Cost Benefit Analysis (CBA) Training for Analysts

FM LEVEL II

Visit our CBA Website for more information regarding locations, signing up, upcoming training sessions, and more
https://cpp.army.mil
Welcome

- The Army's senior leaders are committed in making resource-informed decisions by means of CBAs.
- Army leaders have identified cost culture as one of the highest priorities in adapting to an increasingly resource-constrained environment.

Mr. Stephen G. Barth  
Deputy Assistant Secretary of the Army  
(Cost & Economics)
A Cost Culture entails developing – through leadership, education, discipline, and experience an understanding of the importance of:

– making cost-informed decisions
– making effective trade-off decisions to achieve the best possible use of limited resources
– holding people accountable for understanding and being able to explain the costs of their organizations, products, services, and customers
– focusing on continuously improving the efficiency and effectiveness of operations

- Culture: Common Beliefs and Behavior in an Organization
Comparative Analysis Approach

Cost Benefit Analysis—Making the case for a project or proposal:
Weighing the total expected costs against the total expected benefits over the near, far, and lifecycle timeframes from an Army enterprise perspective.

**COSTS**
- Quantifiable costs
  - Direct
  - Indirect
  - Initial/Start up
  - Sustainment
  - Procurement
- Non Quantifiable Costs
  - Life/Safety/Health
  - Perception/Image
  - Opportunity
  - Risk/Uncertainty
  - Political

**BENEFITS**
- The total of quantifiable (e.g. cycle-time) and non-quantifiable (e.g. quality) benefits
- Financial benefits
  - Return on Investments
  - Cost Avoidances
  - Break-even Pt
- Non-Financial benefits
  - Greater capability
  - Faster availability
  - Better quality
  - Improved morale
  - Other?

BENEFITS MUST BALANCE OR OUTWEIGH COSTS

1. Develop the Problem Statement; Define the Objective and the Scope
2. Formulate Assumptions; and Identify Constraints
3. Document Current State (Status Quo)
4. Define Alternatives with Cost Estimates
5. Identify Quantifiable and Non-Quantifiable Benefits
6. Define Alternative Selection Criteria
7. Compare Alternatives
8. Report Results and Recommendations
Army’s Demand for CBA

**Total CBAs Created**

![Graph showing the total CBAs created over time.]

**Submitting Organizations**

![Pie chart showing the percentage of CBAs submitted by different organizations.]

**CBAs by Decision Forum**

![Pie chart showing the distribution of CBAs by decision forum.]

**CBAs by DOTMLPF**

![Pie chart showing the distribution of CBAs by DOTMLPF.]

- **Concept Plan**: 31%
- **AROC**: 26%
- **Legislative Proposal**: 8%
- **FDU**: 4%
- **Other**: 5%

- **Doctrine**: 36%
- **Organization**: 15%
- **Training**: 5%
- **Leadership**: 4%
- **Materiel**: 36%
- **Personnel**: 5%
- **Facilities**: 1%
Training Objectives

Objectives:

• Understand how CBA should be used
• Understand Army’s CBA methodology
• Explore potential challenges in analysis
• Explore best practices
• Illustrate the methodology
CBA BASICS
**Why Do We Need CBAs?**

**Purpose:**
- Supplement (but not replace) professional experience, subject matter expertise, and military judgment with rigorous analytical techniques
- Make best possible use of constrained resources
- When making resource decisions:
  - Ensure that all decisions are resource-informed
  - Treat cost a consideration from the outset, not as an afterthought
  - Understand how much benefit will be derived
  - Identify billpayers
  - Consider second- and third-order effects
Cost-Benefit Analysis:

• Is a structured methodology used to identify alternative solutions to a problem, determine the costs and benefits of each alternative, define the appropriate decision criteria, and select the best alternative.

• Produces a strong value proposition – a clear statement that the benefits outweigh the costs and risks.

• In English:
  1. Define a problem or opportunity
  2. Identify alternatives
  3. Determine their costs and benefits
  4. Evaluate and select the best alternative
CBA METHODOLOGY
Eight-Step Methodology

1. Define Problem/Opportunity and Objective
2. Define CBA Boundaries and Parameters
3. Define Alternatives
4. Develop Cost Estimate for each Alternative
5. Identify Quantifiable and Non-Quantifiable Benefits
6. Define Alternative Selection Criteria
7. Compare Alternatives
8. Report Results and Recommendations
Cost Benefit Analysis and the MDMP

CBA Methodology

1. Define Problem/Opportunity and Objective
2. Define Scope; Formulate Facts and Assumptions
3. Define Alternatives
4. Develop Cost Estimate for each Alternative
5. Identify Quantifiable and Non-Quantifiable Benefits
6. Define Alternative Selection Criteria
7. Compare Alternatives
8. Report Results and Recommendations

Military Decision-Making Process (MDMP) *

Receive Mission
Analyze Restated Mission (includes assumptions and constraints)
Develop Alternatives
Analyze Alternatives
Compare Alternatives
Approve Alternatives
Issue Implementing Orders

* As prescribed in FM 5-0.
Step 1: Define the Problem/Opportunity and Objective

Before beginning, determine whether the proposal is realistic and will be seriously considered.

- **The Problem Statement clearly defines the problem/opportunity that:**
  - Requires a solution
  - Describes what the effort will accomplish

- **The objective of the analysis:**
  - Describes the role of the CBA: what is the decision to be made, and how does the CBA inform and support it.
The Boundaries and Parameters of a CBA are the specifications that make an analysis feasible and practicable. They are expressed by Scope, Facts, and Assumptions.

- **Scope**: Defines the range of coverage encompassed by an initiative or proposal along specific dimensions like time, location, and organization.
- **Fact**: A verifiable statement that is real and something that has happened or is happening.
- **Assumption**: A condition or situation over which we have no control but is essential to the success of our proposed solution.
• Different scopes entail different cost estimates: For example, Flyaway, Weapon System, Procurement, Program Acquisition, and Life Cycle Costs all encompass different types of costs.
Step 3: Define Alternatives

- **Alternatives:**
  - They must include the status quo or current state, if applicable.
Feasible Alternatives

• Too many alternatives is as bad as too few
• Alternatives should illustrate the realm of feasible solutions
• In analysis, an optimal solution often exists

Presenting 3 of these does not help
Step 4: Develop Cost Estimate for Each Alternative

**Cost Estimates:**
- Capture the total cost of each alternative over the appropriate period of analysis.

**Types of Cost Estimates:**
- Historical
- Parametric
- Analogy
- Engineering

Document the cost estimate with data sources, computations, rationale, etc. as this is essential to the review/validation process.
**Benefits**: “Benefits of a chosen alternative are results expected in return for costs incurred. They are the quantitative and qualitative results expected or resulting from the implementation of a project/initiative (which may include but are not limited to the following: equipment, facilities, hardware, systems, etc.).”

(CBA guide, “Step 5”)
Step 6: Define Alternative Selection Criteria

Alternative Selection Criteria:

- The standards upon which the decision will be based
  - Criteria must be consistent with the Problem Statement and the benefits

CBAs must:

- Identify the recommended decision criteria
- Elucidate how much each alternative satisfies the criteria

Leadership Engagement:

The Lead Analyst should work with the Functional Manager to ensure they agree on the selection criteria, particularly if criteria will be weighted in the evaluation phase.
Step 7: Compare Alternatives

**Alternative Comparison:** Compare alternatives using the selection criteria to identify the preferred alternative.

**Billpayer Analysis:** Identify the billpayer if there is a bill associated with the recommended alternative.

**Effects Analysis:** Identify the positive and negative impacts of the 2\textsuperscript{nd} and 3\textsuperscript{rd} order effects. What must be done to manage the negative impacts?

**Sensitivity Analysis:** Determine the robustness of the conclusions. If anything changes (i.e., assumptions, costs, benefits) would the recommendation change?

**Risk Analysis:** Identify the high-risk aspects of the recommended alternative and define appropriate risk mitigation measures.
The CBA process is essentially comparing the costs with the benefits between all alternatives.

The preferred alternative provides the greatest amount of value.

Risk and second- and third-order effects should be included in the comparison of alternatives.

\[ \text{Value} = \text{Benefit} - \text{Costs} \]
### Aid for Completing - Step 7a

<table>
<thead>
<tr>
<th>Costs</th>
<th>Benefits</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal</td>
<td>Unequal</td>
<td>Alternative that provides greatest benefits for given cost</td>
</tr>
<tr>
<td>Equal</td>
<td>Equal</td>
<td>Subjective reasoning and a fortiori analysis</td>
</tr>
<tr>
<td>Unequal</td>
<td>Unequal</td>
<td>Alternatives ranked in order (based on benefit/cost ratio, net present value, or other relevant criterion)</td>
</tr>
<tr>
<td>Equal</td>
<td>Equal</td>
<td>Least costly alternative</td>
</tr>
</tbody>
</table>

**Most likely CBA Scenario:**

- Most likely CBA Scenario

**CBA may not be appropriate:**

- CBA may not be appropriate
## Comparative Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>When Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value (NPV)</td>
<td>Converts future cash flows into present equivalent values and then adds them together</td>
<td>When alternatives have the same economic life</td>
</tr>
<tr>
<td>Benefit/cost ratio (BCR)</td>
<td>Compares present value (PV) of benefits with present value of costs</td>
<td>When competing alternatives have unequal costs and unequal benefits</td>
</tr>
<tr>
<td>Break-even Point</td>
<td>Identifies point at which cumulative cost of two alternatives equal the cumulative benefits</td>
<td>When projects are high-risk, to show when investment costs need to be recovered quickly</td>
</tr>
<tr>
<td>Subjective reasoning</td>
<td>Applies professional judgment as a complement to, or to the exclusion of, quantitative data.</td>
<td>When professional judgment is considered to be more important</td>
</tr>
<tr>
<td>Point System</td>
<td>Applies objective values to subjective criteria.</td>
<td>When decision makers wish to narrow the list of alternative solutions to the few that are most suitable</td>
</tr>
<tr>
<td>Decision Matrix</td>
<td>Allows for multiple criteria to be used to compare alternatives</td>
<td>It is a very flexible tool that can be used under many circumstances. It can even account for other decision support methods described in this table.</td>
</tr>
<tr>
<td>A Fortiori Analysis</td>
<td>Determines whether a strongly favored alternative is still the best choice even when assumptions are formulated that put that alternative at a disadvantage.</td>
<td>When generally accepted intuitive judgment strongly favors one alternative</td>
</tr>
</tbody>
</table>
Step 8: Report Results and Recommendations

Results and Recommendations:
- Summarize the analysis
- Make conclusive statements about each of the alternatives and how they were evaluated
- Present specific recommended solution
- Include documentation used in all steps
ANALYSIS TIPS
CBA is Not a Linear Process

- At any step in the process, the team’s findings and analysis might make it necessary to revisit previous steps.
- Significant findings might require asking the decision maker for revised guidance.
Normalization of Value

Normalization:

- The values of alternatives can easily be compared
  - Costs of today with costs of tomorrow
  - Present with future benefits
  - Costs with benefits

- Appropriate method must be chosen from many choices

- Costs and benefits may have to be recalculated based upon chosen method

- Common methods:
  - Discounting
  - Constant (base) year
Special Notes on Cost

• Cost is the consumption of resources
• Type of funding or appropriation should not affect cost
• Approved funding ≠ Free of cost
• What if something is funded (funding reqt exists) or unfunded (no funding reqt)?
  – Again. Funded ≠ Free
  – Spending ≠ cost of requirements
  – Cutting overhires ≠ savings analysis
  – People/equipment already in use ≠ requirements
Common Mistakes

• Problem stated as **predetermined solution** instead of as problem, as in the form, “We need more money.”
• Problem does not reflect the **stakeholder concerns**
• Problem is **based on anecdotal information**
Effects of Over simplification

<table>
<thead>
<tr>
<th>Metric</th>
<th>Benefit</th>
<th>Score/Rank</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>20 widgets/yr</td>
<td>Good</td>
<td>3</td>
</tr>
<tr>
<td>Alternative 2</td>
<td>15 widgets/yr</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>10 widgets/yr</td>
<td>Bad</td>
<td>1</td>
</tr>
</tbody>
</table>

• What happens when using a per cost or per benefit metric?

<table>
<thead>
<tr>
<th>Metric</th>
<th>CBI</th>
<th>BCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>8.3</td>
<td>0.12</td>
</tr>
<tr>
<td>Alternative 2</td>
<td>7.5</td>
<td>0.13</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>10</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Best Case: COA 2 is best?
• Organization XYZ needs 20 new people to deliver more service, but they already have 10 excess employees.

• While my mother was spending $700 for an X Box and games for the kids last Christmas she commented that she only spent a total of less than $500 for Atari products for you in all of the eighties.
BEST PRACTICES
Decision Points

• **Initial decisions are most important!**
  – Drive subsequent decisions
  – Largest driver of impact

• In the Army, **requirements** decisions usually precede design or funding decisions

• **Example 1: Personal Transportation Decision Tree**
  1. Public vs Private auto to commute to work
  2. If private auto, what type, model?
  3. Funding decision on financing, leasing, etc.

• **Example 2: Army Mobility Requirement Decision Tree**
  1. DOTMLPF decision
  2. If material, what type of equipment?
  3. Tradeoff decisions
  4. Vendor & Model selection
  5. Funding and schedule decisions
Best Practices

Practices:

• Compare the incremental costs with the incremental benefits
• Compare the one or two most relevant benefits with the costs
• Find the “knee in the curve” or optimal value solution
Common Mistakes 2

• “Over-averaging” for sake of simplification:
  – Example:
    ▪ “Fort Hood data is representative of all bases.”

• Assuming away cost:
  – Examples:
    ▪ “Year-end funds will be available,” when that’s not the case
    ▪ “Higher headquarters will pay for it.”
    ▪ “Other organizations will pay for it.”
    ▪ “Military personnel are free.”

• Assuming away the problem:
  – Example:
    ▪ “Unused office space is available.”
    ▪ “Chief of Staff said we need this.”
    ▪ Adding a layer of oversight will increase process efficiency
### Decision Matrix Merits

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Easy to use</td>
<td>• Error prone</td>
</tr>
<tr>
<td>• Normalizes costs and benefits</td>
<td>• Highly judgmental</td>
</tr>
<tr>
<td>• Is a familiar tool</td>
<td>• Loss of information via normalization</td>
</tr>
<tr>
<td>• Flexible</td>
<td>• Results not definitive</td>
</tr>
<tr>
<td></td>
<td>• Scoring is subjective</td>
</tr>
</tbody>
</table>
# Example - Decision Matrix

<table>
<thead>
<tr>
<th>Benefit Criteria</th>
<th>Weight</th>
<th>COA-1</th>
<th>COA-2</th>
<th>COA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lethality</td>
<td>30%</td>
<td>9</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Safety</td>
<td>45%</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Survivability</td>
<td>25%</td>
<td>6</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

**Score**: 6.0, 5.8, 4.1

**Cost $M in BY-2011**: $20, $16, $12

Cost = $ quantifiable cost – $ quantifiable benefit or saving

<table>
<thead>
<tr>
<th>Benefit</th>
<th>COA-1</th>
<th>COA-2</th>
<th>COA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per Benefit</td>
<td>$3.33</td>
<td>$2.78</td>
<td>$2.96</td>
</tr>
</tbody>
</table>

**Benefit** = $ non-quantifiable benefit and $ non-quantifiable risk

Rating: 1 (worst) to 9 (best)
Types of Risks

**Business/Programmatic Risk:**
• Affect the budget and viability of a program

**Operational Risk:**
• Affect the ability to perform a mission

**Process Risk:**
• Associated with failing to meet standards and performance benchmarks in a newly established process

**Technical Risk:**
• Associated with failing to develop or implement technology

**Schedule Risk:**
• Associated with allocating time to perform and manage tasks

**Organizational Risk:**
• Associated with management changes

All risks need to be reflected in Costs and/or Benefits of COAs
Risks must factor into the decision-making process
DOD has scheduled the procurement of seven customized “Killer Stealth” drones with a preliminary delivery date of 15 May 2017 (with 95% certainty). Normal procurement cost per drone is $35M. Each of the new drones has been ordered with a classified modification to suit customized mission requirements, at an additional cost over the normal procurement cost for each drone. All seven customized drones are necessary for mission effectiveness. It is known that to achieve the delivery date at the given degree of certainty, the required production rate must far exceed normal capacity, and that this contributes as a cost factor. An analysis of past production performance has determined that the relation between cost and risk can be approximated by $r = 0.09c^2 - 1.24c + 4.32$ (for values of $c$ between 3.64 and 10) where $r$ is the risk (expressed as a decimal between 0 and 1) that delivery will miss the deadline, and $c$ is the cost in millions of dollars over the normal procurement cost per drone. After setting the delivery date the total procurement costs for the procurement have been capped at $280M. Determine the optimal value of $c$.
• Remember that $3.64 \leq c \leq 10$
• At $c = 7$, $r = 0.05$, preserving the status quo
• However, at $c = 7$, $7 \times ($35M+$7M) = $294M$

<table>
<thead>
<tr>
<th>$c$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.64</td>
<td>0.9989</td>
</tr>
<tr>
<td>4</td>
<td>0.8</td>
</tr>
<tr>
<td>4.5</td>
<td>0.5625</td>
</tr>
</tbody>
</table>
| **5**| **0.37**| At $c = 5$, total cost hits the cap of $280M$  
| 6    | 0.12    |
| 7    | 0.05    |
| 8    | 0.16    |
| 9    | 0.45    |
| 10   | 0.92    |
Resources

- DASA-CE has put together the following set of enablers:
  - Cost Benefit Analysis Guide Book
  - CBA Briefing Template
  - CBA Examples and Case Studies
  - Question and Answer Mailbox

- All documents are posted in the Cost and Performance Portal: https://cpp.army.mil
- Question and Answer Mailbox (24-hour turn around) usarmy.pentagon.hqda-asa-fm.mbx.army-cost-benefit-analysis@mail.mil (link in cpp)
- CBA Training:
  - 4 Hour familiarization training
  - 4 Day course
  - Introduction in various other classes: FM Classes, CMCC, PCAM, ICAM..

Assistance is available from DASA(CE)
A Note from the Leadership

Mr. Stephen G. Barth
DASA
Cost and Economics

Historically, Army has focused on managing by the budget; whereas, we are focusing now on managing by costs. Our financial systems provide Senior Leaders and Commanders the information they need to make Resource-Informed Decisions such as: total costs, quantitative data in Statistical Key Figures, and Return on Investment.

We understand that moving toward full implementation of Cost Management is going to be an evolutionary process. Our resource management professionals and our operational managers Army-wide have been impacted. In an effort to capture all the Cost Management information in one area, we have created a Cost Management Knowledge Center on the Cost and Performance Portal.

The information you will find on this site includes, but is not limited to: Guidance on Cost Management and the Cost Management in GFESB, Training Opportunities, Cost Warrior publications, and a Command Corner with command specific resources.

We hope this new site will foster a positive and open environment to Share Best Practices and lessons learned across Army organizations.

What's New...

March Cost Warrior Roundtable Discussion
Date/Time: 26 Mar 14 1130-1230 EST
Topic: Reporting Using Cost Object Attributes
Presenter: Mark Gaydos, Chief, Fiscal and Policy Division, ATEC

Cost Warrior Newsletter
Feb 2014 Cost Warrior Newsletter

What is Cost Management?

- Considering total costs when making a decision
- Using Army Financial Systems to identify, calculate, and assess benefits and related costs to meet mission requirements
- Linking expenses with operational outcomes and performance data in a way that directly ties it to mission requirements for the analytical assessment of best practices and best value decisions

What does Success look like?

Resource Managers and Operational Managers working together, using cost and performance data in conjunction with experience-based knowledge, to make more effective use of scarce resources
Available Tools and Models for Cost Data

Data Sources

Personnel

Facilities

Equipment

AMCOS – The Army Military-Civilian Cost System

Modeled costs

AMCOS must be used for military and civilian personnel compensation and benefits

US Army Corps of Engineers

Form 1391 – MILCON
construction costs

Unified Facilities Criteria
Facilities sustainment costs estimation

Army Equipping Enterprise System
Equipment costs by LIN

FORCES
OPTEMPO, equipment, force structure, transportation, CONOPS

Electronic Document Access
Contract data

Services, leases, and equipment

AMCOS must be used for military and civilian personnel compensation and benefits

GSA Advantage!

www.gsaAdvantage.gov
Available Tools and Models for Cost Data

<table>
<thead>
<tr>
<th>Tool/Model</th>
<th>URL</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORCES Cost Models</td>
<td><a href="https://www.osmisweb.army.mil/forces/login.aspx">https://www.osmisweb.army.mil/forces/login.aspx</a></td>
<td>Suite of models that provides quick and reasonable unit cost estimates to a wide variety of users</td>
</tr>
<tr>
<td>Army Military-Civilian Cost System (AMCOS)</td>
<td><a href="https://www.osmisweb.army.mil/amcos/app/home.aspx">https://www.osmisweb.army.mil/amcos/app/home.aspx</a></td>
<td>Personnel costs for military, civilian, and/or contractor</td>
</tr>
<tr>
<td>Operating and Support Management Information System (OSMIS)</td>
<td><a href="https://www.osmisweb.army.mil/osmisrdb/login.aspx">https://www.osmisweb.army.mil/osmisrdb/login.aspx</a></td>
<td>Operating and support information for major weapon/material systems</td>
</tr>
</tbody>
</table>

Some of the websites listed here require user accounts. In most cases, anyone with a dot mil address can obtain an account. You are encouraged to scan these sites and request an account to any site that you think will be useful to you. This will save time when you need to use any sites to support a CBA or other projects.

Access links through the “Resources” tab in the CBA Portal at https://cpp.army.mil
ILLUSTRATIONS
The DOD has identified $198M for the procurement of two different models of the multiple rocket launcher systems—class X and class Y—for deployment to Afghanistan. The class Y system costs $9M each and weighs 27,000 pounds. The class X system costs $11M and weighs 12,000 pounds. After procurement, all the launchers will be transported to Afghanistan by a single sortie of C-130 Hercules aircraft, each with a total maximum payload of 405,000 pounds.
How do you maximize the total number of launchers procured?

If you buy only Class X, you can afford 18.

If you buy only Class Y, you can carry 15.

So is “buy 18 Class X launcher systems” the optimal solution?
Example: Finding Optimal Solutions

COA 1 (Status Quo)  
COA 2  
COA 3  
COA 4
Example: Finding Optimal Solutions

• You can procure 9 Class X and 11 Class Y launchers, for a total of 20.

• Moral of the exercise: analysis is sometimes necessary to determine the optimal solution.
**Base Relocation**

Decision is the potential realignment and relocation of an Army school with approximately 50 staff members and 2000 students/year.

<table>
<thead>
<tr>
<th>Benefit Criteria</th>
<th>COA-1</th>
<th>COA-2</th>
<th>COA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political support</td>
<td>75%</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Quality of life/post support</td>
<td>25%</td>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

**Score**: 7.25 6 7

<table>
<thead>
<tr>
<th>Cost- Investment</th>
<th>COA-1</th>
<th>COA-2</th>
<th>COA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>$40M</td>
<td>$25M</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost - Recurring (FY 1-6)</th>
<th>COA-1</th>
<th>COA-2</th>
<th>COA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$648M</td>
<td>$527M</td>
<td>$612M</td>
<td></td>
</tr>
</tbody>
</table>

**Cost per Benefit**

<table>
<thead>
<tr>
<th>COA-1</th>
<th>COA-2</th>
<th>COA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$89.4</td>
<td>$94.4</td>
<td>$87.5</td>
</tr>
</tbody>
</table>

Rating: 1 (worst) to 9 (best)
• CBA helps leaders and managers make better resource-informed decisions and thus helps the Army make better use of resources that are becoming increasingly constrained.
  • Help your leaders make the best decisions!

• Analysis is important, but so is the final presentation.

• Support is available – tools, models, guidebooks, dedicated mailbox, additional training
QUESTIONS?
BACKUP
Base Relocation

Decision is the potential realignment and relocation of an Army school with approximately 50 staff members and 2000 students/year.

<table>
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<th>COA-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>30%</td>
<td>5</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Political support</td>
<td>45%</td>
<td>8</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Quality of life/post support</td>
<td>25%</td>
<td>5</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td><strong>Score</strong></td>
<td></td>
<td>6.4</td>
<td>7.2</td>
<td>7</td>
</tr>
</tbody>
</table>

**Decision Matrix Rating or Ranking**

COA-1 highest benefit          COA-2 best value          COA-3 lowest cost

Rating: 1 (worst) to 9 (best)