U.S. Department of Homeland Security

United States Coast Guard

# *COAST GUARD*

# *STRATEGIC COST MANUAL*


**COMDTINST M7000.4**
**FEBRUARY 2005**

U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol: CG-8
Phone: (202) 267-6886
Fax: (202) 267-4153

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COMMANDANT INSTRUCTION M7000.4

Subj: COAST GUARD STRATEGIC COST MANUAL

1. PURPOSE. This Manual provides resource managers with policy on the tools and techniques to employ when conducting economic analyses and implementing activity-based costing.

2. ACTION. Area and district commanders, commanders of maintenance and logistics commands, commanding officers of headquarters units, assistant commandants for directorates, Judge Advocate General, and special staff offices at Headquarters shall ensure compliance with the provisions of this Instruction. Internet release authorized.

3. DIRECTIVES AFFECTED. None.

4. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS. Environmental compliance considerations were examined in the development of this Manual and have been determined to be not applicable.

5. DISCUSSION. This Instruction was developed using a variety of government and industry sources, including trade publications, books, white papers, magazine articles, and presentations. It is not offered as original material, but as a consolidation of best practices taken from leading experts and practioners of economic analysis and activity-based costing.

DISTRIBUTION – SDL No. 142

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NON-STANDARD DISTRIBUTION:

6. REQUESTS FOR CHANGES. Units and individuals may recommend changes by writing to Commandant (CG-832), U.S. Coast Guard, 2100 2nd Street S.W., Washington, D.C. 20593-0001.

7. FORMS/REPORTS. None.

R. R. HOUCK /s/
Assistant Commandant for Planning,
Resources and Procurement

## RECORD OF CHANGES

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Much of this document was generated using material from government and industry sources, including trade publications, books, white papers, magazine articles, presentations, etc. It is not offered as original material, but as a consolidation of best practices taken from leading activity-based costing experts and practitioners. Sources are identified where reasonably possible.

## EXECUTIVE SUMMARY

A. The Strategic Cost Initiative (SCI) rejects the notion that services today should cost what they cost last year, inflated by some index to reflect inevitable cost growth. That cost-plus-COLA view is blind to productivity gains and innovation; two hallmarks of the modern Coast Guard. Leadership on one of the Commandant's principal themes, *stewardship*, is squarely within the CG-8 franchise, and the SCI is a directed effort to bring Coast Guard resource planning and analysis activities in line with the concept of stewardship.

B. While there are an infinite number of ways to express the concept of stewardship, a useful one for our purposes is to strive for a Coast Guard that does *ever-more good at ever-lower cost*. Industry has embraced this concept through Six Sigma, target costing, value chain analysis, and a number of other approaches. Coast Guard personnel can well be proud of what we accomplish and our overall efficiency, but that pride cannot be allowed to obscure the central truth of Total Quality Management…that we can always do better, with focused effort.

C. For Coast Guard operations, which are substantially represented by resource utilization within the Operating Expenses Appropriation, there are three fundamental opportunities, or strategic goals, that can help us to enhance stewardship, presented in order of declining significance.

   1. **Smarter recapitalization.** The most substantial monetary impact the SCI can have is in promoting rational, consistent, insightful analysis of proposed capital acquisitions or lease arrangements. When we purchase a cutter, aircraft, boat, or building we lock in our operating costs for up to 30 years. Any upfront effort to reduce operating costs during the acquisition phase will have great paybacks for years to come. Conversely, if we ignore operating costs, our legacy becomes a fiscal burden for future generations.

   2. **Reduce support and overhead spending.** While much attention is focused on the relatively modest puts and takes of the budget process, we have been insufficiently attentive to the opportunities that exist, <u>within our base</u>, to perform maintenance, conduct logistics, provide housing, health care, training, payroll processing or bill paying at lower cost.

   3. **Minimize legacy asset operating cost.** There may be modest opportunities for savings in the operation of our legacy assets. It is important to have a rational, consistent way to evaluate those opportunities and save where we can.

D. A comprehensive Coast Guard Strategic Cost Manual supports these goals by promoting improved and more consistent decision-making throughout the organization.

E. The purpose of the economic analysis guidance provided herein is to dramatically improve the quality, consistency, and timeliness of chain of command reviews of resource proposals. Currently, planning officers and resource managers can choose to evaluate projects using many different tools and techniques, such as the Office of Management and Budget's (OMB) benefit-cost analysis method, an internal rate of return analysis, payback period analysis,

lifecycle or total ownership cost analysis, discounted cash flow analysis, or any of a number of other techniques. Beyond the time wasted in trying to figure out how to do the analysis, the obvious result of the status quo is that decision makers around the Coast Guard view similar projects very differently.

F. Activity-Based Costing/Management (ABC/M) has become one of the most powerful tools for achieving economy and efficiency in the federal, state, and local government environments. The purpose of the ABC guidance herein is to set the Coast Guard on the path to better management of existing resources and support more informed planning and forecasting of future resource requirements at all levels of the organization.

# CHAPTER 1 – ECONOMIC ANALYSIS

A. **References**

1. Total Ownership Cost Guiding Principles, COMDTINST M4140.1 (series); http://cgcentral.uscg.mil

2. Circular No. A-94, Guidelines and Discount Rates for Benefit-Cost Analysis; http://www.whitehouse.gov/omb/circulars/a094/a094.html

3. Economic Analysis for Decision-Making, DOD Instruction 7041.3; http://www.dtic.mil/whs/directives/corres/text/i70413p.txt

B. **Applicability and Scope**. This guidance applies to the creation of planning proposals, resource proposals, and other similar proposals that seek to commit resources for the startup, research, acquisition, renewal, renovation, conversion, upgrade, expansion, improvement, leasing, or operations of programs or projects. The adoption of such programs and projects is expected to commit the Coast Guard to a series of measurable expenditures or benefits beyond the inception date.

C. **General Principles**. Economic analysis is a systematic approach to the problem of choosing the best method of allocating scarce resources to achieve a given objective. A sound economic analysis recognizes that there are alternative ways to meet a given objective and that each alternative requires certain resources and produces certain results. To achieve a systematic evaluation, the economic analysis process employs the following two principles:

1. Each feasible alternative for meeting an objective must be considered, and its life-cycle costs and, if practicable, its benefits evaluated.

2. All costs and benefits are adjusted to "present value" by using discount factors to account for the time value of money. Both the size and the timing of costs and benefits are important.

D. **Elements of an Economic Analysis**. A complete economic analysis of investment alternatives includes the following elements:

1. **Objective**. The statement of the objective should clearly define and quantify (to the extent possible) the function to be accomplished. The statement of the objective should not assume a specific means of achieving the desired result. If such an assumption is made, the statement of the objective undermines the analytical purpose of the economic analysis by prejudging the result and should be avoided.

2. **Assumptions**. The economic analysis should be based on facts and data when possible. Since economic analysis deals with costs and benefits occurring in the future, assumptions must be made to account for the uncertainties. All assumptions should be clearly stated in the analysis.

3. **Alternatives**. Feasible ways of satisfying the objective must be documented and discussed. The recommendation resulting from the economic analysis shall come from the options evaluated. Careful attention must be given to identifying alternatives.

4. **Costs and Benefits**. The costs and benefits associated with each alternative under consideration should be quantified whenever possible, so they may be included in the economic analysis calculations. When quantification is not possible, the analyst should still attempt to document significant (qualitative) costs and benefits. Minimally, qualitative costs or benefits should be discussed in narrative format.

5. **Comparison of Alternatives**. Compare the costs and benefits (if quantifiable) of each alternative and rank them according to present value of costs or net present value.

6. **Results and Recommendations**. The economic analysis report should begin with a summary of the analysis (based on the benefits and costs of the alternatives), and an interpretation of the results (to include a recommendation of the preferred alternative). The actual decision is based on qualitative as well as quantitative factors. The results of the economic analysis, including all calculations and sources of data, must be documented down to the most basic inputs to provide an auditable and stand-alone document.

E. **Identification of Alternatives**.

1. The purpose of the economic analysis is to give the decision maker insight into economic factors bearing on accomplishing the objectives. Therefore, it is important to identify factors, such as cost and performance risks and drivers that can be used to establish and defend priorities and resource allocations. The discussion of alternatives in the economic analysis shall determine which options to analyze. The analyst must consider and document, minimally, each of the following alternatives:

   a. Status quo or current functional baseline

   b. New acquisition or construction

   c. Leasing

   d. Modification of existing assets to include: renovation, conversion, upgrade, expansion, or other forms of improvement of existing assets and/or services.

2. Alternatives must be fully investigated and a determination made whether the alternative satisfies the functional requirements for the project. Alternatives considered feasible are compared in the economic analysis. Alternatives dismissed as "infeasible" must be discussed, but need not be formally compared in the economic analysis. Aggressive pursuit of alternatives is strongly encouraged so innovative and improved ways of doing business are actively considered.

F. **Analytical Methodology and Criteria.**

1. **Parameters.** Besides discounting procedures, the treatment of inflation, and economic comparison criteria, an economic analysis of investment alternatives consists of basic parameters necessary to account for how costs and benefits for each alternative are displayed, treated, and reported. Those basic parameters are summarized below:

   a. **Physical Life**. The estimated number of years that an asset can physically be used in accomplishing the function for which it was intended.

   b. **Technological Life**. The estimated number of years a facility or piece of equipment will be used before it becomes obsolete due to changes in technology.

   c. **Start Year**. The first year in which an alternative incurs a cost or realizes a benefit. The start year is the first year of the period of analysis and to which costs and benefits are discounted.

   d. **Lead Time**. The period from the start year to the time that an alternative begins to produce benefits.

2. **Treatment of Costs and Benefits**. For each alternative, an economic analysis needs to identify the pertinent costs and benefits, estimate the magnitude of those costs and benefits, and estimate the timing of the costs and benefits.

3. **Identification of Costs and Benefits**.

   a. Include all measurable costs and benefits to the Federal Government that are incident to achieving the stated objectives of the function. The costs and benefits will be exhaustive and may cover multiple government agencies and budgets. Define "costs" and "benefits" so they are mutually exclusive. Societal costs and benefits outside the federal government are usually not included in an economic analysis. However, if quantifiable, societal benefits may be included.

   b. Sunk costs should not be included as a cost. Sunk costs are costs that have already been incurred and which cannot be recovered to any significant degree. Sunk costs are sometimes contrasted with incremental costs, which are the costs that will change due to the proposed course of action. Only incremental costs are relevant to a decision. If we let sunk costs influence our decisions, we will not be assessing a proposal exclusively on its own merits.

4. **Recurring Costs**. Those costs incurred on a continuing annual basis to support the alternative. Those can often be grouped into such categories as "personnel," "energy," "maintenance," etc. Calculations for the increase or decrease of personnel should use the Coast Guard's Standard Personnel Costs (SPC) table, located at CG Central, http://cgcentral.uscg.mil, keywords "Standard Personnel Cost (SPC) tables." For

planning proposals that deal with new buildings, the following recurring costs should be used:

a. AFC-30, annual unit-level maintenance, $4.00 per square foot
b. AFC-30, annual energy costs, $2.00 per square foot

5. **Nonrecurring Costs**. Often one time costs or costs that occur on an infrequent and intermittent basis.

6. **Timing of Costs and Benefits**. Accounting for the time value of money is crucial to the conduct of an economic analysis. Economic analyses must accurately reflect the time when costs and benefits occur. A cost in an economic analysis shall be discounted in the year in which the federal government is expected to incur an expenditure; a benefit shall be discounted in the year in which the federal government expects to realize the benefit.

7. **Discounting**.

   a. The discount rate to be used for conducting economic analysis in the Federal Government is based on an estimate of the Government's costs of borrowing for the appropriate period of analysis. OMB Circular A-94 provides the option of using either the real or nominal discount rate when conducting an economic analysis.

      (1) **Real discount rate**. A real discount rate does not include inflation and is to be used when discounting constant dollar costs, i.e. costs that have not been adjusted for inflation. Using the real discount rate and constant dollars simplifies the analysis and removes a significant degree of uncertainty inherent in inflation projections.

      (2) **Nominal discount rate**. A nominal discount rate includes projected inflation and is to be used when discounting current dollars, i.e. costs that have been adjusted for inflation. The benefit of using current dollars and nominal discount rates is that decision makers are better able to evaluate future budgetary impacts and cash flow issues.

   b. OMB Circular A-94 further states that real and nominal rates shall not be combined in the same analysis. Therefore, to simplify the comparison of alternatives within an analysis and the comparison of competing proposals, all shore facility capital asset economic analysis (i.e. planning proposals) shall use constant dollars and real discount rates. Additionally, all economic analysis associated with on-budget proposals (requests for funding via the federal budget process) or capital acquisition projects should also use constant dollars and the real discount rate. The real discount rate is updated annually in February and posted on OMB's website: http://www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html. In February 2004, OMB's website was updated with the 30-year real discount rate, which was 3.5%.

8. **General Principles for Analysis**. The net present value (NPV) analysis is the recommended technique to use in a formal economic analysis of government programs or projects where benefits can be quantified. Cost-effectiveness analysis is a less comprehensive technique, but it can be appropriate when the benefits from competing alternatives are the same or where a policy decision has been made that the benefits must be provided.

    a. The cost-effectiveness analysis pertains to the majority of planning proposals, as the benefit is constant among the various alternatives. Therefore, for simplicity in comparing competing planning proposals, the cost-effectiveness analysis shall be used.

    b. The NPV analysis should be used in resource proposals and other projects where alternatives will produce new or varying benefits and therefore are critically important to resource decisions.

9. **Cost-Effectiveness Analysis**.

    a. A program is cost-effective if, on the basis of life cycle cost analysis of competing alternatives, it is determined to have the lowest costs expressed in present value terms for a given amount of benefits. Cost effectiveness analysis is appropriate whenever it is unnecessary or impractical to consider the dollar value of the benefits provided by the alternatives under consideration. This is the case whenever (i) each alternative has the same annual benefits expressed in monetary terms; or (ii) each alternative has the same annual affects, but dollar values cannot be assigned to their benefits.

    b. Cost-effectiveness analysis can also be used to compare programs with identical costs but different benefits. In this case, the decision criterion is the discounted present value of benefits. The alternative program with the largest benefits would normally be favored. For consistency in calculation and review, a standardized cost effectiveness calculator has been created and posted at CG Central, http://cgcentral.uscg.mil, keywords “CG-832 Cost Effectiveness Calculator.”

    c. Creators of planning proposals and resource proposals are encouraged to download the calculator and use for each alternative, where applicable.

10. **Net Present Value (NPV)**. The standard criterion for deciding whether a government program can be justified on economic principles is net present value - the discounted monetized value of expected net benefits (i.e., benefits minus costs). Net present value is computed by assigning monetary values to benefits and costs, discounting future benefits and costs using an appropriate discount rate, and subtracting the sum total of discounted costs from the sum total of discounted benefits. Discounting benefits and costs transforms gains and losses occurring in different time periods to a common unit of measurement. Programs with positive net present value increase social resources and are generally preferred. Programs with negative net present value should generally be avoided. Although net present value is not always computable, efforts to measure it can

produce useful insights even when the monetary values of some benefits or costs cannot be determined. In these cases:

a. A comprehensive enumeration of the different types of benefits and costs, monetized or not, can be helpful in identifying the full range of program effects.

b. Quantifying benefits and costs is worthwhile, even when it is not feasible to assign monetary values; physical measurements may be possible and useful.

G. **Special Procedures for Leasing**

1. **Application**. The special guidance in this attachment applies only to analyses that include a feasible leasing alternative. All costs for both lease and purchase alternatives should be handled in a consistent and equitable fashion. This special guidance applies when any of the following conditions is satisfied:

   a. The asset is leased to the Coast Guard for a period of 3 years or more.

   b. The asset to be leased is new, with an economic life of less than 3 years, and will be leased to the Coast Guard for a term of 75 percent, or more, of the economic life of the asset.

   c. The asset is built for the express purpose of being leased to the Coast Guard.

   d. The asset is leased to the Coast Guard and clearly has no alternative commercial use (e.g., a special purpose government installation).

2. **Analytical Requirements and Definitions**. When a Coast Guard activity needs to acquire the use of a capital asset, it should do so in the way that has the least expensive life-cycle cost to the government.

3. **Life-Cycle Cost**. If the set of alternatives includes both lease and purchase alternatives, the analysis should compare the net discounted present value of the life-cycle cost of leasing with the full cost of buying or constructing a comparable asset. The full costs of buying include the asset's purchase price plus the net discounted present value of any relevant ancillary services for the purchase and imputed costs.

4. **Taxes**. In analyzing the cost of a lease, the normal payment of taxes on the lessor's income from the lease should not be subtracted from the lease costs since the normal payment of taxes shall also be reflected in the purchase cost. The cost to the U.S. Treasury of special tax benefits, if any, associated with the lease should be added to the cost of the lease. Examples of such tax benefits might include highly accelerated depreciation allowances or tax-free financing.

5. **Ancillary Costs**. If the terms of the lease include ancillary costs provided by the lessor, the present value of the cost of obtaining those services separately should be added to the purchase price. Examples of ancillary costs include the following:

   a. Repair and improvement costs (if included in lease payments)

   b. Operation and maintenance costs (if included in lease payments)

6. **Estimating Imputed Costs**. Certain costs associated with the Federal purchase of an asset may not involve a direct monetary payment. Some of those imputed costs may be estimated, as follows:

   a. **Purchase Price**. An imputed purchase price for an asset that is already owned by the Federal Government, or which has been acquired by donation or condemnation, should be based on the estimated value of similar properties that have been traded on commercial markets in the same or similar localities. The same method should be followed in estimating the imputed value of any Federal land used as a site for the asset.

   b. **Property Taxes**. Imputed property taxes may be estimated in the following two ways:

      (1) Determine the property tax rate and assessed (taxable) value for comparable property in the intended locality. If there is no basis on which to estimate future changes in tax rates or assessed values, the first-year tax rate and assessed value (if costs are expressed in nominal dollars, inflation adjusted for each subsequent year) can be applied to all years. Multiply the assessed value by the tax rate to determine the annual imputation for property taxes.

      (2) As an alternative, obtain an estimate of the current local effective property tax rate from the "Building Owners and Managers Association's Regional Exchange Reports." Multiply the fair market value of the Government-owned property (if costs are expressed in nominal dollars, inflation adjusted for each year) by the effective tax rate.

   c. **Insurance Premiums**. Determine local estimates of standard commercial coverage for similar property from the "Building Owners and Managers Association's Regional Exchange Reports."

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## CHAPTER 2 – SCOPE OF ACTIVITY-BASED COSTING GUIDANCE

A. **Purpose**. Provide guidance for implementing activity-based costing (ABC) in the Coast Guard. Although activity-based management (ABM) and performance-based budgeting are briefly addressed, this document does not provide a roadmap for integrating activity-based costing data with performance metrics. It serves as initial direction from Commandant (CG-8) to the field to assist financial managers with the implementation of ABC at their respective commands. Further guidance on ABM will be promulgated with the approval of the Coast Guard's Institutional Research Road Map[1].

B. **Goal**. Deliver higher quality products and services to internal and external customers while driving toward more efficient production of public goods and services and more effective performance of activities.

C. **Organizational Responsibilities**

1. **Commandant (CG-8)**. Activity-Based Costing / Management

2. **Commandant (CG-81)**. Activity-Based Management

3. **Commandant (CG-83)**. Activity-Based Costing. CG-83 is the focal point for ABC policy and implementation guidance.

4. **Commandant (CG-832)**. Coast Guard Strategic Cost Manual. CG-832 is the resource repository for ABC information, tools, and implementation assistance.

5. **Commandant (G-WTT)**. ABC implementation at Coast Guard training centers

6. **Commanders of Maintenance and Logistics (MLC) Commands**. ABC model implementation at support units

7. **Area and District Commanders**. ABC at operational units such as Sectors

8. **Field Units**. ABC model maintenance and execution

D. **Training**. Commandant (CG-832) is responsible for coordinating ABC model development training for Coast Guard comptrollers, budget officers, program mangers, etc. Commanders of Maintenance and Logistics Commands and Commandant (CG-832) are responsible for identifying personnel under their purview to attend such training.

[1] An Institutional Research (INRE) Task Force has been chartered by Commandant (G-CCS) to coordinate several on-going institutional research initiatives at CG Headquarters. Those initiatives include ABC, ABM, Readiness Management System, Unified Performance Logic Model, etc.

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# CHAPTER 3 – INTRODUCTION TO ACTIVITY-BASED COSTING

## A. Activity-Based Costing (ABC)

1. ABC shows how resources (i.e., time, materials, facilities) are consumed by activities (i.e., work performed) to produce outputs (i.e. products, services) that benefit a customer. Under traditional accounting methods, costs are allocated uniformly across products, services, and customers under the assumption that equal amounts of support and/or overhead are consumed. This often paints an inaccurate picture of actual costs and forces management to make important decisions using distorted information.

2. A powerful tool for measuring performance, ABC is used to identify, describe, assign costs to, and report agency operations. A more accurate cost management system than traditional cost accounting, ABC identifies opportunities to improve business process effectiveness and efficiency by determining the "true" cost of a product or service. Figure 3-1 illustrates the differences in information available for traditional and ABC cost management systems.

| Traditional | Cost | Activity-Based Costing | Cost |
|---|---|---|---|
| Military Pay | $140,000 | Train personnel | $40,000 |
| Equipment | $10,000 | Paint Motor Lifeboat (MLB) hull | $20,000 |
| Electronic Supplies | $15,000 | Repair MLB machinery | $70,000 |
| Routine Inspection & Repair | $15,000 | Repair MLB electronics | $20,000 |
| Maintenance & Repair | $20,000 | Conduct preventative maintenance | $50,000 |
| Total: | $200,000 | Total: | $200,000 |

Figure 3-1

3. ABC principles are used to focus management attention on the total cost to produce a product or service and as the basis for full cost recovery. Support services are particularly suitable for activity-based costing, as they produce identifiable and measurable units of output.

4. ABC models use cost drivers to assign costs through activities to outputs. In its most basic application, the ABC cost assignment is a two-stage procedure. The first stage assigns resource costs to activities. The second stage assigns activity costs to outputs. In reality, ABC is a multi-level cost allocation methodology, where costs are driven within stages (e.g. activity to activity), as well as from stage to stage (e.g. resources to activities). Appendix B illustrates the traditional flow of costs from resources to activities to outputs (or cost objects). Appendix C describes the cost allocation process at a fictitious Coast Guard small boat station.

B. **Activity-Based Management (ABM)**. When managers routinely use ABC information to analyze costs and identify process improvements, they perform ABM. In doing so, managers can make effective strategic and operational decisions by linking financial data to

performance. In short, managers do not manage costs directly – they manage the activities that consume costs. The relationship between ABC and ABM is illustrated in Appendix B.

## C. Performance-Based Budgeting (PBB)[2]

1. A performance budget is an integrated annual performance plan and annual budget that shows the relationship between program funding levels and expected results. It indicates that a goal or a set of goals should be achieved at a given level of spending. An effective performance budget does more than act as an object class, program, or organizational budget with anticipated outcomes. It identifies the relationships between dollars and results, as well as explaining how those relationships are created.

2. A program performance budget defines all activities, direct and indirect, required by a program for support, in addition to estimating activity costs. Activity-based costing is the first step toward implementing performance-based budgeting. The Coast Guard currently uses an enterprise-wide activity-based costing model, the Standard Rates and User Fees model, and the Mission Cost Model[3] to develop performance-based budgets.

## D. The Value of Activity-Based Costing / Management (ABC/M)[4]

1. Most public sector organizations are facing intense pressure to do more with less. This is a daunting challenge that often requires:

   a. Determining the true costs of services and rates and associated billing

   b. Implementing process improvements

   c. Determining make vs. buy outsourcing decisions

   d. Aligning activities to mission and strategic planning

2. ABC/M is an excellent method for addressing these challenges. A common mistake is that ABC/M can be viewed as a fad with no real impact on operations and no meaningful, measurable results. The good news is that, trendy or not, ABC/M actually works. Furthermore, it is the most cost-effective method of enabling operational managers and day-to-day workers to effect change in a government environment.

3. Currently, the emphasis of the Chief Financial Officers (CFO) Act, the Government Performance and Results Act, and the Federal Accounting Standards Advisory Board (FASAB) statement number 4 to have an operational cost management system has focused the public sector on ABC/M to meet these new requirements. Although these

[2] Mercer, John. "Performance Budgeting for Federal Agencies." American Management Systems. March 2002.
[3] The Mission Cost Model applies Abstract of Operations data to the total cost of assets and certain missions to calculate the cost and/or budget authority for each of 26 (as of FY05) employment categories and the 11 Coast Guard mission-programs.
[4] Adapted from: Fabian, Alan. "Activity-Based Management in the Public Sector."

needs are real and must be met, they only begin to scratch the surface of the benefits of ABC/M.

4. The starting point for any government organization is to develop an activity-based costing (ABC) model. This provides the top down look of the organization's resources and activities and the relationship between the activities and the resources they consume. This is important because a cost, any cost, can only be incurred if someone does something. In other words, if you want to understand costs you must clearly understand which activities your organization performs, and which departments and services these activities support.

5. The real benefit, however, is in providing data of varying detail to managers, supervisors, and regular employees in a distributed fashion that allows each person to see, analyze and manage the costs and activities that are within their control. It is at this level where real and meaningful changes in cost structure, performance measurement and service delivery will occur.

6. ABC/M encourages management to evaluate the efficiency and cost-effectiveness of program activities. Its strength is giving insights based on understanding past calculated costs, not just spending, and then applying the same data to make better future decisions.

7. With appropriate cost information, Coast Guard managers can:

    a. Compare costs with known or assumed benefits of activities, identify value-added and non-value added activities, and make decisions to reduce resources devoted to activities that are not cost effective.

    b. Compare and determine reasons for variances between actual and budgeted costs of an activity or a product.

    c. Compare cost changes over time and identify their causes.

    d. Identify and reduce excess capacity costs.

    e. Compare costs of similar activities and find causes for cost differences, if any.

8. With appropriate cost information, Coast Guard Headquarters staff can:

    a. Make strategic decisions knowing the total costs of operating Coast Guard assets, delivering support services, and conducting operational missions.

    b. Identify opportunities for organization-wide efficiencies, cost savings, and process improvements.

    c. Better support and defend budget submissions.

d. Measure the Coast Guard's efficiency in meeting its annual performance goals by mission-program[5].

e. More accurately map the cost of mission-programs to the Department of Homeland Security's strategic goals.

[5] The Coast Guard's 11 mission-programs are: Search and Rescue (SAR); Marine Safety; Aids to Navigation (AtoN); Ice Operations; Marine Environmental Protection (MEP); Living Marine Resources (LMR); Illegal Drug Interdiction; Undocumented Migrant Interdiction; Other Law Enforcement; Ports, Waterways, and Coastal Security (PWCS); Defense Readiness.

## CHAPTER 4 – FEDERAL REQUIREMENTS FOR COST ACCOUNTING

A **Statement of Federal Financial Accounting Standard Number 4**. The executive and legislative branches of the federal government have mandated that federal agencies adopt costing methodologies, such as ABC, to accumulate cost information. The Office of Management and Budget (OMB) and the Government Accountability Office (GAO) have approved and published Federal Financial Accounting Standard Number 4 from the Federal Accounting Standards Advisory Board (FASAB):

> "Each reporting entity should accumulate and report the cost of its activities on a regular basis for management information purposes. Cost may be accumulated either through the use of cost accounting systems or through the use of cost finding techniques."

B. **Chief Financial Officers (CFO) Act of 1990**. The requirement for managerial and cost accounting on a regular and consistent basis also supports legislative actions. The Chief Financial Officers Act of 1990 states that agency CFOs shall provide for the development and reporting of cost information and the periodic measurement of performance.

C. **Government Performance and Results Act of 1993**. The Government Performance and Results Act (GPRA) of 1993 requires each agency, for each program, to establish performance indicators and measure or assess relevant outputs, service levels, and outcomes of each program as a basis for comparing actual results with established goals.

D. **President's Management Agenda**. In 2001, OMB published the President's Management Agenda, which identifies five specific areas in need of process improvement in all government organizations: Strategic Management of Human Capital, Competitive Sourcing, Improved Financial Performance, Expanded Electronic Government, and Budget and Performance Integration. OMB released a memorandum in October 2001 that detailed the core criteria for receiving a "green[6]" rating in Budget and Performance Integration. Of those criteria, the following can only be achieved through the implementation of activity-based costing principles:

> "Full budgetary cost is charged to mission accounts and activities. Cost of outputs and programs is integrated with performance in budget requests and execution."

[6] Green Rating: For each of the five initiatives, OMB prepares a scorecard consisting of "green, yellow, and red lights" reflecting agency status and progress in meeting the standards for success for an individual initiative. The standards for success are collectively known as "Getting to Green."

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# CHAPTER 5 – ABC IN THE COAST GUARD

## A. Current ABC Efforts

1. In 1997, the Coast Guard developed an enterprise-wide activity-based costing model called the Standard Rates and User Fees (SRUF) model. The SRUF is used to calculate the standard rates and user fees the Coast Guard charges external customers for the use of its assets. It captures the Operating Expense (OE) appropriation cost pool, including depreciation, cost of capital, and pensions, and excludes reimbursables from other agencies and refunds from other Coast Guard appropriations. Using an ABC cost allocation methodology, the SRUF drives the costs in the OE cost pool to cost objects (or output providers), such as aircraft types, cutter classes, boat classes, and port security units, etc. Output providers also include marine safety services and activities, as well as missions or services which the Coast Guard performs but does not have established standard rates or user fees for, such as long range aids to navigation.

2. ABC models have also been established at the Aircraft Repair and Supply Center (AR&SC) in Elizabeth City, Integrated Support Commands (ISC), and the Personnel Service Center (PSC). In 2004, the Coast Guard Engineering Logistics Center carried out an event-driven costing project in which mathematical equations were formulated to drive activity costs to cost objects. Training Center Yorktown began building a prototype ABC model in the fall of 2004 that will serve as the template for each of the Coast Guard's training centers.

3. The following examples illustrate how ABC information can be, or is already being, used by the Coast Guard[7]:

    a. To determine the rates and fees to charge customers for the use of Coast Guard assets
    b. To improve performance of processes and activities
    c. To benchmark similar units
    d. To support improvement initiatives
    e. To evaluate outsourcing of activities
    f. To focus improvement efforts by identifying the "biggest bang for the buck"
    g. To drive a cultural change toward accountability and responsibility for the activities and process of the unit
    h. To effect strategy deployment
    i. To determine value-added/non-value added activities and their costs
    j. To cut cost/downsize
    k. To budget
    l. To determine and optimize activity capacity
    m. To isolate/eliminate cost drivers
    n. To renew previous total quality initiatives
    o. To set target costs
    p. To quantify the result of improvement initiatives

[7] The list was adapted from Implementing Activity-Based Management in Daily Operations, John A. Miller. John Wiley and Sons, Inc, 1996. Page 16.

q. To estimate/bid on customer work
r. To manage projects and contracts
s. To consolidate operations
t. To evaluate acquisition candidates
u. To evaluate contractor performance

## B. **Future ABC Efforts**

1. The path to employment of ABC throughout the Coast Guard is a long one. It cannot, and should not, be traversed overnight. The objective is to employ ABC models at Coast Guard field commands whose costs can be attributed to service-wide outputs and outcomes, or that incur costs with a cause-and-effect relationship to an output provider. Examples of these units are Maintenance and Logistics Commands (MLC), Districts, Electronic Support Units (ESU), Training Centers, and the Engineering Logistics Center (ELC), as well as operational units like Sectors.

2. Initially, the ABC models deployed at units across the Coast Guard will be used to enhance the Standard Rates and User Fees model. This would accomplish the following:

   a. Eliminate the need to annually survey support units to update the Standard Rates and User Fees model.

   b. Decrease the cycle time for generating cost data via the Standard Rates and User Fees model. This, in turn, will increase the Coast Guard's responsiveness in providing data to Coast Guard customers, such as the Deepwater program, as well as external customers, such as the Department of Homeland Security, Congress, etc.

   c. Improve the accuracy and consistency of cost data.

   d. Improve the accuracy of the Coast Guard's Mission Cost Model allowing for better information with which to build budgets and answer external data calls.

   e. Improve Coast Guard cost and performance management.

3. Eventually, as the Coast Guard evolves into a mature ABC/M organization, ABC data will allow managers at all levels of the organization to make better decisions, focus on process improvements, and enhance the efficiency and effectiveness of their commands.

4. ABC models will be implemented at categories of units (Integrated Support Commands, Sectors, Training Centers, etc.) based on the magnitude of their collective costs. The strategy is to target units with the greatest costs first, which will enable the Coast Guard to maximize efficiencies and cost savings.

5. Ultimately, the ABC data collected in the field will be linked to the Readiness Management System (RMS)[8] and to a developing "Risk Management System" for use throughout the organization.

6. Furthermore, there are a number of innovative institutional research initiatives, including ABC and ABM, ongoing within Coast Guard Headquarters. Institutional research includes those initiatives that are used by programs and resource managers to better assess performance through measurement, analysis, modeling, and simulation. The Institutional Research guidance team and workgroup will make recommendations to Commandant on how to integrate these initiatives and provide an Institutional Research Road Map designed to harness individual program efforts toward better achieving service-wide operating goals.

[8] Comdt (CG-81) manages the Readiness Management System (RMS). RMS provides a framework for assessing people and unit readiness using standards and measures. The intent of RMS is to improve how the Coast Guard measures, monitors and manages readiness.

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# CHAPTER 6 – ABC MODEL DEVELOPMENT

## A. Getting Started

1. Successful ABC implementations are characterized by:

   a. Enthusiastic command cadre support.

   b. Linkage of ABC to Coast Guard goals, mission, and performance metrics through the Unified Performance Logic Model[9].

   c. Communication strategy that relays the expectations, benefits, risks, day-to-day utility and strategic benefits of ABC.

   d. Resources (time and funding) set aside for ABC implementation and sustainment.

   e. Plan to overcome organizational resistance to change.

2. ABC model developers should first consult with local managers before creating a model. Find out what challenges managers are faced with in improving their processes. Determine what questions they currently have and how better cost data might provide the answers. Activities must be defined so manager questions can be answered. If the definition and assignment of dollars to activities are poorly planned in early models, the entire project will be viewed as useless and unworthy of further resources.

3. The Unit Performance Tables[10], maintained by Commandant (G-CQM - Office of Quality and Management), and the Malcolm Baldridge National Quality Award Criteria for Performance Excellence are excellent tools to assist novice and expert ABC managers in developing comprehensive breakouts of processes, activities, and customers.

4. The Coast Guard has enjoyed early success with creating a template ABC model at one unit and exporting it to similar units. This will continue to be the process for creating models at new categories of units (Integrated Support Commands, Training Centers, Sectors, etc.). Doing so breeds consistency and shields unit comptrollers from the time-consuming burden of independently creating ABC models. A small team of experts, including at least one representative from the respective unit category will create and disseminate template models that are ready for data population.

5. Creating an ABC model requires five major steps, each of which is described in greater detail in the following pages:

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[9] The Unified Performance Logic Model (UPLM) shows the relationship between resources, Coast Guard activities, the risks they are intended to mitigate, and the goals they are intended to achieve. A primary goal of the UPLM is to enable good decision-making regarding risk mitigation and readiness maximization.

[10] Unit Performance Tables can be found at CG Central, http://cgcentral.uscg.mil; keywords “Commandant’s Quality Integration Programs,” “Unit Performance Tables.”

a. Identify activities

b. Gather costs

c. Assign resource costs to activities using drivers

d. Identify cost objects (outputs)

e. Assign activity costs to cost objects using drivers

## B. Identify Activities

1. This step requires an in-depth analysis of the processes and work performed at a unit. An activity is a unique process, function, or task that processes inputs and produces outputs. It is a basic component and fundamental building block of every ABC model. A verb-adjective-noun naming convention should be used when creating activities. "Repair outboard motor" and "Create Military ID card" are examples of activities that might be conducted at Coast Guard units.

2. The following steps should be considered when developing a unit's activity set:

   a. **Leverage experiences of similar commands that have already implemented ABC**. Those commands have comptrollers and managers that have gathered considerable knowledge and insight about implementing ABC. Adopt their most successful techniques, learn from their mistakes, and incorporate their lessons learned into your overall implementation strategy.

   b. **Interview employees; analyze organization charts; review Standard Operating Procedures (SOP), business plans, unit tickler lists, etc., to determine the activities performed**. Start with identifying the 30 to 50 critical activities carried out at the unit. Early models must be easy to explain and visualize, so people can understand how they work. Don't get distracted by detailed process issues until a model is produced that shows the strategic level picture. A model must first be sustainable before it can be useful.

   c. **Develop attributes to assess the value of the activities performed**. An attribute is a descriptive label given to an activity. Attributes can be classified in many ways, including value-added versus non-value-added. Assigning a value to each activity enables managers to conduct cost-benefit analyses of activities once the model is populated with data. This helps managers identify what activities are really value-added – those that will best contribute to a mission, deliver a service, or meet customer demand, thus improving decision-making through better information, and helping to eliminate waste by encouraging personnel to look at all costs. That is why an essential aspect of any ABC endeavor is to get a clear picture of the activities a unit performs. When managers understand their activities, they can better understand the associated costs incurred.

d. **Define performance metrics for the activities**. Doing so provides managers with the data they need to determine how well activities are being performed. For example, if the performance metric for "Create Military ID card" is 5 per yeoman, and the actual rate is 2 per yeoman, further analysis of the efficiency of this activity should be undertaken.

3. A unit's activities shall be compiled into an activity dictionary. The dictionary lists all the activities incorporated into the model, and corresponding descriptions. An ABC Configuration Control Board will maintain activity dictionaries for all Coast Guard field units and staff elements. They will feed a common Coast Guard-wide activity dictionary that is being consolidated by the Institutional Research Task Force. The activity dictionaries will be posted at CG Central, http://cgcentral.uscg.mil, keywords "Activity Dictionary," and in the Readiness Management System.

4. Each of the following sets of commands will share primary activities to enable benchmarking and consistency. Each unit will have the latitude to create sub-activities, which would further detail how the primary activity is carried out locally.

   a. Maintenance and Logistics Command staff elements
   b. Pacific and Atlantic Area staff elements
   c. District staff elements
   d. Electronics Support Units
   e. Naval Engineering Support Units
   f. Civil Engineering Support Units
   g. Integrated Support Commands
   h. Training Centers Yorktown, Cape May, and Petaluma
   i. Sector commands
   j. Other - operational units
   k. Other - unique commands, such as the Finance Center, Personnel Service Center, etc.

## C. Gather Costs

1. Gathering costs entails capturing all decision relevant costs, which are those under the control of the command or program. Organizational overhead should not be included except to the extent some element of it is decision relevant. Some resources not included in the command's funding base, such as pay and AFC-43 (shore facility maintenance), are clearly a resource over which the command has a great deal of control and are decision relevant. Other examples of decision relevant costs are supplies, rental equipment, raw materials, fuel, utilities, grounds maintenance, and security.

2. Training provided by central funding (e.g. A-school), permanent change of station costs (AFC-20), and AFC-4X costs related to scheduled asset overhauls are usually not decision relevant since commands have little control over those decisions. Other examples include cost of capital, pensions, and medical accrual fund contributions.

3. Depreciation may be captured at the unit level for local analysis but it will not be rolled up to the Standard Rates and User Fees (SRUF) model. Depreciation in the SRUF model will be coordinated at the headquarters level by Commandant (CG-832) using the Finance Center's Reserve Summary report. Consult Chapter 7 of the Financial Resource Management Manual for guidance on depreciating assets at the local level. Land is not depreciable.

4. The largest resource decision made is how personnel are employed. In fact, approximately 70% of Coast Guard costs are associated with personnel. The military (AFC-01) and civilian (AFC-08) costs are to be included in the ABC model. In the absence of actual salary costs, the pay portion of the Standard Personnel Cost (SPC) tables should be used as a proxy.

5. Commandant (CG-832) annually produces a Master Data Set (MDS). The MDS represents the OE expenditures for a given year categorized by cost center, allotment fund control code (AFC), object class code, region, and administrative target unit (ATU). Until Coast Guard data systems can be integrated with ABC models, the MDS will be the primary source of expenditure data. The MDS is posted at CG Central, http://cgcentral.uscg.mil, keywords "CGINFO," or "Master Data Set."

6. The source of data for ABC models should be gathered according to the following hierarchy:

   a. Master Data Set (MDS)
   b. Coast Guard Core Accounting System (CAS)
   c. Budget distribution figures, and Standard Personnel Cost (SPC) tables

7. The resource module, which is the entry point for financial data in an ABC model, should be arranged by organizational structure (office, section, division, department, etc.).

D. **Assign Resource Costs to Activities Using Drivers**

1. Costs are categorized in three ways:

   a. **Direct**: Costs that can be traced directly to a cost object. Example: The costs incurred by cost objects, such as USCGC HAMILTON, Maritime Safety and Security Team (MSST) Seattle, and Port Security Units.

   b. **Indirect**: Costs that cannot be allocated to an individual output. In other words, they benefit two or more outputs or cost objects. An assignment methodology (surveys, interviews, statistical sampling, etc.) is required to allocate the indirect costs. For example, in the FY03 SRUF model, the costs incurred by a Naval Engineering Support Unit (NESU) were driven to cost objects using percentages. Surveys were used to determine an estimated percentage of the NESU's labor and non-labor costs that were dedicated to specific cost objects.

c. **General and Administrative (overhead)**: Costs that cannot be reasonably associated with any particular product or service. These costs would remain the same no matter what output the activity produced. Examples: The costs of security at an Integrated Support Command or the salaries of personnel working at Coast Guard Headquarters. Overhead costs are normally allocated evenly across cost objects.

2. Resource drivers are a measure of the level of demand placed on resources by activities. They should be units of the resource, not percentages or proportions. Examples include: number of square feet, number of hours, and number of persons. Expediency may dictate deviating from this principle in early modeling efforts. The deficiency, however, should be identified and upgraded when the model has established its managerial value.

3. Ideally, time or duration drivers would be employed. If time collection systems are not available to capture the duration of activities, the employment of transaction drivers that allocate costs based on units of the resource is acceptable.

## E. Identify Cost Objects (Outputs)

1. The Coast Guard provides products and services to its customers via front line operational units, including cutters, boats, and aircraft. These assets and units perform the multiple missions for which the Coast Guard is valued and funded.

2. The indirect and overhead costs of activities should be driven to operating assets and units. If they cannot be driven to an operating asset or unit, they should be driven to a mission (as defined by the Abstract of Operations program[11] or Mission Cost Model). No final cost objects (products and services) shall exist other than operating assets, other front line service-providing units, such as Port Security Units, and certain missions.

3. It may be valuable for units to make operating assets "second level" cost objects. By doing so, local managers can better analyze processes. For example, a Training Center may be primarily interested in determining the cost per student – its primary output or product. It is acceptable to do so as long as the logic exists to tie the local primary cost objects to the higher level organizational cost objects.

4. The following charts illustrate examples of the Coast Guard's outputs or cost objects:

| Cutters | Boats | Aircraft | Other |
|---|---|---|---|
| 1. WHEC 378 | 1. 41' UTB | 1. HH-65 | 1. Strike Teams |
| 2. WPB 110 | 2. 47' MLB | 2. HH-60 | 2. VTS |
| 3. WLI 100 | 3. Skiff | 3. HU-25 | 3. Taclet/Ledet |
| 4. WYTL 65 | 4. 21' TPSB | 4. HC-130 | 4. Auxiliary |

Figure 6-1

[11] The Abstract of Operations program (AOPS) exists to obtain resource activity data for use in facility planning/management, program cost allocation, and program management. Abstract of Operations Reports, COMDTINST M3123.7 (series) provides procedures and direction for personnel in the aviation, small boat, and cutter communities.

5. A complete and up-to-date list can be found at CG Central, http://cgcentral.uscg.mil, keywords “Strategic Cost Initiative,” “Activity Based Costing,” “Output Providers.”

F. **Assign Activity Costs to Cost Objects Using Drivers**

1. In this step, activity costs are assigned to cost objects using activity drivers. Activity drivers assign activity costs to outputs based on the consumption or demand for activities. A driver may be the number of times an activity is performed (transaction driver) or the length of time an activity is performed (duration driver).

2. For example, if the activity were “Create Military ID card,” the number of ID cards processed for each cost object would be an appropriate driver. A 378-foot WHEC would place a higher demand on this activity than a 110-foot WPB because of the difference in crew sizes.

G. **Performance Measurement**

1. In addition to cost information for business process and activities, an ABC/M system must report information and data on activity performance. Knowing the total cost of an activity is insufficient to measure activity performance. Activity measures of quality, cycle time, productivity, and customer service may also be required to judge activity performance.

2. Performance measures are defined as indicators of the work performed and the results achieved in an activity, process, or organizational unit. Measuring the performance of activities provides a scorecard to report how well improvement efforts are working and is an integral part of continuous improvement. Therefore, a key output of ABC/M is the measurement of performance at the activity and business process level.

H. **Cost Behavior.** It is important for managers to recognize how costs behave in order to plan and manage properly. There are basically three types of cost behavior:

1. **Fixed**: Those costs that, over some specific time period, do not vary with quantity or output. For example, a facility lease that requires payment, whether or not any work is performed at the unit, is a fixed cost.

2. **Variable**: Those costs that vary directly with quantity of output. If nothing is produced, variable costs are zero. The costs of aircraft fuel and main diesel engine fuel oil filters are examples.

3. **Semi - variable**: Those costs that behave as fixed costs up to some minimum quantity of output, then, like variable costs, increase as the number of units of output increases.

# CHAPTER 7 – ABC CONFIGURATION CONTROL BOARD

A. **Responsibilities**. The ABC Configuration Control Board has the following responsibilities:

1. Coordinate the development of prototype ABC models in the field and implementation of ABC.

2. Develop and maintain an activity dictionary, which will include support commands, Headquarters units, and operational units.

3. Evaluate ABC software applications and make recommendations on an enterprise-wide software solution.

B. **Membership**

1. The Chief of the Office of Resource Management (CG-83) will oversee the ABC Configuration Control Board. Its members will include:

   a. Commandant (CG-81r) Special Assistant for Risk Management
   b. Commandant (CG-832) Strategic Cost Team Leader
   c. Commandant (CG-832) Strategic Cost Team Member
   d. Commandant (G-WTT) Division Chief
   e. Maintenance and Logistics Command (MLC) Atlantic Planning and Budget Branch (fpb-1)
   f. Maintenance and Logistics Command (MLC) Pacific Planning, Programming, and Budget Branch (fpb-1)

2. The ABC Configuration Control Board will meet as necessary to carry out its responsibilities. Additional members may be included as the ABC initiative gains momentum.

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# APPENDIX A – COST MANAGEMENT REFERENCES

**Government sources:**

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2. Office of Management and Budget Circular A-25
3. Statement of Federal Financial Accounting Standard Number 4
4. Government Performance and Results Act of 1993
5. Chief Financial Officers (CFO) Act of 1990
6. President's Management Agenda

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2. CAM-I ABCM Design Framework Development Team. Activity-Based Cost Management Design Framework. Ed. Ron Bleeker, Ken Euske.
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1. Cokins, Gary. "Activity-Based Cost Management in Government." Extracted from Gary Cokins' book, Activity Based Cost Management in Government.
2. Fabian, Alan. "Activity-Based Management in the Public Sector."
3. Spinner, Paula. "Activity-Based Costing for Operations Management." Robbins-Gioia, Inc. 1999.

**Websites:**

1. CG-832 Strategic Cost Initiative, CG Central, http://cgcentral.uscg.mil, keywords "Strategic Cost Initiative."
2. Consortium for Advanced Manufacturers - International, http://www.cam-i.org/

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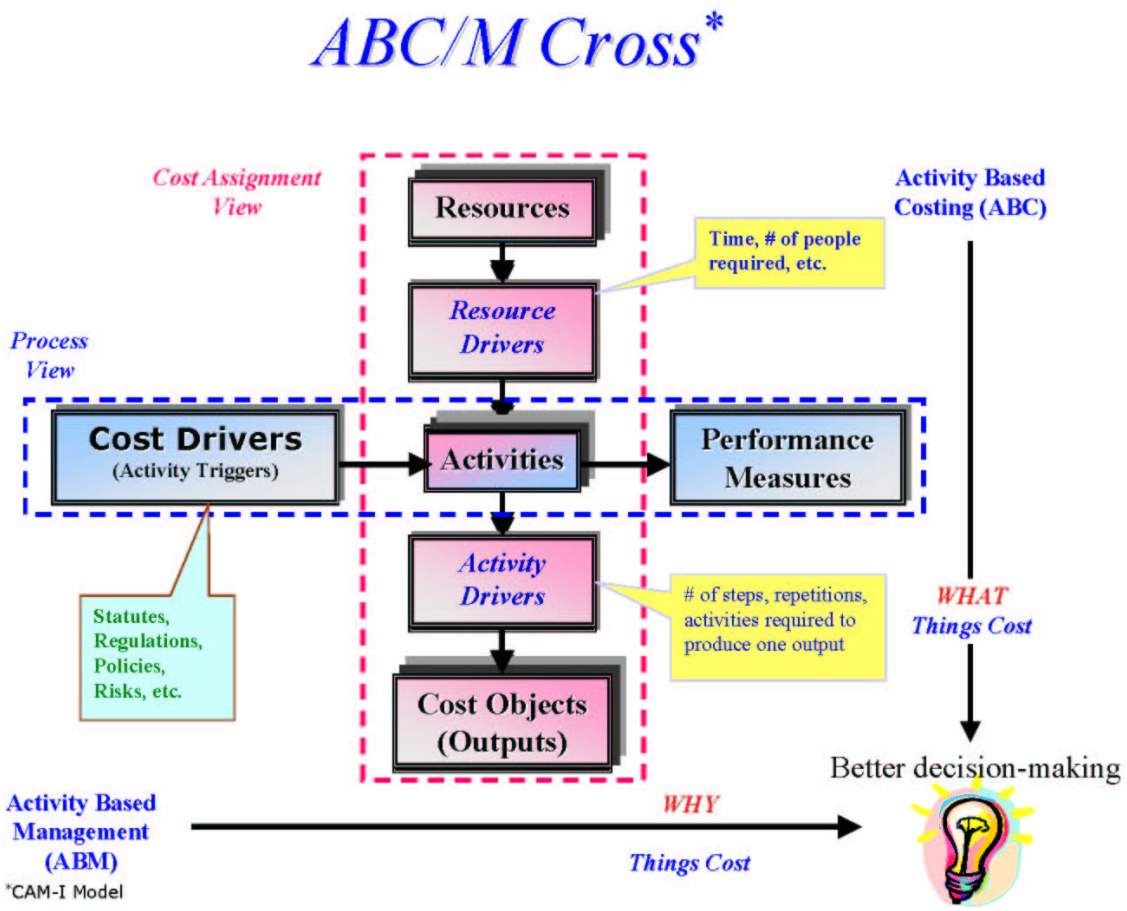
## APPENDIX B – THE CONSORTIUM OF ADVANCED MANUFACTURER'S – INTERNATIONAL (CAM-I) ABC/M CROSS

The relationship between ABC and ABM is pictorially depicted below. ABC (vertical component) is the measurement of costs for those activities. ABM (horizontal components) is goal-focused, measure-informed management of activities to influence performance outcomes.



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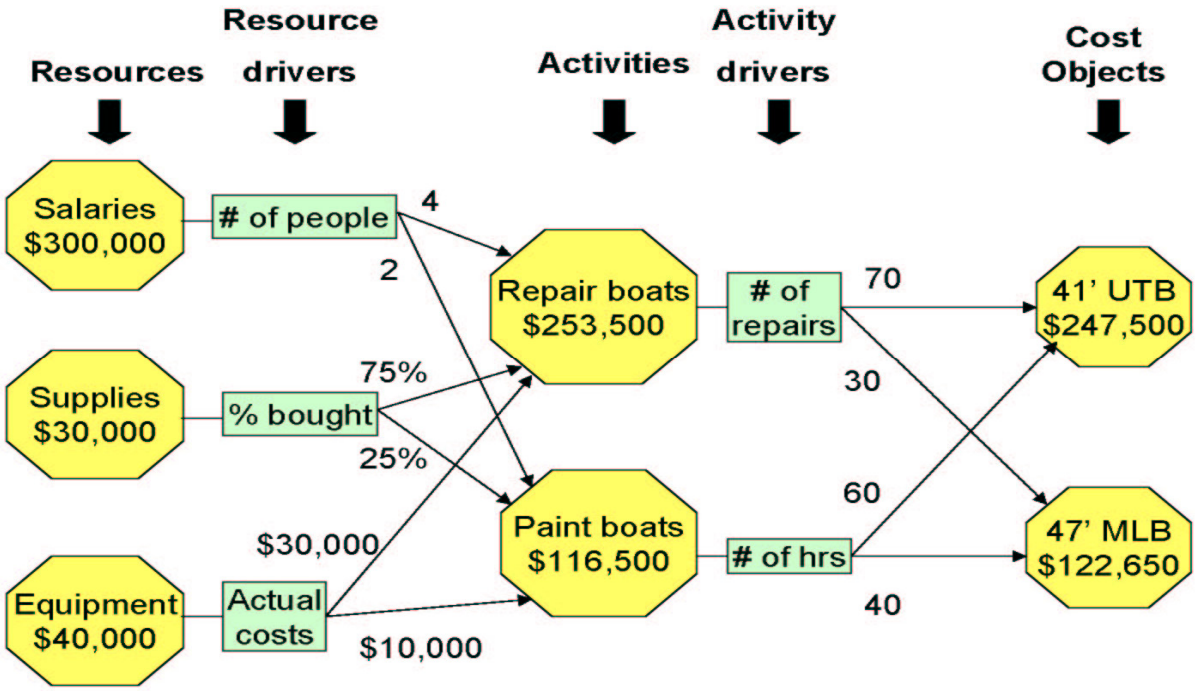
## APPENDIX C – ACTIVITY-BASED COSTING EXAMPLE – STATION BAY RIVER




1. This Appendix provides a basic example of an ABC model for a fictitious Coast Guard station - Bay River. Actual ABC models would have far more resources and activities.

2. There are three pools of resources, obtained from the Coast Guard's Core Accounting System (CAS): Salaries for 6 employees, Supplies, and Equipment.

3. There are two activities carried out by Bay River: "Repair boats" and "Paint Boats." These activities absorb resources:

   a. Military personnel repair and paint boats. Their salaries are driven to the two activities based on how many people are dedicated to each activity. Since 4 people repair boats and 2 paint boats, 67% (4/6) of the station's salary costs are driven to "Repair boats" and 33% (2/6) are driven to "Paint Boats." The driver is "# of people."

      Repair boats: 0.67 X $300,000 = $201,000
      Paint boats: 0.33 X $300,000 = $99,000

   b. Supplies are consumables purchased to repair and paint boats. The costs are driven to the two activities based on the percentage of supplies bought for each activity. 75% of the supplies were purchased to "Repair boats" and 25% were bought to "Paint boats." The driver is "% bought."

      Repair boats: 0.75 X $30,000 = $22,500
      Paint boats: 0.25 X $30,000 = $7,500

c. Equipment includes expenditures on tools and machinery to repair and paint boats. The costs are driven to each activity based on the actual costs of tools and machinery purchased to "Repair boats" and "Paint boats." The driver is "actual costs."

Repair boats: $30,000
Paint boats: $10,000

d. After driving the costs in the resource pools to the two activities, the total costs are:

Repair boat machinery: $201,000 + $22,500 + $30,000 = $253,500
Paint boats: $99,000 + $7,500 + $10,000 = $116,500

4. There are two cost objects (consumers of activities, or work, performed) at Bay River, a 41-foot utility boat (UTB) and a 47-foot motor lifeboat (MLB). The two boats absorb activities:

a. 100 boat repairs were completed at Bay River. Since 70 of those repairs were done on the UTB, 70% (70/100) of the costs of "Repair boats" are driven to the UTB. 30 repairs were done on the MLB, therefore, 30% (30/100) of the costs of "Repair boats" are driven to the MLB. The driver is "# of repairs."

41-foot UTB: 0.70 X $253,500 = $177,450
47-foot MLB: 0.30 X $253,500 = $76,050

b. Two Bay River personnel spent 1000 hours painting boats. Since 600 hours were spent painting the UTB, 60% (600/1000) of the costs of "Paint Boats" are driven to the UTB. 400 hours were spent painting the MLB, therefore, 40% (400/100) of the costs of "Paint boats" are driven to the MLB. The driver is "# of hours."

41-foot UTB: 0.60 X $116,500 = $69,900
47-foot MLB: 0.40 X $116,500 = $46,600

5. By employing an ABC model, Bay River managers and decision makers now know the total cost to maintain each of their small boats:

41-foot UTB: $177,450 + $69,900 = $247,350
47-foot MLB: $76,050 + $46,600 = $122,650

6. Under the traditional Coast Guard accounting system, Bay River would have known the costs incurred to purchase supplies and equipment. In most cases, salary costs would not have been viewed as a resource under the control of the station, and would have been ignored. Using ABC, Bay River managers know which activities are performed and their total cost, including salaries. They also know the total costs of maintaining each of the small boats.

7. This information can be used to reallocate resources between boats, document a declining material condition, justify additional resources, institute process improvements, etc.

# APPENDIX D – ACTIVITY-BASED COSTING / MANAGEMENT GLOSSARY

Entries marked with an * are extracted from the Glossary of Terms in Activity-Based Cost Management Design Framework (Ron Bleeker and Kenneth Euske, 2004.)

**Accrual Basis of Accounting**

A method of accounting in which revenues are recognized in the period earned and costs are recognized in the period incurred, regardless of when payment is received or made.

**Activity***

Work performed by people, equipment, technologies, or facilities. Activities are usually described by the "action-verb-adjective-noun" grammar convention. Activities may occur in a linked sequence and activity-to-activity assignments may exist.

**Activity-Based Budgeting (ABB)***

An approach to budgeting where a company uses an understanding of its activities and driver relationships to quantitatively estimate work load and resource requirements as part of an ongoing business plan. Budgets show the types, number of, and cost of resources that activities are expected to consume, based on forecasted planning process and can be used in evaluating its success in setting and pursuing strategic goals.

**Activity-Based Costing (ABC)***

A methodology that measures the cost and performance of cost objects, activities and resources. Cost objects consume activities and activities consume resources. Resource costs are assigned to activities based on their use of those resources, and activity costs are reassigned to cost objects (outputs) based on the cost objects' proportional use of those activities. Activity-based costing incorporates causal relationships between cost objects and activities and between activities and resources.

**Activity-Based Management (ABM)***

A discipline focusing on the management of activities within business processes as the route to continuously improve both the value received by customers and the profit earned in providing that value. ABM uses activity-based cost information and performance measurements to influence management action.

**Activity-Based Planning (ABP)***

Activity-based planning (ABP) is an ongoing process to determine activity and resource requirements (both financial and operational) based on the ongoing demand of products or services by specific customer needs. Resource requirements are compared to resources available and capacity issues are identified and managed. Activity-based budgeting (ABB) is based on the outputs of activity-based planning.

**Activity Cost Pool**

Total costs assigned to an activity. The sum of all cost elements assigned to an activity.

**Activity Cost Assignment**

The process by which the costs of activities are attached to cost objects using activity drivers.

**Activity Dictionary***

A listing and description of activities that provides a common/standard definition of activities across the organization. An activity dictionary can include information about an activity and/or its relationships, such as activity description, business process, function source, whether value-added, inputs, outputs, supplier, customer, output measures, cost drivers, attributes, tasks, and other information as desired to describe the activity.

**Activity Driver**

A factor used to assign cost from an activity to a cost object. A measure of the frequency and intensity of use of an activity by a cost object.

**Allocation**

A process of assigning cost to an activity or cost object when a direct measure does not exist. For example, assigning the cost of power to a machine activity by means of machine hours is an allocation, because machine hours are an indirect measure of power consumption. Instead of using machine hours to allocate power consumption, for example, an organization can place a power meter on machines to measure actual power consumption.

**Anti-Deficiency Act**

An Act of Congress which: (a) prohibits the obligation or expenditure of government funds in excess of the amounts appropriated by Congress or in excess of amounts permitted by regulations; (b) forbids the obligation of any funds in advance of the official Appropriation of Funds; and (c) requires the head of each government agency to establish an administrative control system for the purposes of keeping obligations within the amount of apportionment, and enabling the agency to detect and report violations of the Anti-Deficiency Act through the Executive Branch to Congress. ("Society of Cost Estimating and Analysis (SCEA) Glossary")

**Assignment***

A distribution of costs using causal relationships. Because cost causal relationships are viewed as more relevant for management decision-making, assignment of costs is generally preferable to allocation techniques. (Synonymous with Tracing; contrast with Allocation.)

**Attributes***

A label used to provide additional classification or information about a resource, activity, or cost object. Used for focusing attention and may be subjective. Examples are a characteristic, a score or grade of product or activity, or groupings of these items, and performance measurements.

**Benchmarking**

The process of investigating and identifying "best practices" and using them as a standard to improve one's own processes and activities.

**Budget Authority**

The authority becoming available during the year to enter into obligations that result in immediate or future outlays of government funds.

**Capacity***

The physical facilities, personnel, and process available to meet the product or service needs of customers. Capacity generally refers to the maximum output or producing ability of a machine, a person, a process, a factory, a product, or a service.

**Chief Financial Officers (CFO) Act of 1990**

The 1990 CFO Act established a centralized financial management structure within the Office of Management and Budget (OMB) and in major departments and agencies. It strengthened financial management internal controls by requiring: 1) the preparation of five-year financial management systems improvement plans, both government-wide and in the 23 agencies covered by the Act; 2) the preparation of financial statements and audits of selected activities of agencies to hold agency heads accountable for their operations; and 3) annual reporting to the President and Congress on the status of general and financial management in the federal government.

**Commitment of Funds**

A administrative reservation of funds, based upon firm procurement directives, orders, requisitions, authorizations to issue travel orders, or requests which authorize the recipient to create obligations without further recourse to the official responsible for certifying the availability of funds. The recording of a commitment reserves funds for future obligations.

**Continuous Improvement Program**

A program to continuously and incrementally improve yields, eliminate waste, reduce response time, simplify design of both products and processes, and improve quality on a continuous incremental basis.

**Cost**

Resources consumed in the performing activities to produce a service or product

**Cost Allocation**

A method of assigning indirect and general and administrative costs to activities, functions, or outputs.

**Cost Assignment**

The tracing or allocation of resources to activities or cost objects.

**Cost Driver**

Any factor that causes a change in the cost of a function or output.

**Cost Element***

The lowest level component of a resource, activity, or cost object. (For example, salary costs, utility costs, and depreciation may be cost elements in the activity cost pool for an equipment activity.)

**Cost Object**

Any customer, product, service, contract, project, or other work unit for which a separate cost measurement is desired.

**Cost per Output**

The term Cost per Output is synonymous with Unit Cost. It is the relationship of resources consumed to outputs produced. Simply stated: the cost of resources divided by the number of outputs equals the Cost per Output or Unit Cost.

**Customer**

External and internal recipients of a product or service.

**Customer-Driven Demand**

The requirement (demand) for production of goods or services (output) that originates from customers, not from the producing activity.

**Depreciation (or Amortization)**

The expending of capital assets over the useful life of the asset. If the asset is intangible (rather than a tangible fixed asset), the process of expending over the useful life is called amortization.

**Direct Cost**

A cost that is directly attributable to a specific product or service. Some examples are labor hours or materials consumed in the production of an output.

**Direct Labor Hour (DLH)**

The number of hours required to perform the direct work on a product, or to perform a billable service for customers. The DLH generally includes the hands-on maintenance, repair, overhaul, test, and related direct production effort that follows the established sequence and content of work necessary to accomplish the billable job. DLHs do not include the support work or labor hours identified as either indirect or general and administrative in nature. DLHs are estimated for budget purposes, by product or service, based on industrial or management engineering standards developed using time, method, and motion studies, historical usage averages, or professional estimating and evaluation techniques.

**Federal Managers' Financial Integrity Act (FMFIA)**

P.L. 97-255-The Federal Managers' Financial Integrity Act was enacted in September 1982 to strengthen internal control and accounting systems throughout the federal government and to help reduce fraud, waste, abuse, and misappropriation of federal funds. The Act holds agency managers accountable for correcting noted deficiencies and requires that agencies annually identify and report internal control and accounting system problems and planned remedies. (GAO/AFMD-92-12)

**Fixed Cost**

A cost or expense that does not vary in the short run with the quantity of output produced.

**Full Absorption**

A requirement that all costs, even those associated with unused capacity, be assigned to existing products.

**General and Administrative (G&A) Cost**

A cost that cannot be attributed to just one output. This cost is commonly referred to as overhead, and typically is allocated across all outputs. Some examples of G&A include installation security, facilities engineering, custodial services, and personnel offices.

**Government Performance and Results Act (GPRA) of 1993 (P.L. 103-62)**

This act requires the development of strategic plans focused on long-term goals and annual performance plans with specific indicators to measure performance. The purpose of the act is to shift managerial emphasis to actual program execution and to compare results achieved with desired outcomes.

**The Government Management Reform Act (GMRA) of 1994 and the Federal Financial Management Act (FFMA) of 1994**

These acts were enacted to provide a more effective, efficient, and responsible government. They mandated statutory requirements for reports to the Congress, the use of electronic funds transfers for payments, the establishment of a franchise fund in each of four executive agencies, and the submission of annual audited financial statements to the Director of the Office of Management and Budget.

**Indirect Cost**

A cost that is associated with a product or service, but not directly attributable to just one product or service. Supervisor or manager activities are examples of these costs.

**National Performance Review (NPR)**

A management reform initiative established by the national government administration to identify ways to make the government work better and cost less. The NPR Report, dated September 7, 1993, contained 384 major recommendations covering 27 Federal agencies and 14 governmental systems such as procurement, human resources management, and budgeting. (GAO/OCG-95-1)

**Non-Value-Added Activity**

An activity that is judged not to contribute to customer value. Also, an activity that can be eliminated without reducing the quantity or quality of output.

**Obligation of Funds**

Amounts of orders placed, contracts awarded, services received, or other similar transactions made by Federal agencies during a given period, which will require outlays during the same or some future period.

**Outlays**

Checks issued or other payments made by the government for goods and services received. Gross outlays are equal to the cumulative amount of disbursements made for the fiscal period to date. Net outlays are equal to gross outlays less the cumulative amount of collections received for the fiscal period to date.

**Output**

The product or service provided. The primary output reflects the principal mission of a unit cost activity.

**Overhead Commands**

Coast Guard units that provide a service across the entire organization. The Human Resources Services and Information Center (HRSIC) provides a service to all Coast Guard units by processing military pay. The Finance Center provides a service to the entire organization by paying unit bills and formulating the Coast Guard's financial statements.

**Pareto Analysis**

Arrangement of activities or activity drivers in descending order of cost. The activities or drivers accounting for the majority of costs are targeted for cost reduction.

**Performance Measures**

An objective indicator of service effectiveness and efficiency that is directly related to the service mission.

**Performance Measurement**

The use of objective, quantifiable indicators of program effectiveness and efficiency to assess progress against stated goals and objectives. A balance of financial and non-financial indicators should be used to measure performance, such as cost per output, cost per outcome, customer-oriented indictors of quality, timeliness and customer satisfaction. Program accomplishments in terms of outputs and outcomes are integral elements of performance measurement.

**President's Budget**

The budget for a particular fiscal year transmitted to the Congress by the President in accordance with the Budget and Accounting Act of 1921, as amended.

**Process**

A specific ordering of work activities across time and place, with a beginning and end, and clearly identified inputs and outputs.

**Revolving Funds**

The accounts authorized by specific provisions of law to finance a continuing cycle of business-type operations and to incur obligations and expenditures that generate receipts.

**Resource**

An economic element that is applied or used in the performance of activities. Salaries and materials are examples of resources used in the performance of activities.

**Resource Drivers**

A measure of the quantity of resources consumed by an activity. The links between resources and activities.

**Resource Cost Assignment**

The process by which cost is attached to activities. This process requires the assignment of cost from the general ledger to activities using resource drivers.

**Storyboards**

A group of problem solving techniques that creates a picture of each department's activity and related information.

**Support Commands**

Coast Guard units that provide a service to, or support, other units and in determinable quantities. NESU Alameda is an example of a Coast Guard support command. It can be determined how much support the NESU provides to a finite set of customers.

**Sustaining Activity**

An activity that benefits the organization but not the cost object.

**Total Quality Management**

An approach that focuses all organizational resources on achieving quality throughout the value chain. Emphasis is on quality from the customer's point of view. Cost should be reduced as product failures and follow-on customer service requirements are reduced.

**Target Costing**

Setting cost targets for new products based on market price.

**Tracing**

The assignment of cost to an activity or a cost object using an observable measure of the consumption of resources by the activity or cost object. Tracing is generally preferred to allocation if the data exist or can be obtained at a reasonable cost. Tracing is also called direct tracing.

**Unit Cost**

The cost associated with a single unit of the product, including direct costs, indirect costs, traced costs, and allocated costs.

**Value-Added Activity**

An activity that is judged to contribute to customer value or satisfy an organizational need. The attribute "value-added" reflects a belief that the activity cannot be eliminated without reducing the quantity, responsiveness, or quality of output required by a customer or organization.

**Value Analysis**

Intense study of a business process with the intent of improving the process and reducing cost.

**Variable Cost**

A cost that varies with changes in the quantity of output produced when other factors are held constant. The cost of material handling to an activity, for example, varies according to the number of material deliveries and pickups to and from that activity.

**Variance**

The amount, rate, extent, or degree of change, or the divergence from a desired characteristic or state.

**Waste**

Resources consumed by unessential or inefficient activities.

**Working Capital Fund**

A revolving fund that operates as an accounting entity in which the assets are capitalized and in which all income is derived from the operations of its activities. The fund is available to finance continuing operations without fiscal year limitations.