staff provides technical support to this process in accordance with AFI 65-504, *Commercial Activity Cost Comparisons*, and AFMAN 65-507, *Comptroller Support of Commercial Activity Cost Comparisons*.

2.5.2. AFI 38-203, paragraph 6.5.7, requires the servicing Financial Management Flight to determine if providing government property to a contractor is in the government's best interest, using either Table 6.1 of that instruction, or an EA. AFMAN 65-506 gives guidance on performing this type of analysis.

2.5.3. According to 10 USC 2461, cost comparisons impacting 50 Department of Defense (DOD) civilian employees require an analysis of the economic impact of a function's potential conversion to contract performance on the local community and the Government. AFMAN 65-506 contains guidance on performing economic impact analysis. Include the results of this analysis in RCS: HAF: A1M (AR) 8001, *Final Decision Report*.

2.6. Major Weapon System Warranty Cost-Benefit Analysis. Follow this guidance when performing a cost-benefit analysis (CBA) to determine whether using a warranty is beneficial to the government.

2.6.1. The principal criterion for determining life cycle cost (LCC) advantage is the present value (i.e., discounted dollars) of expected program costs and benefits, estimated both with warranty coverage and without warranty coverage, and (if appropriate) with partial warranty coverage.

2.6.2. Plan sufficient lead time to complete the detailed work required in a warranty CBA. Start early if it will support contract negotiations. Intermediate CBA findings are very valuable in establishing government negotiating positions; the CBA identifies expected major cost drivers and potential failure nodes.

2.6.2.1. You may do the CBA as early as the demonstration and validation phase and then update the CBA during full-scale development and source selection or negotiations for the production contract. It's best to accomplish the CBA before release of the Request for Proposal for the production contract and update after receipt of proposals with the contractor's proposed warranty price.

2.6.2.2. The OPR for life-cycle cost analysis of the program is OPR for the warranty CBA, unless the program manager assigns responsibility elsewhere. The program manager (System Program Office (SPO) director, project manager, etc.) should ensure the CBA is initiated as soon as system technical design is well enough established to allow LCC estimation.

2.6.2.3. OCRs are significant stakeholders and any other organizations with information necessary to develop the life-cycle cost model. OCRs usually include engineering and logistics staffs.

2.6.3. A computer model is available to do the CBA. Contact HQ AFMC/FM for information. Consider information in the Warranty Activity Report, if available, when doing the CBA.

2.6.4. Estimate LCC for the system or component without warranty coverage. Then estimate LCC under full or partial warranty coverage.

2.6.4.1. Break down the system or item under consideration into its constituent parts, based on the expected major operating and support (O&S) cost drivers and associated failure nodes. Items considered for warranty coverage may be a combination of new components and of components similar to those in historically procured items. Therefore, analysts may face a combination of historical data and engineering forecasts to identify cost drivers and failure nodes.

2.6.4.2. Estimate the expected costs over time for each failure node, based on expected failures and anticipated cost per failure.

2.6.4.2.1. Use statistical methods or mathematical models to relate failures at each node to variables measuring system deployment and operation (e.g., shelf life, operation cycles, hours of operation, or presence or absence of special operating conditions).

2.6.4.2.2. Estimate the mean time between failures (mean operating cycles between failures, etc.) and variables which are related to failure.

2.6.4.2.3. Build estimates of the cost of a failure at each node from historical data or projections, as applicable.

2.6.4.2.4. Sum up monetary LCCs as the total of the costs of each failure node.

2.6.5. Estimate LCCs for the alternative including warranty coverage. The basic procedure is the same as above: break down the system or item into its major cost components. This is particularly useful for addressing whether proposed warranty provisions should be accepted.

2.6.5.1. Estimate the costs and benefits of each warranty clause or provision.

2.6.5.1.1. Consider benefits to the government of warranty implementation plans and procedures.

2.6.5.1.2. Consider administrative costs of the warranty and potential claims that the warranty is likely to cover. When possible, identify administrative costs with specific warranty provisions, to increase the precision of the warranty assessment.

2.6.5.2. Consider warranty effects on system or item cost components or performance characteristics outside warranty coverage. For example, consider such factors as the effects of warranty provisions on system field performance or the implicit cost differences due to different turnaround times between contractor and in-house repair.

2.7. Economic Analyses of Overseas Activities. Express the LCCs of EAs for overseas activities in US dollars.

2.7.1. SAF/FMCE can provide forecasts of foreign exchange rates for use in Air Force EAs upon request.

2.7.2. AFMAN 65-506 contains additional information on exchange rates.

2.8. Analysis of Alternatives (AoAs). AoAs are required for analysis of weapons systems according to DoD Instruction 5000.2, *Operation of the Defense Acquisition System*. System Program Offices (SPOs) must notify SAF/FMC of all AoA efforts for ACAT I or IA programs. Depending on resource availability, SAF/FMC may simply advise the AoA team, assess the methodology and rigor of the AoA cost estimate, or may perform an independent estimate of costs of the alternatives.

2.9. Program Evaluation (PE). A PE is an economic analysis of on-going operations to ensure that established goals and objectives are being attained in the most cost-effective manner. A PE compares actual performance with stated program objectives. Economic analysis in the stricter sense aids in identifying alternate uses of available resources before decisions are made. A PE identifies the outputs of actual performance: benefits, utility, effectiveness, performance, energy footprint/use, and work measures. From a broader organizational perspective, an objective of PE is to review programs to determine if they should be continued, modified or ended. Programs are selected for evaluation based on scope, cost, and relative sensitivity. A program is evaluated only if the benefits of the evaluation (or potential cost savings of modifying the existing program) clearly outweigh the cost of collecting the data and conducting the evaluation.

2.9.1. Requirement. A PE must be performed when directed by the original decision maker or higher authority, by commanders or senior leadership, or when prescribed by functional directives.

2.9.2. Responsibilities Assigned. The official who implements a program, or a higher authority, directs that a PE be completed at a specific future date. The functional manager, with the financial analysis staff, then establishes a plan to collect and maintain the cost and benefit data necessary for the evaluation.

2.9.3. Selection of programs for evaluation must allow sufficient lead time to allow collection of data that may not ordinarily be collected. If a new requirement for a PE is established, the functional office should immediately notify all offices necessary to obtain appropriate data. If a PE is to be recurring, a requirement for the retention of source data may be established.

2.9.4. Additional information on PE is found in AFMAN 65-506.

2.10. MILCON, MFH, and Real Property Repair Projects.

2.10.1. Do a preliminary EA after an installation Facilities Board (FB) has established a requirement for a project, but before the installation FB has chosen an alternative. Develop the analysis as the engineers develop the DD Form 1391, *Military Construction Project Data*.

2.10.2. If the MAJCOM supports a project, complete a full EA to accompany the finalized proposal.

2.10.3. Under a tri-service agreement, EAs for the design phase of construction follow special guidance. These EAs must follow the guidance in AFMAN 65-506, Attachment 17.

2.10.4. The project cost estimate for every alternative in an EA must be of the same quality and accuracy, and will normally use the same estimating tool or method as that used for the originally proposed project. Fair, unbiased and accurate cost estimates for each alternative in an economic analysis are essential to a fair and reasonable comparison of alternatives. It often happens that cost estimates for project alternatives in an EA are of a much lower quality than the originally proposed project, thus precluding a fair comparison of costs. Ensuring that the cost estimate for each alternative in an EA is of the same quality will help ensure the analysis is fair and credible, thus supporting better decision-making.

2.11. Business Case Analysis (BCA). A BCA is a decision support analysis that identifies alternatives and presents business, economic, risk, and technical arguments for selecting an alternative to achieve organizational or functional missions or goals. It differs from an EA in that it provides a more comprehensive, enterprise-wide perspective on Air Force business operations. Additional information on BCAs can be found in AFI 65-509, *Business Case Analysis*, and AFMAN 65-510, *Business Case Analysis Procedures*.

Chapter 3

ESTIMATING AND COMPARING THE FULL COSTS OF CIVILIAN AND MILITARY MANPOWER AND CONTRACT SUPPORT

3.1. Introduction:

3.1.1. This chapter implements the Office of the Secretary of Defense Cost Assessment and Program Evaluation (OSD-CAPE) Directive-Type Memorandum (DTM) 09-007, dated 29 Jan 2010, which establishes business rules for use in estimating and comparing the full costs of military and DoD civilian manpower and contract support. It applies to all Air Force appropriated fund activities. The full costs of manpower include current and deferred compensation costs paid in cash and in-kind as well as non-compensation costs. As of 20 April 2011, the DTM can be found at this web address: <http://www.dtic.mil/whs/directives/corres/pdf/DTM-09-007.pdf>. It is Air Force guidance that:

3.1.1.1. Air Force officials are aware of the full costs of manpower and have a thorough understanding of the implications of those costs to the Department of Defense and, on a broader scale, to the Federal Government when developing national security policies and making program commitments. Accordingly, Air Force officials shall use the business rules set forth in DTM 09-007, and in any DoDI that supersedes or otherwise replaces DTM 09-007 to estimate the full costs of the defense workforce in support of strategic planning, defense acquisition, and force structure decisions.

3.1.1.2. Air Force officials shall use these business rules when performing an economic analysis in support of workforce decisions. This includes, but is not limited to, determining the workforce mix of new or expanding mission requirements that are not inherently governmental or exempt from private-sector performance. Air Force officials shall also use these business rules to decide whether to use DoD civilians to perform functions that are currently being performed by contractors but that could be performed by DoD civilians. For cost comparisons for conversions from government to contractor performance (governed by OMB Circular A-76), see the guidance in paragraph 3.2.2.4.

3.1.1.3. SAF/FMC is the OPR for Air Force issues related to this guidance.

3.2. General: The business rules in DTM 07-009 establish standard procedures for use across the Department of Defense for estimating and comparing the costs of different configurations of manpower (military and DoD civilian) and service contracts.

3.2.1. **Manpower Costs.** When answering questions about the costs of manpower for a specific unit, organization, function, mission, or defense acquisition program, analysts should report the full costs of both military and civilian DoD manpower. For example, analysts should account for the full costs of manpower when developing independent cost estimates and analyses of alternatives for defense acquisition programs and when pricing units in the force structure. Manpower cost estimates normally address costs to the Department of Defense. However, in certain cases, analysts may be asked to report full manpower costs to the Federal Government. The business rules address both kinds of requests.

3.2.2. **Workforce Mix Decisions.**

3.2.2.1. New or Expanded Missions. If a manpower analysis shows that a new or expanded mission requirement is not inherently governmental or exempt from private-sector performance, the official responsible for the function(s) in question shall conduct a cost comparison using the business rules prescribed in DTM 07-009 to determine whether DoD civilian employees or a private-sector contractor would perform the function(s) at a lower cost.

3.2.2.2. Conversion from Contractor to Government Performance: In-Sourcing. If a review shows that a function currently being performed under contract could be performed by DoD civilian employees, the official overseeing the function shall conduct a cost comparison using the business rules to determine whether DoD civilian employees or a private-sector contractor would perform the function at a lower cost.

3.2.2.3. Manpower Conversions - Military to DoD Civilian or DoD Civilian to Military. Military manpower may be converted to DoD civilian performance and DoD civilian manpower may be converted to military performance. Although cost is not the only factor in such decisions, analysts may be asked to estimate the cost impact of the conversions. In such cases, an analyst shall conduct a cost comparison using the business rules to estimate the cost impact of converting a function from military to DoD civilian performance or from DoD civilian to military performance.

3.2.2.4. Conversions from Government to Contractor Performance. The DoD Components are required to conduct public-private competitions in accordance with OMB Circular A-76, 10 USC 2461, and other applicable laws and regulations in determining whether to convert a commercial activity performed by any civilian DoD personnel or by any number of military personnel to private-sector performance. These laws and regulations take precedence over DTM 09-007 and this Instruction for analysis of this type of conversion.

3.2.3. Program and Budget Submissions

3.2.3.1. Policies and procedures for calculating DoD civilian and military manpower costs for programming and budgeting purposes are established through separate guidance issued by the Under Secretary of Defense (Comptroller) (USD(C) /Chief Financial Officer (CFO)), 10 USC 2461, Department of Defense, and the Director of Cost Assessment and Program Evaluation (DCAPE), as part of the annual integrated program and budget review process.

3.2.3.2. The DoD composite rates, as published by the USD(C)/CFO, used to calculate manpower costs for program and budget submissions do not account for the full costs of military or DoD civilian personnel. For example, the outlays for compensation costs and for retirement and medical accrual accounts for active duty (AD) military personnel represent only a fraction of total Federal outlays. For this reason, composite rates should not be the only source of data used when answering questions about the cost of the defense workforce, making workforce-mix decisions, or determining the cost impact of manpower conversions.

JAMIE M. MORIN
The Assistant Secretary of the Air Force for
Financial Management and Comptroller

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

10 USC 2461, (Public-Private Competition)

AFI 38-203, *Commercial Activities Program*, 20 Jun 08

AFI 63-101, *Acquisition and Sustainment Life Cycle Management*, 17 Apr 09

AFPD 65-5, *Cost and Economics*, 5 Aug 08

AFI 65-504, *Commercial Activity Cost Comparisons*, 6 Nov 08

AFMAN 65-506, *Economic Analysis*

AFMAN 65-507, *Comptroller Support of Commercial Activity Cost Comparisons*, 6 Nov 08

AFI 65-509, *Business Case Analysis*, 19 Sep 08

AFMAN 65-510, *Business Case Analysis Procedures*, 22 Sep 08

Clinger-Cohen Act of 1996 (40 USC 1401 et seq)

DoDI 7041.3, *Economic Analysis for Decisionmaking*, 7 Nov 95

DoDI 5000.02, *Operation of the Defense Acquisition System*, 8 Dec 08

DTM 09-007, *Estimating and Comparing the Full Costs of Civilian and Military Manpower and Contract Support*, 29 Jan 10

NIST Handbook 135, *Life-Cycle Costing Manual for the Federal Energy Management Program*, 1995 (supplemented annually)

NISTIR 85-3273-xx, *Energy Price Indices and Discount Factors for Life-Cycle Cost Analysis*, updated annually

OMB Circular A-76, *Performance of Commercial Activities*, 29 May 03

OMB Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, 29 Oct 92

Adopted Form

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AFCAIG—Air Force Cost Analysis Improvement Group

AFSARC—Air Force Systems Acquisition Review Council

AoA—Analysis of Alternatives

BCA—Business Case Analysis

CAPE—Cost Assessment & Program Evaluation

CBA—Cost Benefit Analysis

CIO—Chief Information Officer
CoE—Center of Expertise
DAB—Defense Acquisition Board
DAU—Defense Acquisition University
DOD—Department of Defense
DOE—Department of Energy
EA—Economic Analysis
ECIP—Energy Conservation Investment Program
FASCAP—Fast Payback Capital Investment
FB—Facilities Board
FM—Financial Management
FOA—Field Operating Agency
IT—Information Technology
LCC—Life Cycle Cost
MAIS—Major Automated Information System
MAJCOM—Major Command
MCP—Military Construction Program
MFH—Military Family Housing
MILCON—Military Construction
NAF—Non-Appropriated Funds
NSS—National Security System
OCR—Office of Collateral Responsibility
OMB—Office of Management and Budget
OPR—Office of Primary Responsibility
OSD—Office of Secretary of Defense
PE—Program Evaluation
PECI—Productivity Enhancing Capital Investment
PIF—Productivity Investment Fund
RCS—Report Control Symbol
ROI—Return on Investment
RPM—Real Property Maintenance
SPB—Simple Payback

SPO—System Program Office

SIR—Savings Investment Ratio

Terms

Alternative—An approach or program that is another possible way of fulfilling an objective, mission, or requirement. The status quo, or an upgrade to the status quo, is usually one alternative to a proposed course of action.

Benefits—Measures of an alternative's value to the United States. When a dollar value cannot be placed on comparable program or project benefits, subjective measures may be useful for comparing alternatives. Monetary benefits are receipts of the United States due, e.g., to sale of physical assets, or reductions in costs of other programs due to the action of the program under analysis.

Commercial or Industrial Activities—Activities conducted by Air Force military, civilian or contractor personnel that provide products or services obtainable from a commercial source.

Constant Dollar Value, Costs or Benefits—Value, cost, or benefits measured based on constant purchasing power of the dollar. That is, constant dollar analyses are done from the perspective of a constant general price level of a specific base year.

Cost—Benefit Analysis or Cost-Effectiveness Analysis—See Economic Analysis.

Current Dollar Value, Costs or Benefits—Value, cost, or benefit measures which include estimates of all expected future price changes. In current dollar analyses prices, costs, and other dollar-denominated measures are increased based both on anticipated year-to-year changes in the general price level and on anticipated changes in relative prices.

Discount Rate—The parameter used to translate future costs or benefits into present worth (see "Present Value" below). It is a measure of the time value of money.

Discounting—The process of using the discount rate to determine the present value of costs and benefits. (Elements of cost and benefit streams are multiplied by their corresponding discount factors to yield discounted costs and benefits.)

Economic Analysis—A systematic approach to the problem of choosing how to use scarce resources to meet a given objective. It reveals the present value of the monetary costs and benefits associated with all alternatives under consideration, and provides as accurate and complete a picture as possible of nonmonetary costs and benefits.

Economic Life—The period of time over which the benefits to be gained from a project may reasonably be expected to accrue to the DoD. It is the shortest of physical, technological or mission life.

Investment costs—Costs associated with the acquisition of equipment, real property, nonrecurring services, nonrecurring operations and maintenance (start-up) costs, and other one-time outlays.

Life-Cycle Cost—The total cost to the government for a system over its full life, including the cost of development, procurement, operation, support, and disposal.

Present Value—The net value of a flow of funds, expressed as a single sum of dollars; effectively, the sum of money equivalent to all current and future flows. Calculated by multiplying the net cost figure for each year by the corresponding discount factor, and summing the results.

Sensitivity Analysis—Examination of the effects obtained by changing the direction and magnitude of assumptions embodied in an analysis or key variables or factors in an analysis.

Terminal Value—The expected value of assets at the end of their economic life.

Attachment 2

**MATRIX OF RESPONSIBILITIES FOR MILITARY CONSTRUCTION PROGRAM
(MCP) AND MFH EAS**

NOTE: *For cost data.
(**) For engineering data.

TASK	<u>COMPTROLLER</u>	<u>ENGINEER</u>	<u>USER</u>
Identify Need			OPR
Determine if EA Required	OCR	OPR	
Initiate Economic Analysis		OPR	
Develop Alternatives	OCR	OPR	OCR
Identify Data Requirements	*OPR	**OPR	OCR
Data Gathering	*OPR	**OPR	OCR
Data Analysis	OPR		
Recommend/Select Alternative	OPR	OCR	OCR
Identify Changes in Scope		OPR	
Documentation	*OPR	**OPR	
Certification	OPR	OCR	OCR