

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

**AIR FORCE INSTRUCTION 65-508**

**6 DECEMBER 2018**

**Financial Management**

**COST ANALYSIS GUIDANCE AND  
PROCEDURES**



**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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OPR: SAF/FMCC

Certified by: SAF/FMC  
(Ms. Pamela Schwenke)

Supersedes: AFI65-508, 6 June 2012

Pages: 38

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This instruction implements Air Force Policy Directive (AFPD) 65-5. It is consistent with established guidance in AFI 63-101/20-101, *Integrated Life Cycle Management*, DoD Instruction (DoDI) 5000.02, *Operation of the Defense Acquisition System*, DoDI 5000.73, *Cost Analysis Guidance and Procedures*, DoDI 5000.75, *Operation of the Defense Acquisition System*, and with 10 United States Code (USC) §2334; 10 USC §2366a; 10 USC §2366b; 10 USC §2433; 10 USC §2433a; 10 USC §2441; and Public Law 111-23, *Weapon Systems Acquisition Reform Act (WSARA) of 2009*. This publication does not apply to Air Force Reserve Command, Air National Guard, and Civil Air Patrol units. It establishes timelines, documentation requirements and review procedures for all cost estimates, and provides specific instructions on performing cost analyses. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW AF Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW the AF Records Disposition Schedule in the AF Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility using the Form 847, *Recommendation for Change of Publication*; route Form 847s from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but all Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of

command to the appropriate Tier waiver approval authority, or alternately, to the requestors commander for non-tiered compliance items.

## ***SUMMARY OF CHANGES***

**This document is substantially changed and must be reviewed in its entirety.**

The changes to this AFI constitute several policy directive updates. Included are references annotating Business Acquisition Category and Defense Business Systems replacing Major Automated Information Systems and the publication of DoDIs 5000.02, 5000.73, and 5000.75. The Air Force Cost Analysis Improvement Group is changed to the Cost Review Board. New content was added throughout fulfilling required sustainment cost estimates.

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## Chapter 1

### OVERVIEW, ROLES, AND RESPONSIBILITIES

#### 1.1. Overview

1.1.1. Air Force cost estimates support a wide range of activities. They provide the cost, technical and programmatic analysis required to support key decisions within the requirements, planning, acquisition, programming, and budget processes as well as daily program management activities – affordability, design and budget trades, contract negotiations, contract performance measurement, program management reviews, requirements trades, etc. They are used to support multiple forms of comparative analysis and baseline reviews, including Analysis of Alternatives, Economic Analysis, make buy decisions, source selections, proposal evaluations, and design/cost tradeoff analyses.

1.1.2. These cost estimates also support key decision points for acquisition programs (e.g., Major Defense Acquisition Programs (MDAP), Major Automated Information Systems (MAIS), Defense Business Systems (DBS), Business Acquisition Category (BCAT) systems, rapid capability prototype/acquisition programs) to include acquisition milestone/event/decision reviews, Strategy, Planning, Programming, Budget and Execution (SPPBE) reviews, sustainment reviews, Air Force Corporate Structure decisions, Acquisition Program Baseline (APB) development, program unit cost breaches (commonly known as Nunn-McCurdy breaches) and critical change notifications.

1.1.3. This instruction focuses primarily on the types of cost estimates used in support of these decisions, and their associated cost estimating requirements and processes. Additional specific requirements and processes for developing cost estimates to support source selections, contract negotiation and contract performance measurement, Analysis of Alternatives, and other comparative studies can be found in other related instructions (i.e. AFI 63-138 and AFI 65-503).

#### 1.2. Roles

1.2.1. The Deputy Assistant Secretary for Cost and Economics (SAF/FMC) shall:

1.2.1.1. Develop and administer cost policy and guidance; standards and templates; training, education, and professional certification programs; analyst qualification criteria; cost estimating performance and budget risk metrics; participate in cost and technical data collection efforts; develop cost estimating methods and model development projects; maintain a historical cost database; and provide support to other Headquarters Air Force (HAF) functional organizations.

1.2.1.2. Conduct and approve Non-Advocate Cost Assessments (NACAs), develop Independent Cost Estimates, review program cost estimates, and approve waivers for Program Office Estimates (POEs) and NACA requirements (unless required by statute) with the coordination of Assistant Secretary of the Air Force for Acquisition, Technology & Logistics (SAF/AQ); Deputy Under Secretary of the Air Force, Management (SAF/MG), or their delegated Program Executive Officer (PEO).

1.2.1.3. Review and comment on technical propriety and sufficiency of any cost, analysis (whether developed by the MAJCOM, acquiring organization or HAF organization) when

the analysis will be presented to the Secretary of the Air Force (SECAF), the Under Secretary of the Air Force, the Chief of Staff of the Air Force (CSAF), or the Vice Chief of Staff of the Air Force, Office of the Secretary of Defense (OSD), Office of Management and Budget, or Congress.

1.2.1.4. The Air Force Cost Analysis Agency (AFCAA) is a Field Operating Agency under the direction and operating guidance of the Deputy Assistant Secretary for Cost and Economics (SAF/FMC) as outlined in HAF Mission Directive (MD) 1-12, paragraph A2.4.2.1. AFCAA is responsible for developing and validating life-cycle cost estimates and analyses as well as enhancing state-of-the-art Air Force cost analysis capabilities. AFCAA develops independent cost estimates (as required by Public Law), non-advocate cost assessments (as required by Department of Defense and Air Force policies and regulations), and other cost, economic, and business case analysis on major space, aircraft, weapons, electronics, and information systems.

1.2.2. SAF/AQ shall:

1.2.2.1. Coordinate on the completion of cost estimates in support of acquisition programs to include acquisition milestone/event/decision reviews, SPPBE reviews, sustainment reviews, Air Force Corporate Structure decisions, APB development, cost breaches, and critical change notifications.

1.2.2.2. Coordinate on: the selection of cost estimates to be completed each year by SAF/FMC; the completion of full funding certifications, and the approval of annual cost estimate waivers.

1.2.2.3. Notify SAF/FMC of any MDAP Issue Team documentation requests.

1.2.2.4. Participate in the Cost Review Board (CRB) process.

1.2.3. PEOs are responsible for preparing and maintaining program cost estimates in accordance with AFI 65-508. Under their hierarchy are Program Offices that support a portfolio of acquisition programs managed by Program Managers (PMs). Each PEO may also have an Acquisition Center Cost Staff that is delegated the responsibility of preparing and maintaining program cost estimates **(T-1)**.

1.2.4. MAJCOMs, field operating agencies and direct reporting units will:

1.2.4.1. Establish and maintain cost, economic, and financial management expertise to support the resource allocation process; certify EAs within their command; support training, education, professional development and certification programs; and develop knowledge management tools. **(T-1)**.

1.2.4.2. Prepare NACAs when delegated by SAF/FMC. **(T-1)**.

**1.3. Responsibilities.** The Assistant Secretary of the Air Force for Financial Management (SAF/FM) is responsible for Air Force cost analysis and EAs and will work collaboratively with other headquarters organizations (SAF/AQ, SAF/MG, etc.) to ensure that decision makers receive realistic, reliable, and complete analyses.

## Chapter 2

### 2. AIR FORCE COST ESTIMATES

#### 2.1. Cost Estimate Types and Expectations

2.1.1. The Air Force primarily develops four types of cost estimates: POEs, NACAs, Service Cost Positions (SCPs) and Independent Cost Estimates (ICEs). Cost estimates are vital to providing leadership with critical information for program decisions, establishing executable budgets, and proactively addressing financial issues.

2.1.2. At least one of these types of cost estimates must be accomplished for: all Milestone /Authority-to-Proceed (ATP) decisions, the SPPBE process, contracting process/decisions, APB updates, rapid acquisition efforts, and program breach and/or program restructure decisions.

##### 2.1.2.1. POEs [or Single Best Estimates (SBEs)].

2.1.2.1.1. POEs (SBEs) are either developed by the Program Office or are the result of a collaborative effort between the Program Office and the Acquisition Center Cost Staff. The Acquisition Center Cost Staff Chief (or delegated representative) must approve all annual ACAT I, II and III POEs. **(T-1)**.

2.1.2.1.2. POEs (SBEs) will be updated annually for all Active Acquisition Master List ACAT I, II and III programs by the Program Office **(T-0)**. Thresholds for ACATs are defined in Department of Defense Instruction (DoDI) 5000.02 Operation of the Defense Acquisition System.

##### 2.1.2.2. Non Advocate Cost Assessments (NACAs).

2.1.2.2.1. NACAs are completed by the Air Force Cost Analysis Agency, as the Air Force independent cost organization, and include analysis of program cost/price, schedule, and technical risk.

2.1.2.2.2. NACAs are primarily designed to support the requirements, programming, planning, and budget processes, acquisition milestone/event decisions/reviews, and Sustainment/Post-Initial Operating Capability (IOC) reviews. NACAs can range from a simple sufficiency review of an existing estimate to a complete ICE. SAF/FM, in coordination with SAF/AQ, is responsible for approving the selection of ACAT II/III programs that require a NACA. The selection of these programs is often informed by feedback and/or requests from AF panels, Program Offices, or other interested parties.

2.1.2.2.3. AFCAA will update NACAs annually for all ACAT I programs and select ACAT II/III programs **(T-0)**. NACAs serve as the component cost estimate as required in the DoDI 5000.02.

2.1.2.2.4. The AFCAA Division Chief is responsible for submitting approved NACAs at a minimum to SAF/FMC, the program's PM and PEO, MAJCOM functional Point of Contact, SAF/AQ Program Element Monitor (PEM), and the Panel Chair.

##### 2.1.2.3. Service Cost Position (SCP).

- 2.1.2.3.1. The SCP represents the Air Force's official cost estimate, and satisfies the requirement for a component cost position per DoDI 5000.02. For ACAT I and select ACAT II/III programs, the Deputy Assistant Secretary of the Air Force for Cost and Economics (SAF/FMC) will approve SCPs and provide the SCPs to the Service Acquisition Executive (SAE) and/or other program decision authorities as required (e.g., Milestone Decision Authority (MDA), PEOs, SECAF/CSAF, SECDEF). **(T-0)**.
- 2.1.2.3.2. A signed SCP and full funding certification must be provided to the Office of the Secretary of Defense Cost Assessment and Program Evaluation (CAPE) in accordance with DoDI 5000.73. The SCP is signed by SAF/FMC. The full-funding certification memorandum is signed by both SAF/FM and SAF/AQ, and in coordination with AF/A8. **(T-0)**.
- 2.1.2.3.3. Typically, the SCP is developed through the CRB process, as described in **Chapter 3**. This process is designed to be collaborative, combining inputs from all stakeholder cost organizations and a broad range of functional inputs. The SCP may also be developed through a tailored process at the discretion of SAF/FMC; this tailored process is described in **Chapter 4**.
- 2.1.2.3.4. Joint programs typically develop Joint Cost Positions for milestone decisions using the processes employed by the lead service.
- 2.1.2.3.4.1. Joint programs where the Air Force is the lead DoD Component will follow Air Force cost policy and processes for all elements of the program (**Chapter 3**). **(T-0)**. In these cases, Air Force cost organizations will provide cost estimates for all common Program Elements and Air Force unique elements. Other services/components' unique elements are typically estimated by their respective cost organizations and reviewed through the Air Force cost processes.
- 2.1.2.3.4.2. Joint programs where the Air Force is not the lead service follow the cost processes of the lead service for all common elements of the program. Air Force unique elements require cost estimates and cost reviews per Air Force policy and processes (see **Chapter 3**). **(T-0)**.
- 2.1.2.4. Independent Cost Estimates (ICEs).
- 2.1.2.4.1. OSD CAPE has the responsibility to develop the ICE required by statute for MDAPs. For ACAT IC/IB programs, OSD CAPE may elect to delegate responsibility for statutorily required ICEs to the respective service cost centers. Across the Air Force, AFCAA is the responsible authority for delegated ICEs. **(T-0)**.
- 2.1.2.4.2. Independence for cost estimates is represented by an estimate generated by a cost organization outside the acquisition chain of command. AFCAA will be the only cost organization in the Air Force that can provide official Air Force ICEs. **(T-1)**. AFCAA may be requested to provide ICEs at the direction of the Under Secretary of Defense for Acquisition, Technology and Logistics, OSD CAPE, SAF/AQ, or SAF/FM.
- 2.1.2.4.3. The following statutes provide direction regarding when ICEs are required.
- 2.1.2.4.3.1. 10 USC §2334 requires an ICE to be accomplished before a milestone decision authority may approve entry into a new acquisition phase (i.e., technology

maturation and risk reduction, engineering and manufacturing development, and production and deployment phases).

2.1.2.4.3.2. Per 10 USC §2334, OSD CAPE must accomplish MDAP ICEs for all programs in advance of (1) 10 USC §2366a and §2366b required certifications (MDAP Milestone A and Milestone B decision points); (2) Low Rate Initial Production and Full Rate Production decisions; (3) upon request of Under Secretary of Defense for Acquisition, Technology, and Logistics or the MDA per 10 USC §2334; and (4) other certifications and reports required under 10 USC §2433a (i.e., MDAP unit cost breaches, also known as Nunn-McCurdy breaches). **(T-0)**.

2.1.2.4.3.3. 10 USC §2441 requires an ICE for the sustainment review of each major weapon system not later than five years after declaration of initial operational capability of a major defense acquisition program and throughout the life cycle of the weapon system to assess the product support strategy, performance, and operation and support costs of the weapon system.

## **2.2. Life Cycle Cost Estimate (LCCE) Requirements.**

2.2.1. All LCCEs shall encompass total program life cycle costs. Total program life cycle costs include sunk costs incurred from program initiation through disposal, and all costs associated with a decision to proceed with the program. LCCEs must be accurate, comprehensive, and address all relevant programmatic, technical, and financial issues. Insight into cost drivers and their effect on life cycle costs should be provided, and estimates should be structured to be responsive to program changes and associated requirements for cost estimate excursions. LCCEs should be fully documented (as described in [Chapter 6](#)) to the level that a qualified cost estimator could recreate the estimate using only the written documentation.

2.2.2. Life Cycle Cost Estimates must include:

2.2.2.1. All Program Acquisition and Operations and Support (O&S) costs including: costs funded by all applicable appropriations including Research Development Test and Evaluation, Procurement, Military Construction (MILCON), Operations and Maintenance (O&M), and Military Personnel, regardless of funding source or management control (ref. 10 USC §2334). **(T-0)**.

2.2.2.1.1. Include all sustainment and disposal costs.

2.2.2.1.2. Include all applicable Restoration and Modernization costs associated with facility and infrastructure sustainment, MILCON and O&M appropriation funds.

2.2.2.1.3. Include all contractor and government costs.

2.2.2.2. Resources associated with all of the applicable Work Breakdown Structure (WBS) elements (reference MIL-STD 881D for the typical WBS elements). **(T-0)**.

2.2.2.3. All indirect elements, particularly those associated with sustainment, or O&S costs, in order to ensure the capture of all relevant total ownership costs. Indirect costs associated with sustainment must meet requirements outlined in the OSD CAIG Operating and Support Cost-Estimating Guide. **(T-0)**.

2.2.2.4. Costs displayed by acquisition program phase, consistent with those defined in DoDI 5000.02. **(T-0)**.

2.2.2.5. A comprehensive risk/uncertainty analysis. All acquisition program (e.g., acquisition category I/II/III, business category, and rapid capability) cost estimates shall ensure that cost estimates are developed, to the extent practicable, based on historical actual cost information that is based on demonstrated contractor and Government performance and that such estimates provide a high degree of confidence that the program or subprogram can be completed without the need for significant adjustment to program budgets. The estimates must consider cost, technical, and schedule risks, opportunities, and uncertainties in the analysis. Based on the risk/uncertainty analysis, the final recommended cost estimate position (single point estimate presented to decision makers for decisions/reviews such as budget, Program Objective Memorandums (POMs), APBs, Selective Acquisition Reports, etc.) should be established at the mean of the program cost estimate distribution (typically 55-65% confidence level), or in circumstances where a distribution cannot be computed, the average, or expected value of the cost estimate. For more information on best practice cost risk and uncertainty analysis guidance, reference the March 2014 Joint Agency Cost Schedule Risk and Uncertainty Handbook. **(T-0)**.

2.2.2.6. An analysis to support decision making that identifies and evaluates alternative courses of action that may reduce cost and risk (i.e., optimal production quantities, testing iterations, or staffing). This requirement is not a separate project or study from the cost estimate. Sources for the alternative courses of action to be evaluated should be identified and developed during the natural course of a cost estimate. The cost estimate should document if, during the development of the cost estimate, no alternatives were identified. **(T-0)**.

2.2.2.7. A schedule analysis should be incorporated with the cost estimate to include an assessment of risk, opportunities and uncertainty associated with schedule variability. A cost and schedule assessment will help determine the impact of schedule delays on project cost estimates and program phasing. **(T-0)**.

2.2.2.8. All cost estimates must be led by a properly qualified member of the Armed Forces or full time DoD employee. **(T-0)**.

2.2.2.9. For ACAT I Programs - A properly qualified lead cost estimator is defined as a professional cost estimator that is Defense Acquisition University Level III certified in the field of Business-Cost Estimating. The lead cost estimator on MDAP and DBS programs should be Key Leadership Position (KLP) coded if deemed necessary. AFI 63-101/20-101 and AFI 36-1301 provide Air Force guidance on KLP definitions.

2.2.2.10. For ACAT II Programs – It is highly encouraged to assign a lead cost estimator that is at a minimum Defense Acquisition University Level II certified in the field of Business-Cost Estimating.

2.2.3. Annual Estimates & Waiver Requests: Cost estimates for all acquisition programs (MDAP, ACAT II/III, MAIS, and DBS) shall be updated annually **(T-1)**. SAF/FM, with the concurrence of SAF/AQ (or their delegated PEO), is responsible for approving annual cost estimate waivers for ACAT I and select DBS POEs and NACAs. The Acquisition Center Cost Staff Chief (or delegated representative) is responsible for approving ACAT II/III and all other

DBS POE waivers. The PM is responsible for requesting POE waivers and the AFCAA Division Chief is responsible for requesting NACA waivers.

2.2.3.1. Waiver requests for both a POE and a NACA cannot be submitted for the same year.

2.2.3.2. POE waiver requests for ACAT I and selected DBS programs and all NACA waiver requests should be submitted to SAF/FMC for final approval, after SAF/AQ (or delegated PEO) concurrence.

2.2.3.3. POE waiver requests for ACAT II/III and other DBS programs should be submitted to the Acquisition Center Cost Staff Chief for final approval, with notification sent to SAF/FMC and the MAJCOM FMC.

2.2.3.4. Waiver requests must be submitted by 30 January of the calendar year the estimate is due. Waiver requests provided after 30 January will be considered for circumstances that could not have been anticipated at the beginning of the calendar year **(T-1)**. **Attachment 2** includes a waiver request template.

#### 2.2.4. Milestone Estimates.

##### 2.2.4.1. Estimates in Support of Milestones.

2.2.4.1.1. The Air Force will develop POEs, NACAs, and/or SCPs for all ACAT I and selected ACAT II/III Milestone reviews and DBS acquisition event reviews.

2.2.4.1.2. When delegated by OSD, AFCAA must develop an ICE for ACAT IC and IB programs at all acquisition phase decisions (as required by 10 USC §2334) **(T-0)**. **Chapter 3** covers the CRB process associated with the preparation of Air Force estimates supporting ACAT I program milestone decisions.

2.2.4.1.3. Per DoDI 5000.02, Cost and Software Data Reports (CSDR) are required for ACAT I program contracts. CSDR plans must be reviewed and approved by SAF/FMC prior to OSD CAPE approval. CRB briefings performed in support of milestone decisions must include the status of CSDR plan development, as well as the status of programs with CSDRs already on contract. **(T-0)**.

##### 2.2.4.2. SPPBE Process and Supporting Cost Estimates.

2.2.4.2.1. The requirement for annual cost estimates ensures timely, relevant, and reliable cost estimates are available to support the Air Force Corporate Structure POM build. All estimates created to support the AF POM build must be documented and provided to AFCAA, SAF/FMC, SAF/AQ PEMs, and AF/A8 for review prior to inclusion in the applicable budget cycle. AFCAA is then responsible for working with OSD CAPE to populate their database of documented cost estimates. **(T-1)**

2.2.4.2.2. SAF/FMC will work within the corporate process to ensure all funding disconnects, revealed by comparing the approved estimate to the budget, are illustrated through a portfolio cost risk assessment provided to the Air Force Corporate Structure: Panels, Group, Board, and Council.

2.2.4.2.3. MDAP Issue Team Process: In order to comply with Public Law 111-23 (WSARA), the Under Secretary of Defense for Acquisition and Sustainment; OSD Director, Acquisition Resources and Analysis; Under Secretary of Defense,

Comptroller; and OSD CAPE instituted the MDAP issue team process. This process entails reviewing 10 USC §2366a and §2366b certification status of MDAPs during the Program Budget Review process.

2.2.4.2.3.1. MDAP issue team reviews focus on the following: 1) verifying MDAPs are fully funded to a realistic cost estimate, 2) cost estimates are documented and consistent with current program definition, per service POMs, and 3) programs are not in imminent danger of a program breach and/or program change decision. In cases where the OSD stakeholders cannot verify that a program is fully funded to a realistic cost estimate, the program risks de-certification of 2366 status, and revocation of milestone approval (with possible loss of authority to obligate and expend funding).

2.2.4.2.3.2. MDAP issue team reviews are typically conducted every year at three points in the SPPBE cycle: 1) when the service POM is sent to OSD, 2) after the Resource Management Decisions are issued, and 3) immediately before delivering the President's Budget to Congress.

2.2.4.2.3.3. The MDAP issue team process expects the service cost directors, upon request, to provide documentation on all MDAP cost estimates used to support development of the POM and that SAF/AQ PEMs provide explicit information on Acquisition Decision Memorandum direction, funding profile, the most current cost estimate, and current certification status.

2.2.4.2.4. Development Planning Estimates prepared for Development Planning programs, where requirements are still undefined, will be reviewed by the Acquisition Center Cost Staff per existing Center processes. The Development Planning Estimates are provided to support concept planning and requirements development. The Development Planning Estimates may not reflect the cost of a program once requirements and acquisition strategy are approved. AFCAA, upon request or at the direction of SAF/FM, will support development planning estimates by preparing, advising, or reviewing estimates going for decision or coordination through the headquarters requirements, programming, planning, Air Force Corporate Structure, or other SAF/HAF two-letters.

#### 2.2.4.3. MDAP Program Breach (significant and critical) Estimates.

2.2.4.3.1. When a cost estimate indicates a MDAP unit cost breach as defined in 10 USC §2433, or an MDAP post Milestone A breach (per Public Law 111-23 modifications to 10 USC §2433a), the PM must consider all current cost estimates and report the findings to the SAE. The SAE will then report these findings to the Secretary of the Air Force (SECAF) who will make the final breach or program change determination. **(T-0)**.

2.2.4.3.2. The SAF/FMC SCP should be used for breach reporting whenever possible. All MDAPs undergoing a critical breach [10 USC §2433 and Public Law 111-23 (WSARA)] certification to Congress require OSD CAPE concurrence on the Program Acquisition Unit Cost (PAUC) and Acquisition Procurement Unit Cost (APUC) estimates. In most cases, OSD CAPE will request a SAF/FMC SCP, documented through a SAF/FMC signed memorandum, to support their evaluation and

recommendation to the Secretary of Defense (SECDEF). At a minimum, if a SCP is unavailable, the PM should expect OSD to request a SAF/FMC assessment of the basis of estimate for the re-baselined PAUC and APUC estimates as part of its reasonableness determination. The SCP (or ICE) shall be used as the basis for all ACAT I APBs and any update to the estimate by an updated APB.

2.2.4.3.3. Program Offices, the Acquisition Center Cost Staff organizations, and AFCAA will normally have a role in fulfilling program analysis and root cause analysis requirements outlined in Public Law 111-23 (WSARA) Section 103.

#### 2.2.4.4. Sustainment Review and O&S Estimates, Post IOC.

2.2.4.4.1. In support of post IOC sustainment requirements identified in 10 USC §2441, AFCAA will produce an ICE to forecast the remainder of the life cycle of the program. With the support of AFCAA and Program Offices, Center Cost Staff will: 1) develop a comparison of actual costs to the approved funding profile; 2) evaluate the cost of consumables and depot-level repairables; 3) evaluate the cost of information technology, networks, computer hardware; and 4) compare manpower requirements to previous estimates. **(T-0)**.

2.2.4.4.2. AFCAA will complete an analysis of whether accurate and complete data are being reported in the Air Force Total Ownership Cost systems. **(T-1)**.

2.2.4.4.3. The post-IOC/Sustainment Review estimate may follow a tailored CRB process as determined by SAF/FMC. SAF/FMC will summarize and document the ICE and relevant cost analysis findings in a memorandum provided to the Sustainment review chair.

2.2.4.4.4. Program Offices, product/logistic center cost organizations, and AFCAA will have a role in fulfilling analysis requirements for the sustainment reviews outlined in 10 USC §2441.

## Chapter 3

### AIR FORCE COST REVIEW BOARD (CRB)

#### 3.1. Purpose

3.1.1. This chapter provides guidance on the CRB process used in Defense Acquisition Executive, SAE, and other milestone reviews, to include guidance for developing the SCP and obtaining CRB approval.

3.1.2. All ACAT I programs engaged in a milestone decision must follow the CRB process (**T-1**). In addition, programs requiring a SCP to support SPPBE or other key decision points should also follow the CRB process.

3.1.3. ACAT II, III, and non-ACAT programs may follow the CRB process at the discretion of the SAE (typically SAF/AQ, or delegated to the PEO) or SAF/FM.

3.1.4. Additionally, Air Force Acquisition Centers are highly encouraged to implement a modified version of this process, with Center Cost Staff assuming AFCAA responsibilities.

#### 3.2. CRB Background

3.2.1. The CRB process was developed to meet the requirements of DoD 5000 regulations and 10 USC §2334. The purpose of the CRB is to review and advise SAF/FMC on the SCP. SAF/FMC approves the SCP via a signed memorandum provided to the SAE.

3.2.2. The CRB is chaired by SAF/FMC. CRB membership includes key stakeholders from various Air Force Secretariat and Headquarters United States Air Force functional offices (see [Table 3.5](#)).

#### 3.3. CRB Process

3.3.1. The CRB process consists of three phases: 1) Cost Integrated Product Team (CIPT) kick-off ([Attachment 4](#)); 2) SCP development via the Cost Working Group (CWG); and 3) a SCP approval via the CRB meeting, the SAF/FMC signed memorandum, and documentation/out-briefs. [Figure 3.1](#) and [Figure 3.2](#) are a visual depiction of the CRB process.

Figure 3.1. ACAT ID & ACAT IAM

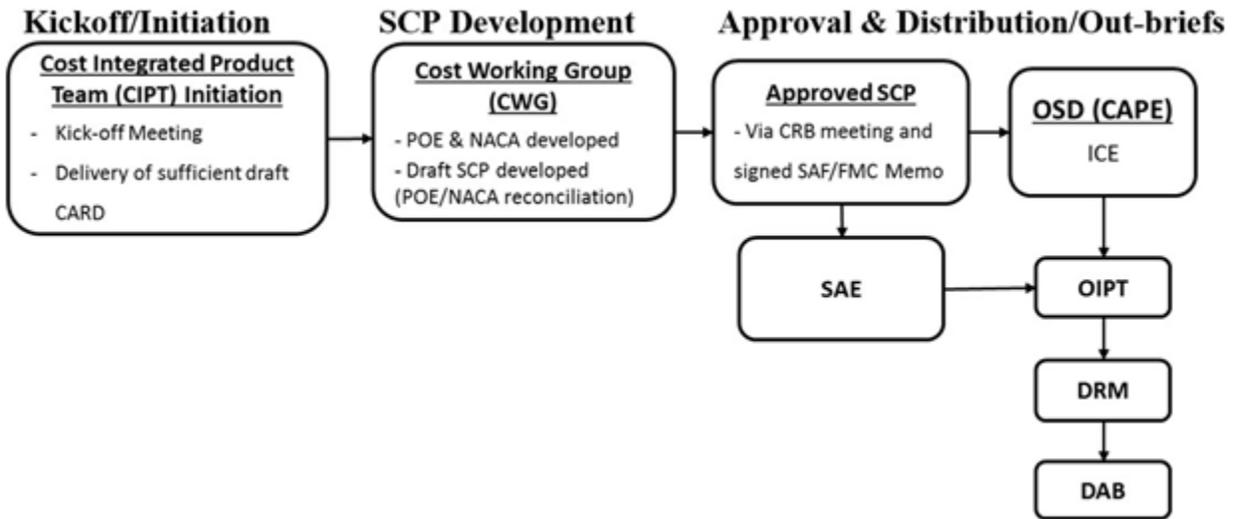
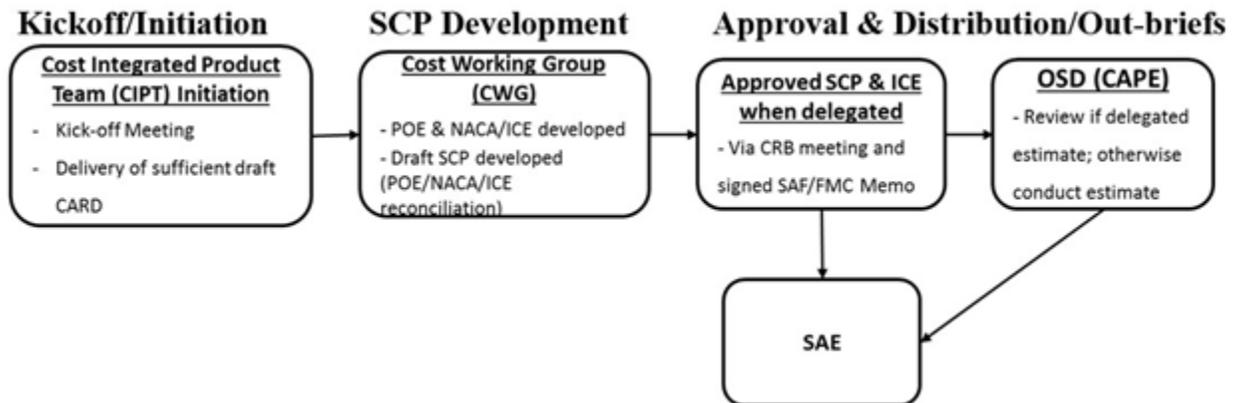


Figure 3.2. ACAT IB/C, ACAT IAC, and DBS



3.3.2. For ACAT IC/IB programs, an ICE must be developed independently by AFCAA when delegated by OSD CAPE. While Program Office personnel do not directly participate in producing the ICE, collaborative interaction between the Program Office and ICE teams is required to maximize the exchange of accurate information. (T-0).

3.3.3. CIPT Kickoff Phase: An AFCAA representative (typically the division chief or AFCAA Technical Director) serves as the CIPT lead, unless delegated by SAF/FMC. The CIPT membership typically includes senior leaders from the organizations listed in [Table 3.1](#).

**Table 3.1. Cost Working Group (CWG) / CIPT Membership List**

Cost Working Group (CWG) Membership		CIPT Membership	
ACAT ID/IC/IB	ACAT IA (MAIS/BCAT)	ACAT ID/IC/IB	ACAT IA (MAIS/BCAT)
FMC/AFCAA	FMC/AFCAA	FMC/AFCAA	FMC/AFCAA
Program Office	Program Office	Program Office	Program Office
Center Cost Staff	Center Cost Staff	Center Cost Staff	Center Cost Staff
OSD CAPE	SAF/FMCE	SAF/AQ (i.e., PEM)	SAF/AQ (i.e., PEM)
	OSD CAPE	PEO	PEO
		OSD CAPE	OSD CAPE
			DoD CIO
			SAF/FMCE

3.3.3.1. This phase establishes the plan to produce a reliable SCP in support of the milestone or other acquisition decision. Decision forums include, but are not limited to, the CRB, the Overarching Integrated Product Team (OIPT), the Component Acquisition Executive, or other service/defense acquisition executive reviews.

3.3.3.2. The CIPT conducts a discussion/meeting as early as feasible, at least 30 – 60 calendar days prior to the draft Cost Analysis Requirements Description (CARD) due date to set up the kickoff meeting date, briefing content, and other preliminary planning. The CARD provides a description of the salient features of the acquisition program. **Chapter 5** provides a more in depth description of the CARD.

3.3.3.3. The CIPT kickoff meeting should be held NLT 180 calendar days prior to the OIPT or relevant decision meeting. A draft kick-off meeting agenda can be found in **Attachment 4**.

3.3.3.3.1. By the kickoff, the CIPT should have determined the effort required to support the CRB review process, developed a preliminary cost estimating schedule, and collected available program information (i.e., current CARD, preliminary POE, program schedule, identification of high cost and high risk areas, technical and programmatic information, etc.). Program Office and other technical subject matter experts support is required to help identify high cost and high risk areas, and key technical and schedule assumptions.

3.3.3.3.2. **Tables 3.2 and 3.3** provide notional CRB timelines for ACAT I programs, consistent with DoDI 5000.73. These timelines facilitate a successful CRB review process through early identification and analysis of available data, and ensure that an acceptable CARD is prepared in a timely manner. A more detailed timeline for use in the kickoff cost estimating schedule approval is provided on the SAF/FMCC SharePoint sites along with other applicable CRB document templates.

Table 3.2. Document Timeline for ACAT ID &amp; IAM Programs (Calendar Days)

Phase	Event	Timing
Notification/Planning	Notification of Need & Initial Planning	210 – 240 days before OIPT
SCP Development	Kickoff Meeting & Draft CARD Delivered	NLT 180 days before OIPT
	AFCAA & CAPE CARD sufficiency assessment to SPO/PEO	NLT 135 days before OIPT
	Final CARD Delivered and initial POE/NACA/ICE cost estimate discussion/reconciling begins	NLT 45 days before OIPT
	POE / NACA / ICE CWG Discussions/Reconciliations Complete	NLT 28 days before OIPT
Briefing	Cost Review Board (CRB) Meeting	21 days before OIPT
	SAE/CAPE Out-briefs	10-21 days before OIPT
	SAF/FMC signed SCP memorandums/reports along with AQ/FM signed full-funding memorandums to OSD	NLT 10 days before OIPT
	OSD CAPE ICE Brief/Report	Typically 10 days before to 7 days after OIPT
	OIPT Review	Day 0
	Defense Acquisition Board Review	10-14 days post OIPT

**Table 3.3. Document Timeline for ACAT IC, IB, IAC, & DBS Programs (Calendar Days)**

Phase	Event	Timing
Notification/Planning	Notification of Need & Initial Planning	210 – 240 days before CRB
SCP Development	Kickoff Meeting & Draft CARD Delivered	NLT 180 days before CRB
	AFCAA & CAPE CARD sufficiency assessment to SPO/PEO	NLT 135 days before CRB
	Initial POE/NACA/ICE <sup>7</sup> cost estimate discussion/reconciling begins	NLT 30 days before CRB
	Final CARD Delivered	NLT 21 days before CRB
	POE / NACA / ICE <sup>7</sup> CWG Discussions/Reconciliations Complete	NLT 14 days before CRB
Briefing	Cost Review Board (CRB) Meeting	Day 0
	SAE/CAPE Out-briefs	0-7 days post CRB
	SAF/FMC signed SCP memorandums/reports along with AQ/FM signed full-funding memorandums to OSD	0-7 days post CRB

3.3.3.3.3. If the program updates their POE and NACA annually, these schedules may be able to be condensed based on previous estimate availability. This can be assessed at the kickoff meeting based on the briefings provided on the current POE and NACA basis of estimates and status updates.

3.3.3.4. At the CIPT kickoff meeting, the CWG is formed. The CWG is a subset of the CIPT and comprised of cost estimators from the organizations listed in [Table 3.4](#)

**Table 3.4. Cost Working Group (CWG) Membership**

ACAT ID	ACAT IC/IB & IAC	ACAT IAM & BCAT I
FMC/AFCAA	FMC/AFCAA	FMC/AFCAA
PEO	PEO	PEO
Program Office	Program Office	Program Office
Center Cost Staff	Center Cost Staff	Center Cost Staff
OSD CAPE		OSD CAPE
		SAF/FMCE

3.3.3.5. A SCP is developed collaboratively by the Program Office and AFCAA. Collaboration can take many forms, from separate NACA/ICE and Program Office teams to a combined AFCAA and Program Office estimating team. Typically, a more balanced approach is taken where AFCAA performs a tailored NACA focused on the high cost and high risk areas. The CIPT kick-off meeting should discuss plans and expectations for CWG collaboration, with the understanding that the degree of collaboration could change as the cost estimate process matures. For cases where AFCAA is performing an ICE required by statute, no Program Office personnel or center cost estimators may participate directly on

the ICE team. The ICE is a full LCCE, complies with all statute requirements, and the schedule must reflect the requirement to provide the ICE to OSD CAPE for assessment.

#### 3.3.4. CWG SCP Development Phase.

3.3.4.1. The CWG begins the cost estimate after the CIPT kick-off meeting. Typically, the CWG has two main components: the Program Office estimating team and the AFCAA estimating team. When practical, the OSD CAPE analyst should be invited to participate in CWG meetings.

3.3.4.2. The CWG SCP development phase starts no later than when the draft CARD is delivered (NLT 180 calendar days prior to the OIPT/CRB). At this time, outstanding CWG issues and concerns should be discussed (estimating plan and schedule, cost and technical requirements, subject matter expert support, independent schedule assessments, etc.). When possible, the Program Office should provide a program overview and status review, and POE briefings that include the program/system description, requirements list, proposed schedules, baseline program/technical overview, acquisition strategy, buy quantities, and a comparison between the current POE and approved program budget, by appropriation.

3.3.4.3. Elements of both the POE and NACA/ICE should be shared with the CWG as they are finished. The CWG should have regular estimating methods reconciliation meetings. The CWG then decides what methods are most applicable for the draft, SCP. The premise behind reconciliations is not compromise; it is a consensus-building exercise between professional counterparts.

3.3.4.4. The POE and NACA/ICE teams must ensure that technical, schedule, cost data, and cost data and models (where possible) are shared, issues are resolved in a timely manner, and differences between the cost estimates are fully understood by all parties (**T-1**). As needed, additional CWG and CIPT meetings are held to collect information, identify and resolve issues, modify schedules, and make incremental decisions about the SCP. The CIPT leads prepare meeting agendas, minutes, and interfaces with other Air Force, OSD and other services offices. As issues are raised, every effort should be made to resolve them at the CWG or CIPT level. Issues not resolved at the CWG or CIPT level are communicated by the CIPT lead to the CRB Chair for resolution. This can be done at any time during the SCP Development Phase.

#### 3.3.5. SCP Briefing and Documentation Phase.

3.3.5.1. The AF targets the CRB meeting to be held 21-45 calendar days prior to the acquisition decision meeting (refer to **Table 3.2** and **Table 3.3** above). In either case upon completion of the CRB meeting, AFCAA will brief the approved SCP to the SAE (e.g., at the Air Force Review Board (AFRB) or other designated Air Force decision meeting) (**T-1**). Therefore, even in the case of an OSD decision authority, the timeline needs to ensure the CRB is held in time to allow for presentation of the SCP at the Air Force decision meeting (e.g., AFRB).

3.3.5.2. During the CRB meeting, the PM or his designee will brief a program overview. If a single estimate has been developed via consensus, the CIPT lead will brief this estimate as the draft SCP. Where both a POE and a NACA have been accomplished and consensus is lacking for the draft SCP, the CIPT lead briefs the CRB on the draft SCP recommendation but the POE and NACA methods and estimates are briefed in detail to

reconcile and decide on outstanding issues for SCP finalization (**T-1**). The briefing should also include highlights of risks/opportunities highlighted by the reconciliation process and open discussion on any unresolved issues or special interest items. After the CRB meeting and successful resolution of issues, SAF/FMC approves an SCP. The SCP is then presented to the SAE (SAF/AQ) for approval through an AFCAA brief to the CRB and/or a SAF/FMC signed memorandum to the SAE.

3.3.5.3. Upon completion of the CRB meeting, and in accordance with the timeline in **Table 3.2** and **Table 3.3**, the CRB chair (SAF/FMC) must sign a memorandum documenting the SCP. This memorandum should be provided to SAF/AQ, SAF/FM, and the OSD CAPE. Typically, the memorandum will include a referenced or attached CRB report providing more detailed information on the cost estimate, including key assumptions, methods, phasing, and cost risks/uncertainty analysis. The detailed CRB report is mandatory for ACAT IC and ID programs requiring OSD CAPE concurrence for 10 USC §2366a and §2366b certification at Milestones A and B. (**T-0**).

3.3.5.4. Currently, OSD requires a full-funding memorandum signed by SAF/FM (as the Chief Financial Officer) and SAF/AQ (as the Acquisition Executive), coordinated through AF/A8, certifying the Future Years Defense Plan fully funds the program consistent with a SAF/FMC signed recommended SCP. Both the SCP and full-funding memorandums are required for all MDAPs seeking approval to enter a new Milestone. Both must be submitted to OSD CAPE per the timeline required in DoDI 5000.73. (**T-0**).

3.3.5.5. After completing the CRB briefing cycle to include providing the SCP memorandum to the SAE and as requested/required briefing the SAE, the SCP is formally presented to the appropriate OSD organization. Ideally, prior to this formal presentation of the SCP, multiple meetings at the CWG level have taken place where information on the final SCP and the OSD CAPE estimates have been fully shared. Presentation of the SCP should occur according to the timelines in **Table 3.2** and **Table 3.3**. This presentation should include a Program Office provided program overview and a CIPT led presentation of the recommended SCP. Preferably, OSD CAPE attended the CRB and this becomes a follow-up meeting to deep dive methodologies and answer any outstanding questions.

3.3.5.6. The CWG will provide the final, signed SCP in accordance with DoD 5000.73 and **Chapter 6** not later than 10 calendar days prior to the OIPT (or Air Force decision meeting, e.g., AFRB). (**T-1**).

3.3.5.7. AFCAA will keep a repository with templates for use in preparing CIPT kickoff meetings, CRB and OSD CAPE briefing charts, SCP memorandums, CRB reports, and full funding memorandums. (**T-1**).

3.3.6. CRB Membership – The CRB includes members from the following organizations:

**Table 3.5. Cost Review Board (CRB) Membership**

<b>ACAT ID</b>	<b>ACAT IC/IB &amp; IAC</b>	<b>ACAT IAM &amp; BCAT I</b>
FMC/AFCAA	FMC/AFCAA	FMC/AFCAA
PEO	PEO	PEO
Program Office	Program Office	Program Office
Center Cost Staff	Center Cost Staff	Center Cost Staff
OSD CAPE		OSD CAPE
		SAF/FMCE

## Chapter 4

### TAILORING THE SERVICE COST POSITION (SCP) CRB PROCESS

#### 4.1. Purpose

4.1.1. This chapter provides further guidance on the development of a SCP outside the normal CRB process. The CRB process, described in [Chapter 3](#), is the primary process for developing the recommended SCP. This process is mandatory when preparing an SCP in support of an ACAT I milestone or major DBS (e.g., BCAT I) major acquisition event review.

4.1.2. At SAF/FMC discretion, SCPs may also be developed in support of other decisions outside the milestone decision environment (e.g., in support of APB update). An SCP required outside the milestone decision environment may use the formal CRB process described in [Chapter 3](#), or the tailored CRB process described here.

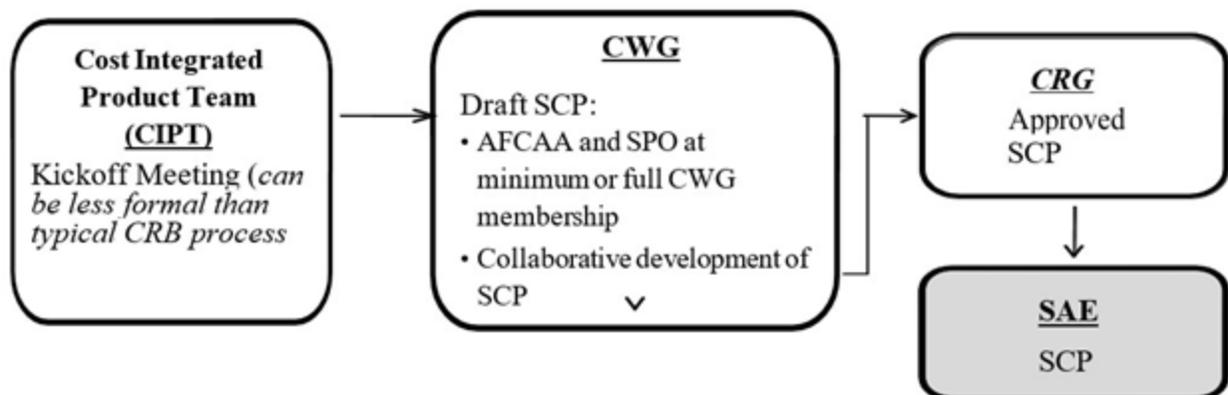
#### 4.2. Tailoring the CRB Process

4.2.1. SAF/FMC is the decision authority on procedures to be followed when generating a SCP outside of the formal CRB process. A tailored SCP process does not require all CRB stakeholders, instead a smaller group referred to as the Cost Review Group (CRG) is convened. In addition, where approved by SAF/FMC, the CIPT and CWG phases can be tailored, as appropriate.

4.2.2. SAF/FMC chairs the CRB comprised of the following members: PEO, PM, the Program Office cost estimating team, the AFCAA cost estimating team, AFCAA leadership and, where applicable, a representative from the organization requesting the SCP. ([Table 3.5](#).)

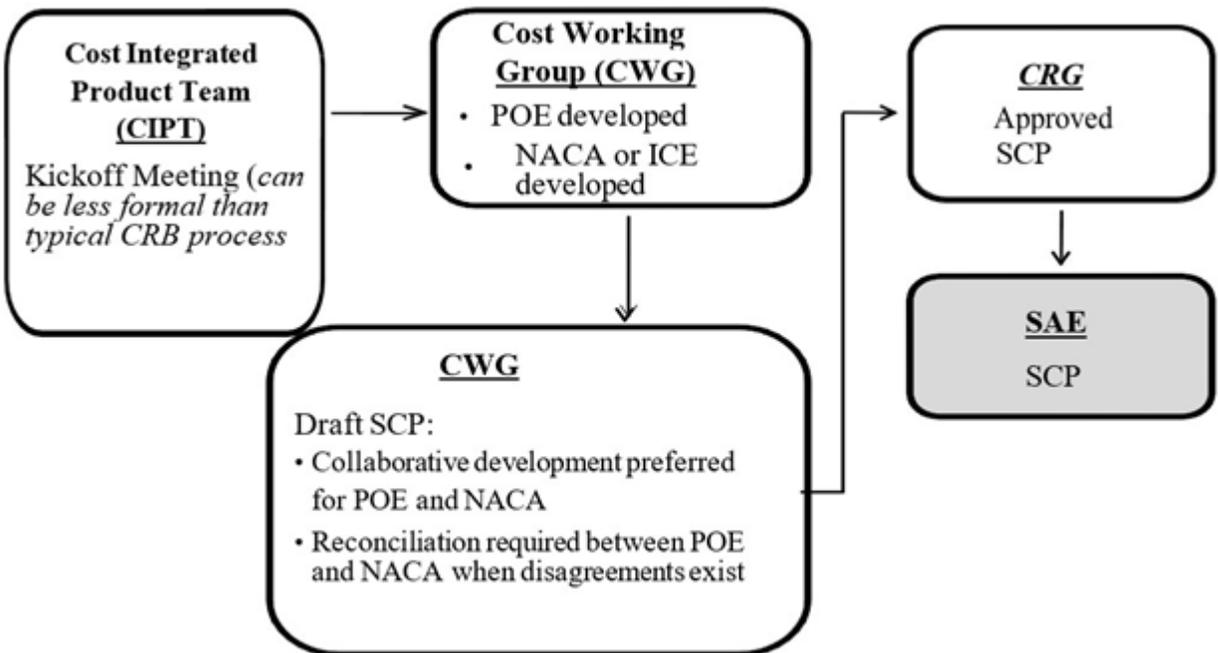
4.2.3. There are two recommended scenarios that can be followed when implementing the tailored process. The preferred scenario, shown in [Figure 4.1](#), involves the Program Office and AFCAA establishing the SCP in collaboration. In this case, the draft SCP is briefed to the CRB. Even if the Program Office and AFCAA are in full agreement on the draft SCP, SAF/FMC may make changes to the estimate before it becomes the approved SCP. The CRG makes recommendations to the Chair, SAF/FMC, and SAF/FMC makes the final determination on the SCP that will be forwarded to the SAE.

**Figure 4.1. Tailored SCP Flow – Example 1**



4.2.4. In the tailored scenario, **Figure 3.2**, a POE and a NACA (or ICE) are prepared and differences are addressed during a cost estimate reconciliation process similar to that described in **Chapter 3**. The product of this reconciliation, a draft SCP, is briefed to the CRG with any unresolved differences highlighted for discussion and resolution/decision. Even if the Program Office and AFCAA are in full agreement on the draft SCP, SAF/FMC may still make changes to the estimate before it becomes the approved SCP. The CRG makes recommendations to the Chair, SAF/FMC, and SAF/FMC makes the final determination on the SCP that will be forwarded to the SAE.

**Figure 4.2. Tailored SCP Flow – Example 2**



## Chapter 5

### COST ANALYSIS REQUIREMENTS DESCRIPTION (CARD)

**5.1. Purpose.** This chapter provides guidance on the CARD. A CARD is required for all MDAP and MAIS programs preparing for a Milestone decision, as well as any program subject to the CRB process described in this document. DoDI 5000.02 also requires a CARD for MDAP Milestone decisions, and any time a MAIS Economic Analysis is required by statute (or per MDA direction). The memorandum from the Director, OSD CAIG, *DoD Cost Analysis Data Improvement*, dated 9 January 2017, requires annual CARDS for ACAT 1 programs. The CARDS will be reviewed for completeness and accepted and signed off by the AFCAA division chief. **(T-0)**.

#### 5.2. Background

5.2.1. The CARD provides a description of the salient features of the acquisition program. It provides technical, schedule, and programmatic parameters facilitating a common, consistent, and accurate baseline for the program life cycle cost estimates. A well-constructed CARD reduces the likelihood of misunderstanding program content and significantly reduces the time needed to reconcile cost estimates. Per DoDI 5000.02, the draft CARD must be provided at least 180 calendar days prior to the planned OIPT or component review, unless a different due date is agreed to by the OIPT. The 180 day— clock starts as soon as the responsible cost estimating team lead determines that the CARD is complete, accurate, and suitable for use as the technical and programmatic baseline for the cost estimate. For ACAT ID and IAM programs, this determination is made by the OSD CAPE analyst. For ACAT IC/B, IAC, DBS, and other relevant rapid acquisition programs where the service is the milestone or acquisition event decision authority, this determination is made by the AFCAA lead cost analyst. **(T-1)**.

5.2.2. DoDI 5000.02, Enclosure 7, and DoD 5000.73 provides detailed information on how and when CARDS should be prepared. It includes a detailed outline of the information required in a CARD. A final CARD must be provided no later than 45 calendar days prior to the planned OIPT or 21 calendar days prior to the CRB unless a different due date is agreed to by the OSD CAPE and AFCAA. However, the CARD should not be finalized before the SCP reconciliation is complete.

#### 5.3. Guidance

5.3.1. The CARD is a key component of the cost estimating process. It is the responsibility of the PM, and is typically developed by the program's engineering staff working in conjunction with the PM. The cost estimating team is highly dependent on this document as it is the primary source of program technical and schedule information used to understand program scope and technology requirements.

5.3.2. The CARD should be flexible and make reference to information available in other documents available to the cost estimators. For programs simultaneously engaged in a source selection and milestone review process, proposal information is often an essential component of the program definition. Under these circumstances, the CARD should be updated to include information that most accurately represents the program (such as ranges that reflect the entire spectrum of capable bidders, or the system description of the selected contractor), or the CIPT

should be given direct access to the proposal information. The following paragraphs provide CARD guidance in addition to the DoDI 5000.73, and the 9 January OSD CAPE memorandum.

5.3.2.1. The PM will deliver the draft CARD as soon as possible, but not later than 180 calendar days prior to the OIPT or 180 calendar days prior to the CRB (T-1). This facilitates timely feedback and early issue resolution.

5.3.2.2. The CARD should cover all efforts associated with the program, regardless of fund source or management control. It should address the responsibility of each funding source, including the responsibility of other Air Force programs and components.

5.3.2.3. The Program Office will coordinate the final CARD with MAJCOM A3/5, A4, A8, Product Center functional groups, relevant HAF/SAF functionals, and the CIPT before being submitted to the PEO for approval. The Program Office is responsible for ensuring the CARD is updated to reflect all program changes and the CIPT should be notified of all CARD updates. (T-1).

5.3.2.4. CARD issues that cannot be resolved within the CIPT should be raised to the CRB for resolution.

5.3.2.5. As directed from the memorandum from the Director, OSD CAIG, *DoD Cost Analysis Data Improvement*, dated 9 January 2017, the CARD shall be updated annually following the first milestone review for MDAP programs, these updates will be facilitated with the CAPE templates found on the Cost Assessment Data Enterprise (CADE) public website, for access by all government personnel in the DoD Cost Community. (T-0).

5.3.2.6. Since the main purpose of the annual CARD is to support the cost estimates used to develop the President's Budget each year and document the assumptions supporting the estimate, the Air Force will require annual CARD submittals to the Air Force Cost Analysis Agency (AFCAA) by January of each fiscal year for review and approval for completeness per OSD guidance. This schedule will enable CARDS to be published in CADE by February each year. This Air Force policy allows the CARD to be consistent with the estimates that support the President's Budget submission in that year. The best practice is for Program Offices to work with the AFCAA as the CARD evolves throughout the year. This practice will help to expedite the AFCAA approval process in February of each year.

5.3.2.7. Per OSD guidance, template workbooks shall be used for commodities and tailored to collect significant portions of data on the general program and specific technical, operations and support, and disposal information. They are available electronically at <http://cade.osd.mil/>. (T-0).

5.3.2.8. All unclassified/For Official Use Only (FOUO) CARDS submitted to CAPE must be emailed to [osd.pentagon.cape.list.cost-librarian@mail.mil](mailto:osd.pentagon.cape.list.cost-librarian@mail.mil). All CARDS classified and marked as secret must be submitted by email to [osd.pentagon.cape.list.cost-librarian@mail.smil.mil](mailto:osd.pentagon.cape.list.cost-librarian@mail.smil.mil). The Program Office must conduct a security review to ensure consolidation of data does not change classification level.

## Chapter 6

### DOCUMENTATION

**6.1. Purpose.** This chapter provides guidance on the minimum documentation required for all ACAT I, II and III cost estimates. More detailed cost estimate documentation is highly encouraged.

**6.2. Background.** DoD 5000.73 requires cost estimate documentation be submitted to the OSD CAPE for all ACAT ID programs. Draft documentation is required no later than 45 calendar days prior to the scheduled OIPT or Component review (**T-0**). These requirements also apply to all other programs subject to the CRB process (i.e., ACAT IC, IB and IAM/C programs). Documentation for any other program cost estimate will be submitted to the milestone/other decision authority and their cost analysis support organizations. As required for cost and program reviews, all cost estimate documentation will be made available to higher headquarters comptroller organizations (**T-1**). Documentation should be sufficiently complete and well organized to enable a qualified cost professional to reconstruct the cost estimate given access to only the documentation. For programs subject to the CRB process, interim documentation requirements should be established by the CIPT during the CIPT kickoff meeting.

### 6.3. Guidance

6.3.1. Cost estimate documentation provides a detailed record of the estimating methods, data, environment and events supporting the development or update of a cost estimate. It should be replicable and must be submitted electronically.

6.3.2. Quality documentation makes an estimate more credible, aids in the analysis of changes in program cost, enables a reviewer to fully understand and replicate the cost estimate, contributes to the population of databases used to estimate the cost of future programs and facilitates continuous process improvement across the cost estimating community. Cost estimate documentation should:

6.3.2.1. Contain an outline. A checklist with minimum documentation requirements is provided in [Attachment 3](#).

6.3.2.2. Include a summary of the cost estimate by program phase, by appropriation and by Fiscal Year. This summary should display both Then-Year and Base-Year dollars and delineate cost estimate confidence level(s).

6.3.2.3. Describe cost estimate Ground-Rules and Assumptions such as cost, schedule and technical. Ground-Rules and Assumptions are unique to the program, but should cover all influential areas. They include cost estimate limitations and caveats, methods and constraints applied to “time phase” the estimate, estimate base year, inflation indices used, profit/fee assumptions, development and procurement quantities, participating agency support, government and contractor furnished equipment, and contractor rates and relationships.

6.3.2.4. Display a breakout of total cost, by program phase and major cost element, paired with a brief summary of the cost estimating methods used to estimate the cost of all major cost drivers. Smaller dollar value cost elements may be rolled into an “other” line.

6.3.2.5. Provide summary descriptions of the process used to address cost, technical, and schedule risks.

6.3.2.6. Include a detailed estimating methods description section. This should include a detailed description of the WBS element content and the method and data applied to estimate the cost of every WBS element. Published Cost Estimating Relationships, data, statistics, etc. should be documented.

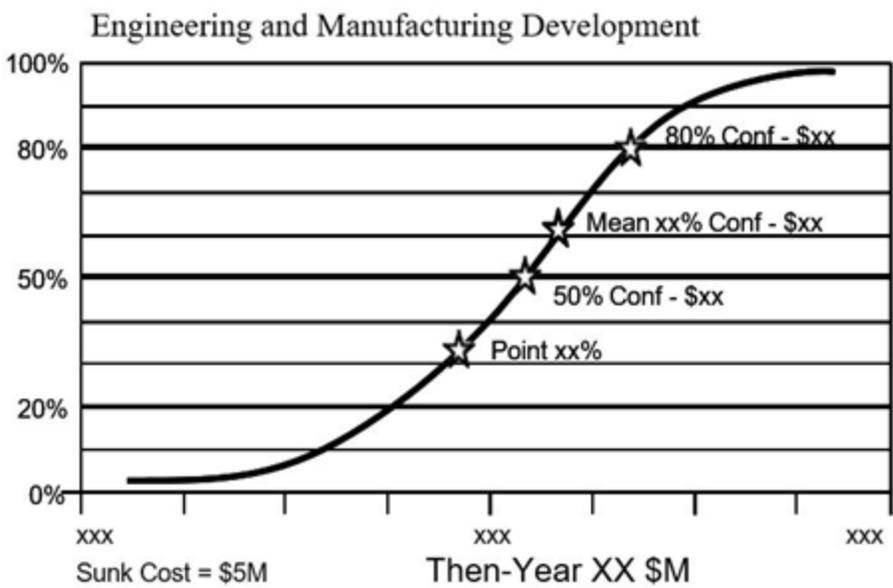
6.3.2.6.1. Estimated total and time phased costs, in Base-Year dollars and Then-Year dollars, for each element and each roll-up element should be included in this section.

6.3.2.6.2. A detailed discussion on the method used to consider cost, technical, and schedule risk and opportunities, including a discussion on the rationale for risk bounds and distributions (normal, triangular, etc.) selected should be included in this section.

6.3.2.6.3. Program Office must conduct a security review to ensure consolidation of data does not change classification level. (T-0).

6.3.2.7. Where produced, include a separate Cumulative Distribution Function (CDF) or “S-Curve” for each phase, in particular, for the Engineering and Manufacturing Development and production and deployment phases. Where practical, development and production and deployment CDFs can be provided by funding source. The point estimate, fifty percent confidence level, eighty percent confidence level and mean points should be identified. CDFs should display Then-Year dollars and include only “cost to go,” sunk costs should be excluded. Sunk cost should be noted at the bottom of the page. Along with the CDF, a table showing the cost estimate in 10% confidence level increments should be included. **Table 6.1** provides a notional example.

**Table 6.1. Cumulative Distribution Function**



% Conf Lvl	\$S
Mean (xx%)	\$xx
Pt Est (xx%)	\$xx
10%	\$xx
20%	\$xx
30%	\$xx
40%	\$xx
50%	\$xx
60%	\$xx
70%	\$xx
80%	\$xx
90%	\$xx

6.3.2.8. Using a table, display cost by appropriation in Then-Year dollars. Where available, compare estimated cost to program budget (either the President’s Budget or the

POM), highlighting constraints, shortfalls, and excesses. This comparison should include all sunk costs or —prior year, Future Year Defense Plan, and —to complete costs. Prior year costs should equal program funds previously committed, obligated, and/or executed, and should therefore not reveal any shortfalls or excesses.

6.3.2.9. Chronology of program cost estimates. Display the history of prior cost estimates at each milestone decision and major program decision point, by program phase and by appropriation. (Note that program phases may contain more than one appropriation.) Discuss the evolution of the cost estimates with particular emphasis on significant changes in estimated program cost, scope, or schedule. Also discuss any significant changes in program cost drivers or cost, technical, and schedule risk assessments. Initially display changes in Then-Year dollars then convert to Base-Year dollars to present inflation adjusted comparisons. Provide a breakout in each estimate the cost estimates for each major contract and do a chronology of estimates versus contract actuals. Provide an assessment of the program technical and schedule baseline highlighting any deviations from the established (CARD or other reference materials) baseline.

6.3.2.10. Identify the cost estimating team composition including all noteworthy contributors.

JOHN P. ROTH  
Assistant Secretary of the Air Force  
(Financial Management and Comptroller)

## Attachment 1

### GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

#### *References*

AFPD 65-5, *Cost and Economics*, 5 August 2008

AFI 63-101/20-101, *Integrated Life Cycle Management*, 9 May 2017;

DoDI 5000.02, *Operation of the Defense Acquisition System*, 7 January 2015

DoDI 5000.73, *Cost Analysis Guidance and Procedures*, 9 June 2015

DoDI 5000.75, *Business System Requirements and Acquisition*, 2 February 2017

10 USC §2334, (*Independent Cost Estimation and Cost Analysis*)

10 USC §2366a, (*MDAP: Milestone A certification requirement*)

10 USC §2366b, (*MDAP: Milestone B certification requirement*)

10 USC §2433, (*Unit Cost reports*)

10 USC §2433a, (*Critical Cost Growth in MDAPs*)

10 USC §2441, (*Sustainment Reviews*)

Public Law 111-23, *Weapon Systems Acquisition Reform Act (WSARA)* 22 May, 2009

MIL-STD-881D, *Work Breakdown Structures for Defense Materiel Items*, 9 April 2018

OSD CAIG *Operating and Support Cost-Estimating Guide*, March 2014

*Joint Agency Cost Schedule Risk and Uncertainty Handbook*, 12 March 2014

#### *Adopted Form*

AF Form 847, *Recommendation for Change of Publication*

#### *Abbreviations and Acronyms*

**ACAT**—Acquisition Category

**AFCAA**—Air Force Cost Analysis Agency

**AFMAN**—Air Force Manual

**AFI**—Air Force Instruction

**AFPD**—Air Force Policy Directive

**APB**—Acquisition Program Baseline

**APUC**—Average Procurement Unit Cost

**ATP**—Authority to Proceed

**BCAT**—Business Acquisition Category\

**CAIG**—Cost Analysis Improvement Group

**CAPE**—Cost Assessment and Program Evaluation  
**CARD**—Cost Analysis Requirements Description  
**CDF**—Cumulative Distribution Function  
**CIPT**—Cost Integrated Product Team  
**CRB**—Cost Review Board  
**CSAF**—Chief of Staff of the Air Force  
**CSDR**—Cost and Software Data Report  
**CWG**—Cost Working Group  
**DBS**—Defense Business System  
**DoD**—Department of Defense  
**DoDI**—Department of Defense Instruction  
**EA**—Economic Analysis  
**HAF**—Headquarters Air Force  
**ICE**—Independent Cost Estimate  
**IOC**—Initial Operating Capability  
**KLP**—Key Leadership Position  
**LCCE**—Life Cycle Cost Estimate  
**MAIS**—Major Automated Information System  
**MAJCOM**—Major Command  
**MDA**—Milestone Decision Authority  
**MDAP**—Major Defense Acquisition Program  
**MIL-STD**—Military Standard  
**MILCON**—Military Construction  
**NACA**—Non Advocate Cost Assessment  
**O&M**—Operations and Maintenance  
**O&S**—Operations and Support  
**OIPT**—Overarching Integrated Product Team  
**OSD**—Office of the Secretary of Defense  
**PAUC**—Program Acquisition Unit Cost  
**PEM**—Program Element Monitor  
**PEO**—Program Executive Officer  
**PM**—Program Manager

**POE**—Program Office Estimate

**POM**—Program Objective Memorandum

**SAE**—Service Acquisition Executive

**SAF/AQ**—Assistant Secretary of the Air Force / Acquisition and Management

**SAF/FM**—Assistant Secretary of the Air Force / Financial Management and Comptroller

**SAF/FMC**—Deputy Assistant Secretary of the Air Force / Cost and Economics

**SAF/MG**—Deputy Under Secretary of the Air Force, Management

**SBE**—Single Best Estimate

**SCP**—Service Cost Position

**SECAF**—Secretary of the Air Force

**SECDEF**—Secretary of Defense

**SPPBE**—Air Force Strategy, Planning, Programming, Budgeting, and Execution

**USC**—United States Code

**WBS**—Work Breakdown Structure

**WSARA**—Weapon Systems Acquisition Reform Act

### *Terms*

**Analysis of Alternatives (AoA)**—A study conducted to explore numerous conceptual solutions with the goal of identifying the most promising options. The AoA is used to justify the rationale for formal initiation of the selected course of action.

**Authority to Proceed (ATP)**—Business systems, as outlined in the DoDI 5000.75, use Authority to Proceed decision points rather than milestones.

**Average Procurement Unit Cost (APUC)**—Calculated by dividing total program procurement cost by the number of items to be procured. APUC is displayed in constant dollars of a base year fixed for each program. Total procurement cost includes flyaway, rollaway, sailaway cost (that is, recurring and nonrecurring costs associated with production of an item such as hardware/software, systems engineering, engineering changes and warranties), plus the costs of procuring technical data, training, support equipment, and initial spares.

**Base Year**—A reference period that determines a fixed price level for comparison in calculating economic escalation and cost estimates.

**Business Acquisition Category (BCAT)**—Business system categories established to facilitate decentralized decision making and execution and compliance with statutorily imposed requirements. The categories determine the level of review, decision authority, and applicable procedures.

**Cost and Software Data Reporting (CSDR)**—The Cost and Software Data Reporting (CSDR) system is the primary means that DoD uses to collect actual cost and related business data on ACAT I and ACAT IA defense contracts. Program Managers use the CSDR system to report data

on contractor development and production costs and resource usage incurred in performing DoD programs.

**Cost Estimate / Analysis**—A documented analysis that predicts future costs, including profit, to develop and field a desired system. This requires evaluation of costs and risks of the development, production, operation, support and disposal of a system. A key element of a comprehensive estimate is a cost risk/ uncertainty analysis of relevant cost, schedule, and performance factors.

**Cost Risk / Uncertainty Analysis**—The process of quantifying the uncertainties associated with elements of the cost model such as cost estimating relationships (CERs), technical parameters that drive CERs, labor and other rates, and the schedule. The probability (risk) that a specific cost target will be exceeded is derived from the total uncertainty of the estimate.

**Cumulative Distribution Function (CDF)**—The CDF is a measure of how much a variable accumulates.

**Defense Business Systems (DBS)**—Defense Business Systems are information systems, other than a national security system (NSS), operated by, for, or on behalf of DoD, including financial systems, mixed systems, financial feeder systems, and Information Technology (IT) and Information Assurance (IA) infrastructure. Defense Business Systems support business activities such as acquisition, financial management, logistics, strategic planning and budgeting, installations and environment, and human resource management.

**Economic Analysis (EA)**—A systematic approach to the problem of choosing how to use scarce resources to meet a given objective. It includes consideration of costs, benefits, risk and uncertainty associated with all alternatives under consideration. At times, the term economic analysis is used in reference to the product/document that results from applying the economic analysis systematic approach. This resulting document is also referred to as a comparative analysis.

**Independent Cost Estimate (ICE)**—A cost estimate / analysis prepared by an organization not directly responsible for the development, acquisition, or support of the program. The Independent Cost Estimate must include a cost risk/ uncertainty analysis and complete documentation.

**Non-Advocate Cost Assessment (NACA)**—An analysis of program cost / price, as well as schedule and technical risk, prepared by an organization not directly responsible for the development, acquisition, or support of the program. NACAs are designed to support the Air Force Corporate Structure and acquisition milestone decision process, and can range from a simple sufficiency review of an existing estimate to a complete Independent Cost Estimate. The NACA should include a cost risk/uncertainty analysis (when possible) and complete documentation.

**Nunn—McCurdy Cost Breach**— When Major Defense Acquisition Programs experience cost growth of 25% in PAUC or APUC from their current baseline or 50% from their original baseline, they are in a “critical” Nunn-McCurdy Unit Cost Breach. Programs in “critical” breach status are required to notify Congress, submit a SAR, and submit SECDEF certification (10 USC 2433) and are subject to detailed review for potential termination. The Nunn–McCurdy Amendment or Nunn–McCurdy Provision, introduced by Senator Sam Nunn and Congressman Dave McCurdy in the United States 1982 Defense Authorization Act and made permanent in 1983, is designed to curtail cost growth in American weapons procurement programs.

**Program Acquisition Unit Cost (PAUC)**—Computed by dividing the Program Acquisition Cost by the Program Acquisition Quantity. The PAUC and APUC are the subject of the Unit Cost

Reports. Programs for which the current estimate of either the PAUC or APUC has increased by 15 percent or more over the currently approved APB or 30 percent or more over the originally approved APB must report a unit cost breach to the congressional defense committees.

**Program Office Estimate (POE)**—The cost estimate produced by the acquiring organization (i.e., Product Center, Air Logistics Center, or Laboratory).

**Unit Cost Breach (potential Nunn—McCurdy Cost Breach)**—Major Defense Acquisition Programs experiencing: a.) significant cost growth of 15% or more in Program Acquisition Unit Cost (PAUC) or Average Procurement Unit Cost (APUC) over the current baseline estimate or b.) 30% or more in PAUC or APUC over the original baseline estimate, are required to notify Congress of the cost growth and submit a Selected Acquisition Report (SAR) during the quarter the breach was determined.

Attachment 2

ANNUAL COST ESTIMATE REQUIREMENT WAIVER REQUEST

Figure A2.1. ACAT 1 Program Office Estimate Waiver Template.

ACAT I Program  
Program Office Estimate (POE) Waiver

Program Name: \_\_\_\_\_

Air Force Policy Directive (AFPD) 65-5 "*Cost and Economics*" requires a Program Office Estimate (POE), be prepared and updated annually, on all Major Defense Acquisition Programs (MDAPs) and all Major Automated Information Systems (MAISs). For the reasons listed below, the \_\_\_\_\_ program is unable to produce its annual POE and is requesting a waiver to AFPD 65-5. The last POE for the \_\_\_\_\_ program was completed on \_\_\_\_\_.

Rationale for waiver:

The \_\_\_\_\_ program plans to complete a POE by \_\_\_\_\_.

	Name	Signature	Date
Program Manager			
SAF/AQ or delegated PEO			
Deputy Assistant Secretary (Cost and Economics)			

**Figure A2.2. ACAT 1 Non Advocate Assessment Waiver Template.**

**Non Advocate Cost Assessment (NACA) Waiver**

Program Name: \_\_\_\_\_

Air Force Policy Directive (AFPD) 65-5 "*Cost and Economics*" requires a NACA be prepared and updated annually for all Major Defense Acquisition Programs (MDAPs) and all Major Automated Information Systems (MAISs). For the reasons listed below, the responsible authority (\_\_\_\_\_) is unable to produce its annual NACA and is requesting a waiver to AFPD 65-5. The last NACA for the \_\_\_\_\_ program was completed on \_\_\_\_\_.

Rationale for waiver:

\_\_\_\_\_ plans to complete a NACA by \_\_\_\_\_.

This waiver must be signed by the AFCAA Division Chief, SAF/AQ or the Program Executive Officer, and the Deputy Assistant Secretary of the Air Force (Cost and Economics).

	Name	Signature	Date
AFCAA Division Chief			
SAF/AQ or delegated PEO			
Deputy Assistant Secretary (Cost and Economics)			

**Attachment 3****COST ESTIMATING DOCUMENTATION CHECKLIST FOR ACAT I, II AND III  
COST ESTIMATES****A3.1. Introduction.**

A3.1.1. Table of Contents.

A3.1.2. Program title and Program Elements.

A3.1.3. Reference to the current program decision, if applicable, and CARD. A3.1.4. Purpose and scope of the estimate.

A3.1.5. Cost estimating team members listed by organization, phone number, and area or estimating responsibility.

A3.1.6. Description of system or effort being estimated, with program phases estimated and excluded costs identified.

A3.1.7. Program schedule; buy and delivery schedules.

A3.1.8. Applicable contract information.

A3.1.9. Cost estimate summary by fiscal year in Base-Year and Then-Year dollars.

A3.1.10. Ground rules and assumptions.

**A3.2. Body.**

A3.2.1. Basis of estimate, by phase and appropriation, by Work Breakdown Structure (WBS) or Cost Element Structure (CES).

A3.2.2. Detailed methods, sources, and calculations provided by WBS or CES along with fiscal year phasing and rationale for phasing.

A3.2.3. Rationale for selecting a specific cost estimating method, by WBS or CES.

A3.2.4. Source of data used when referencing analogous systems. Examples of analogous source data include, but are not limited to the:

A3.2.4.1. Selected Acquisition Report

A3.2.4.2. Defense Acquisition Executive Summary A3.2.4.3. Contract Performance Report

A3.2.4.3. Contractor Cost Data Report and Software Resources Data Report

A3.2.5. Cross checks, reasonableness and consistency checks addressed by WBS or CES. Specific references to studies, analogous systems or other appropriate documented references.

A3.2.6. Track to prior estimate, and rationale for differences.

A3.2.7. Reconciliation between the NACA/ICE and POE. Note: The body of the cost estimate documentation should provide information (source data, estimating methods, and results) sufficient to make it possible for a qualified cost estimator to recreate the estimate using only the written documentation.

**A3.3. Additional checklist considerations identify whether:**

A3.3.1. All life cycle costs are included

A3.3.2. Estimates are organized consistently and logically

A3.3.3. Learning curve slopes and factors are reasonable, similar system slopes and factors are included as cross checks.

A3.3.4. Actual historical data at or near program completion was used, when available.

A3.3.5. Current inflation rates were used, documented and properly applied.

A3.3.6. Historical data used is presented in the documentation, with rationale given as to why that data/program is applicable for use as an analogy and, where applicable, extrapolation is applicable.

A3.3.7. Where systems have previously produced development or production units, unit or lot quantity and associated costs are provided.

A3.3.8. Briefing charts reference program funding provided in the most current budget (President's Budget or POM). If shortfalls exist, a zero —shortfall option is provided.

A3.3.9. Acronyms are defined.

A3.3.10. Personnel costs are consistent with the Manpower Estimate Report, or deviations are properly explained.

A3.3.11. Sensitivity analysis and risk/uncertainty analysis is documented.

A3.3.12. Wrap rates and Forward Pricing Rate Agreement / Forward Pricing Rate Recommendation assumptions are included.

**Attachment 4**  
**SCP KICK-OFF AGENDA**

All the items on the checklist below should be addressed at the Milestone estimate kick-off meeting.

- Meeting held NLT 180 calendar days prior to the scheduled OIPT (or CRB)
- Meeting Co-Chaired by SAF/FMC Deputy (or AFCAA Technical Director) and OSD CAPE Division Director (or delegated authority for CAPE delegation decision)
- Meeting attendees
  - AFCAA – Technical Director, Division Chief and estimating staff
  - Program Manager
  - Program Office Chief Engineer and engineering staff
  - Program Office estimating staff
  - Product Center estimating staff
  - PEO (optional as desired by the PM team)
  - PEO staff (optional as desired by the PM team)
  - SAF/AQ – PEM
  - AF/A8XP – Affordability Analysis
  - OSD CAPE cost estimating staff

- Typical Meeting Agenda Items:

Part I (full attendance)

- Program Overview – PM (include acquisition strategy, system requirements and description, key assumptions provided in the CARD, current budget issues/concerns)
- CARD status/details –critical assumptions/info for estimators – SPO
- Challenges and Risks – PM/Chief Engineer
- Contractor Cost and Software Data Report (CSD) plans and issues – SPO and/or AFCAA
- Independent schedule assessment plan – AFCAA if delegated already or OSD
- Affordability Process and Early Affordability Analysis/Charts/Conclusions (AQX/A8)
- SCP Estimating process, plan and schedule Overview– AFCAA and SPO

Part II (full group if interested but only mandatory for Technical Director with the SPO cost estimating, AFCAA cost estimating, and CAPE cost estimating staffs)

- SCP and ICE process and schedule discussion
  - Planned contractor visit(s) schedule overview
  - Interim reconciliations
  - Interim reviews/murder boards as required
  - Meetings with CAPE (under either ICE or delegation process)
  - Pre-CRB, CRB, etc.
- SCP Estimating Plan Deep Dive– AFCAA and SPO
  - Review draft WBS & existing POE and NACA methodologies
  - Review cost track to any prior estimates if available (POEs and NACAs)
  - Key Ground rules and Assumptions deep dive/discussions along with CARD deep dive questions/comments (if CARD had been available prior to kickoff)
  - Discuss proposed methodologies to include sharing agreements
  - Discussion of available data and data issues (e.g., fidelity, gaps, issues) to include sharing agreements
  - Planned contractor visits and expectations for visits
- Subject Matter Expert support