

# RECLAMATION

*Managing Water in the West*

## Reclamation Value Program Handbook

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U.S. Department of the Interior  
Bureau of Reclamation  
Technical Service Center  
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## LIST OF ACRONYMS

A-E	Architect-Engineer
CO	Contracting Officer
CVS	Certified Value Specialist
DM 369-1	Department of the Interior Manual, Part 369, Chapter 1
DO	Denver Offices of the Bureau of Reclamation
DOI	Department of the Interior
FAR	Federal Acquisition Regulations
FAST	Functional Analysis System Technique
IG	Inspector General
MRPS-VEPM	Managing Risk, Public Safety-Value Engineering Program Manager
OMB Circular A-131	Office of Management and Budget Circular A-131
PL 104-106	Public Law 104-106
PPA	Programs, Projects, Activities
RM CMP P05	Reclamation Manual CMP P05, Reclamation Value Program Policy
RM CMP 06-01	Reclamation Manual CMP 06-01, Reclamation Value Program Directive and Standard
ROI	Return on Investment
RSO	Responsible Senior Official
RVPM	Reclamation Value Program Manager
TSC	Technical Service Center
VA	Value Analysis
VE	Value Engineering
VECP	Value Engineering Change Proposal
VERB	Value Engineering Review Board
VM	Value Management
VMP	Value Methodology Practitioner
VP	Value Planning
VPC	Value Program Coordinator
VPPA	Value Program Plan of Action
VPSA	Value Program Summary of Actions
VPRB	Value Program Review Board

# INTRODUCTION

This handbook is a “how to” book. It tells Reclamation personnel:

- The objectives and requirements of the Reclamation Value Program,
- Who is responsible for the objectives and requirements of the Program, and
- How to meet these objectives and requirements.

Reclamation has chosen not to add Bureau requirements to the government-wide/Department of Interior (DOI) requirements, but has only put in place processes (and support structure) to meet them. Definitions for many terms used in this handbook are in the Office of Management and Budget (OMB) Circular A-131

([www.whitehouse.gov/omb/circulars/a131/a131.html](http://www.whitehouse.gov/omb/circulars/a131/a131.html)) and the Departmental Manual Part 369, Value Engineering, Chapter 1, General Criteria and Policy (DM 369-1) ([elips.doi.gov/elips/release/3226.htm](http://elips.doi.gov/elips/release/3226.htm)). A list of Acronyms is on page iii.

This handbook has three sections and Web Sites of References, as follows:

**Section 1** - describes the objectives and general requirements of the value program. It briefly describes program background (enabling legislation, regulations and policy documents).

**Section 2** - describes specific management functions required to establish and maintain an “aggressive” value program as called for in OMB Circular A-131. It informs managers what to do and how to do it.

Management functions and necessary actions are covered in the following sequence:

- A. Assign Program Responsibilities.
- B. Budget for the Value Program.
- C. Select Activities for Study.
- D. Prepare a Value Program Plan of Action for the coming Fiscal Year.
- E. Provide Training in Value Program Techniques.
- F. Provide People, Resources, and Budget for Studies.
- G. Review and Act on Study Proposals.
- H. Implementation.
- I. Promote and Process Value Engineering Change Proposals (VECPs).
- J. Prepare a Value Program Summary of Action for the Fiscal Year just ended.
- K. Document Value Program Activities.

**Section 3** - provides guidance on how to conduct value studies. Value studies are the cornerstone of the program. Studies generate ideas that can improve performance, reliability, quality, safety, and reduce life cycle costs of almost everything an agency does.

Typically studies bring together, in a high performance team environment, 5 to 7 people who are knowledgeable in the subject matter, but not familiar with the specific activity being studied. The team collects relevant information, analyzes the functions of the activity, creatively generates functional alternatives, critically reviews the ideas, selects the best ideas, and develops and presents them to managers of the activity studied. This effort is usually accomplished in about 5 working days.

Studies are systematic, concentrated problem solving efforts. A study team of 5-7 people for about 5 days provides a collaborative and varied work group with just enough time to perform the problem solving tasks listed above. Depending on the size and complexity of the activity being studied, adjustments to the group size and time may be beneficial.

**References** - Web site addresses are listed for Public Law (PL)104-106, Sec. 4306; OMB Circular A-131, DM 369-1, the DOI Value Engineering Guidance Handbook No. VE-1, RM CMP P05 (Reclamation Manual Value Program Policy), RM CMP 06-01 (Reclamation Manual Directives and Standards), Part 48 of the Federal Acquisition Regulations (FAR), Supplement to Part 7 of OMB Circular A-11, and reports and forms to conduct and administer the Program.

Even though PL 104-106 refers to value engineering, it also provides expanded definitions that are adopted for this handbook. The terms Value Analysis (VA), Value Engineering (VE), Value Management (VM), and Value Planning (VP) are used interchangeably. Throughout the handbook the term value method is used generically. Distinctions between VA, VE, VM, and VP are addressed in Section 2. C. 4. e.

In this handbook the word *activity*, when discussing the subject of value studies, is synonymous with “program, project, system, product, item of equipment, building, facility, service, or supply” as defined in PL 104-106, Section 36, (b). Similarly, an *activity manager* may mean Leadership Team, Area Office, Project, Program, and Group Managers, Client Liaisons and Design Team Leaders, as referenced in RM CMP P05.

Reclamation maintains a web site [www.usbr.gov/pmts/valuprog](http://www.usbr.gov/pmts/valuprog). This site provides additional information concerning the Value Program including recent Value Program Summaries of Action, value program contacts, and current versions of most of the documents referenced in this handbook.

Readers are encouraged to contact their Regional Program Coordinators, the Reclamation Value Program Manager, or Technical Service Center VE Program staff for assistance.

## **SECTION 1. – The Objective and Requirements of the Reclamation Value Program**

### **A. Preface**

The Reclamation Value Program has changed significantly over the past 15 years. The changes have been caused principally by 1) the increasing formalization of value engineering initiatives by the Federal Government, and 2) the reorganization of Reclamation.

Reclamation has chosen not to add Bureau requirements to the government-wide/DOI requirements, but has only put in place processes (and support structure) to meet them.

OMB Circular A-131 ([www.whitehouse.gov/omb/circulars/a131/a131.html](http://www.whitehouse.gov/omb/circulars/a131/a131.html)) has passed sunset reviews and has been reissued several times. On February 10, 1996, Congress passed PL 104-106, Section 4306, ([www.usbr.gov/pmts/valuprog/law\\_pl104106.html](http://www.usbr.gov/pmts/valuprog/law_pl104106.html)) strengthening the VE effort. In 2001 the Federal Facilities Council published “Sustainable Federal Facilities: A Guide to Integrating Value Engineering, Life-Cycle Costs, and Sustainable Development.” It is already included in Capital Asset Management (OMB Circular A-11, Part 7); [www.whitehouse.gov/omb/circulars/a11/cpgtoc.html](http://www.whitehouse.gov/omb/circulars/a11/cpgtoc.html)). The value effort seems to be here to stay.

With the reorganization of Reclamation, projects, programs, and activities are being managed and designed in a less centralized manner than before. More responsibility for applying value processes and implementing the Value Program has shifted to the Region, Area, and Field Offices. The need for timely and consistent Value Program action is greater than before.

### **B. Objectives**

*PL 104-106* states: “Each executive agency shall establish and maintain cost-effective VE procedures and processes.” “...value engineering means an analysis of the functions of a program, project, system, product, item of equipment, building, facility, service, or supply...directed at improving performance, reliability, quality, safety, and life cycle costs.”

*RM CMP P05* paragraph 3 states “Objectives. Each Region and the offices located in Denver will establish annual Value Program objectives in the Value Program Plan of Action which ensure that Value Program Goals are attained.”

### **C. Requirements**

Goals and requirements established to meet the objectives of the government-wide value program are found in PL 104-106, Section 4306; OMB Circular A-131; DM 369-1; and RM CMP P05. The broad requirements are discussed here. More specific requirements are discussed in SECTIONS 2 and 3.

PL 104-106, Section 4306 requires all executive agencies to have “value engineering” programs. It says almost nothing about how agencies accomplish this requirement, leaving the details to OMB Circular A-131, and Departmental and Bureau policy.

OMB Circular A-131 gives agencies a general outline, definitions, and process for establishing programs and reporting on the progress of programs. Circular A-131 tells agencies what they must do in broad terms, leaving agencies some leeway in how they organize and operate. A-131 states, in part, “The minimum threshold for agency projects and programs which require the application of VE is \$1 million.” Circular A-131 also establishes periodic IG audits “to (1) validate the accuracy of agency reported VE and (2) assess the adequacy of agency value engineering policies, procedures and implementation of this revised Circular.”

DM 369-1 identifies policy, goals, procedures, and responsibilities for the Interior Value Engineering Program. It provides more specific actions and responsibilities for carrying out the Department’s VE Program. The DM states “All [Construction] projects over \$1,000,000 shall be subjected to VE study.” It also states “Projects between \$500,000 and \$1,000,000 may be excluded from VE analysis if it is determined that estimated VE savings do not economically justify study and redesign costs. Justification for VE analysis exclusion shall be reviewed by and approved by the bureau/office Value Engineering Review Board (VERB) and reported to the [Department] MRSP - VEPM [Managing Risk and Public Safety - Value Engineering Program Manager].”

RM CMP P05 identifies the goals, objectives, organization, responsibilities, and reporting requirements necessary for Reclamation to implement *OMB Circular A-131* and *DM 369-1*. In general, *RM CMP P05* requires each Region and DO to ensure an adequate program budget; designate program staff; train staff; set annual goals; establish annual plans; budget, staff, and conduct studies; promote and process VECs; document and report program and study activities. *RM CMP P05* refers to *RM CMP 06-01* and *this handbook*.

RM CMP 06-01 establishes the minimum scope and level of detail to ensure that line managers apply the Reclamation Value Program to all activities, consistent with applicable law, policy, and guidance. It describes specific management functions required to establish and maintain an aggressive value program, as called for in OMB Circular A-131.

Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments: Title 43, (Public Lands: Interior), Part 12, Subpart C, encourages recipients of funds (or others with agreements where Federal funds are involved) to use VE and VE Incentive Clauses in their grant-related activities.

#### **D. Additional Authorities**

PL 102-240, Section 1091 requires the Value Method be used on road projects using Federal funds of at least \$25,000,000 in Federal funds assistance.

U. S. C. Title 33, Section 1298, Subchapter II, as amended, requires the Value Method for Waste Treatment Plants using \$10,000,000 or more in Federal funds assistance.

Other laws that affect the Value Program are the Budget Enforcement Act of 1990, Omnibus Budget Reconciliation Act of 1993, Government Performance and Results Act of 1993, and Federal Acquisition Act of 1994 (as amended).

OMB Circular A-11, Part 7, requires value methods to be used in capital asset management planning.

Executive Orders: Some executive orders require the Value Method for specific activities or policy implementation. None of these executive orders change the mandatory Value Program.

### **E. Department Value Engineering Guidance Handbook (VE-1)**

The Department Handbook No. VE-1 ([www.usbr.gov/valuprog/form\\_VE-1](http://www.usbr.gov/valuprog/form_VE-1)) explains principles and methodology of VE and proposes methods of applying them to satisfy the policy, objectives, and goals established by the Department. The handbook was issued in 1992 and includes the following sections:

1. General Information; Description of VE and Benefits; Study Methodology
2. The Elements of a VE Program; Duties, Responsibilities and Procedures; Plan of Action
3. Value Engineering Change Proposals
4. Annual Report of Value Engineering Activities
5. Example forms of VE Studies
6. VE Training Support
7. References
8. Blank VE Proposal/Study Forms

## **SECTION 2. - Responsibilities of and Guidance for Managers (Program Management)**

This section addresses what managers are to do and describes ways to satisfy each requirement. It expands on the RM CMP 06-01, Reclamation Value Program Directives and Standards. Additional, typically higher authorities (requirements) are cited at the beginning of each management function.

DM 369-1, paragraph 1.5, C. states “Responsibility and authority for the VE program are assigned to each of the DOI Assistant Secretaries. Goals, responsibility and authority will be sub-allocated to Bureau/Office Heads and the VE program coordinators.” In Reclamation, overall responsibility and authority for the VE program rests with the Commissioner. Paragraph 1.5, C. also states “Meeting the [Reclamation] VE goals shall be a performance measure of Bureau/Office Heads and appropriate managers responsible for the mandatory VE program.”

RM CMP P05, paragraph 5, B states “The Commissioner establishes meeting program goals as a performance measure for directors and managers who are responsible for the Value Program.”

Management functions and necessary actions are covered in the following sequence:

- Assign Program Responsibilities.
- Budget for the Value Program.
- Select Activities for Study.
- Prepare a Value Program Plan of Action for the Coming Fiscal Year.
- Provide Training in Value Program Techniques.
- Provide People, Resources and Budget for Studies.
- Review and Act on Study Proposals.
- Implementation
- Promote and Process Value Engineering Change Proposals.
- Prepare a Value Program Summary of Action for the Fiscal Year just ended.
- Document Value Program Activities

### **A. Assign Program Responsibilities**

*RM CMP P05, paragraph 5 describes the responsibilities of the Commissioner; Regional Directors; the DO Directors; the TSC Director; Contracting Officers; Leadership Team; Area Office; Project, Program, and Group Managers; Client Liaisons; and Design Team Leaders. These individuals have specific Value Program responsibilities by virtue of their normal job positions.*

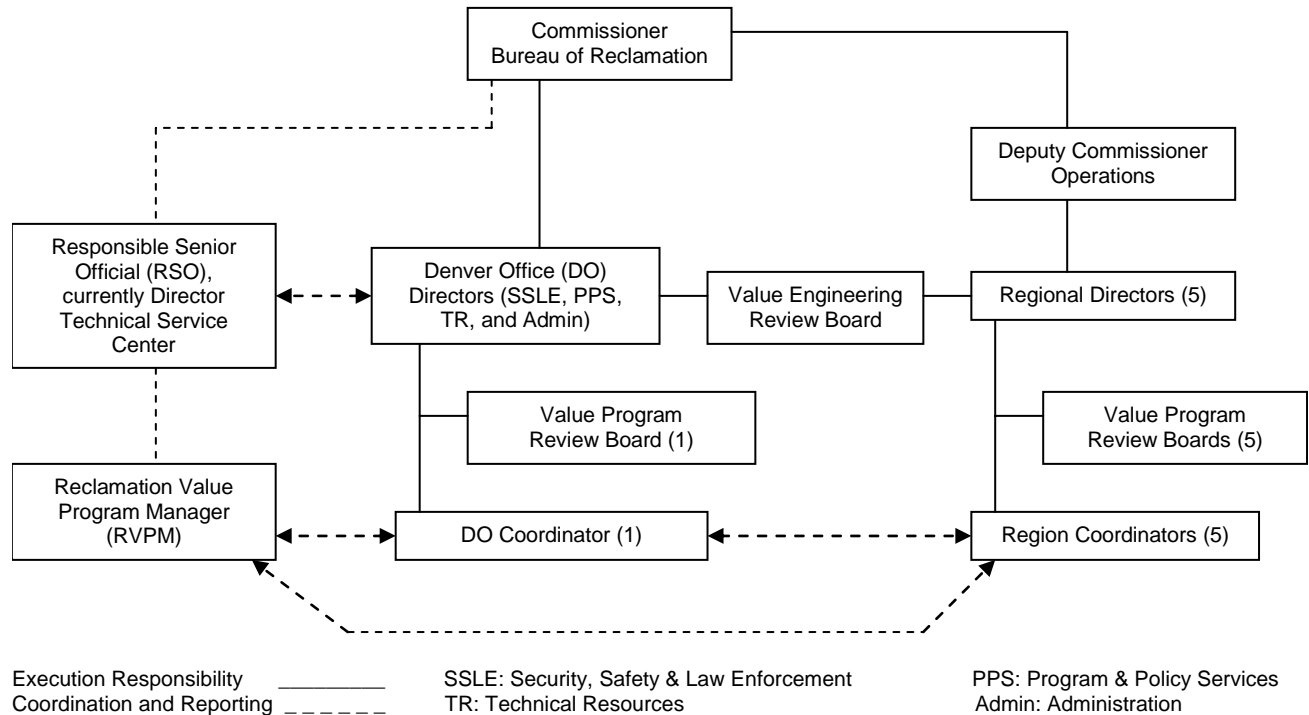
Several other Reclamation employees are assigned specific Value Program duties and titles. The Commissioner assigns individuals to serve as *the Responsible Senior Official (RSO)* for the Reclamation-wide Value Program, and the *Reclamation Value Program Manager (RVPM)*. Regional Directors and the DO Directors are each required to 1) designate senior staff members to chair and act as members of their *Value Program Review Board (VPRB)*, and 2) designate an individual to serve as *Regional or DO Value Program Coordinator (VPC)*. The RSO serves as the chair of

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the Reclamation-wide VERB. Each Regional and DO Director (or a Deputy Director if delegated) and the RVPM serve as the other VERB members.

## Reclamation Value Program Organization Chart

September 18, 2007



Each Regional and DO Director (or a Deputy Director if delegated) and the RVPM serve as the other VERB members.

In the event individuals assigned to the Review Board or as Program Manager or Coordinator leave the office responsible for the assignment, the Value Program duties of that individual revert to the Director/Commissioner until a replacement is assigned. In accordance with DM 369-1 Review Boards (Boards) will be “composed of those individuals who head organizations that are responsible for implementing VE recommendations. A VERB must consist of personnel having decision-making authority that allows immediate action to be taken on each VE proposal/recommendation presented before it.”

### B. Budget for the Value Program

DM 369-1, paragraph 1.9, C. states “Bureau/Office Heads will ... (3) Budget sufficient funds to pay for all VE activities, including: VE staff; VE studies conducted by Government personnel and/or A-E firms under contract; VECP processing; VE related technical assistance; review of VE proposals; redesign to incorporate accepted recommendations; VE related training; and incidental costs such as testing, travel and professional activities related to VE.”

**Directors (or Review Boards, if authorized by their Director) will include adequate funds for an aggressive value program in every annual budget, as called for in OMB Circular A-131.** Directors and Review Boards have historical data showing the costs incurred to complete these program activities. These costs arise from either value study activities or program management/administration activities.

Costs incurred in the conduct of value studies and implementation of proposals, including study scheduling, set up, conduct, study report preparation and production, and redesign or implementation costs are typically charged to the activity studied.

All other costs directly associated with Program administration, including time, equipment and materials used preparing annual Value Program Plans, Value Program Summary of Action Reports, and Value Program training are typically charged to one or more separate budget accounts. These costs should be budgeted as a part of annual budget requests.

On the average, Reclamation value studies have returned over \$18 dollars for every dollar invested on studies. Using the value method has also provided non-monetary benefits and improved the effectiveness, efficiency, reliability, quality, safety, and life-cycle costs of many activities.

DM 369-1, paragraph 1.7, C. states "Subject to the programs/projects/activities (PPAs) appropriation language, money saved from VE efforts may remain with the bureau/office to be used within discretionary authority as follows:

1. Fund authorized but underfunded or unfunded elements of the PPA where the VE savings accrued;
2. Fund other VE reviews within that PPA;
3. Fund authorized but under funded or unfunded elements of another PPA through a reprogramming action:
4. Fund other VE program activities of another authorized PPA through a reprogramming action if necessary; or
5. Return surplus savings to U.S. Treasury."

### **C. Select Activities for Study**

1. OMB Circular A-131 requires agencies to "Develop criteria and guidelines for both in-house personnel and contractors to identify programs/projects with the most potential to yield savings from the application of VE techniques."
2. DM 369-1, paragraph 1.7, sets program goals for Bureaus (paraphrased below):

- a. Annual cost savings of four percent of the aggregate value of all construction, repair, rehabilitation, and renovation projects over \$500,000 in estimated project costs;
- b. To value study all such projects over \$1,000,000;
- c. To exclude from value study only such projects between \$500,000 and \$1,000,000 that 1) have been documented to not economically justify (document a return on investment, [ROI], of 5:1 or less) study and redesign costs, AND 2) have been reviewed and approved by the VERB, AND 3) have been reported [through Reclamation] to the Department [Office of the Secretary, Office of Managing Risk and Public Safety - Value Engineering Program Manager (MRPS-VEPM)];
- d. Re-evaluate the four (4) percent goal after 3 years to determine if it should be adjusted.
- e. To encourage contractor participation in the VECP program sufficiently to produce one VECP for every active contract over \$1,000,000 that they administer; and
- f. To use VE methodology and analysis techniques on non-construction activities to improve operations and reduce cost.

Note: A Study Requirements Screening Table is available at [www.usbr.gov/pmts/valuprog/form\\_screeningtable.pdf](http://www.usbr.gov/pmts/valuprog/form_screeningtable.pdf) to help identify PPAs that require study in accordance with OMB Circular A-131 and DM 369-1.

- 3. In addition to the mandatory program study requirements above, the Department Value Engineering Guidance Handbook (VE-1, page A-8) identifies examples of projects and project components that usually have a high potential for value study savings and cost avoidances, including:
  - a. High acquisition cost (over \$500,000).
  - b. Major potential resource impacts.
  - c. Great complexity, state-of-the-art aspects or techniques.
  - d. A high degree of time compression.
  - e. Exotic, hard to get, or expensive components.
  - f. Record seeking aspects (innovative or large scale).
  - g. Sole source components.
  - h. Poor service, maintenance, or operation costs/history.
  - i. Estimated costs greater than the amount budgeted.

#### 4. Activity Selection

**No later than September 30 each year, consistent with the budget process, each Director will identify all activities including all systems, products, items of equipment, buildings, facilities, services, or supply actions of \$500,000 or more for which procurement is expected in the next 3 fiscal years (BY, BY+1, BY+2). The Director will update this list at least semi-annually.**

a. Construction and O&M procurements of \$1,000,000 or more

The Director will confirm that value studies are scheduled and budgeted for each construction and O&M procurement action of \$1,000,000 or more, usually in the fiscal year prior to the year procurement is expected to take place. **There is no waiver authority from the Department for construction or O&M actions of \$1,000,000 or more.**

b. Construction and O&M procurements of \$500,000 to \$1,000,000

The Director will confirm that value studies are scheduled and budgeted for all construction and O&M procurement actions between \$500,000 and \$1,000,000 unless it is documented (per DM 369-1, paragraph 1.8) that:

- 1) ROI is expected to be less than 5:1 over study and redesign costs, or that improved processes or efficiencies may not be reasonably expected, and
- 2) that the activity is not over budget, and
- 3) is not requested by management.

If a study is shown to be unjustified, the activity manager will prepare a request for exclusion of the study and submit the request to the Director (or Review Board, if so authorized) for action. The request will include a detailed description of the project or program and a cost/savings assessment including calculations and support for determining the ROI. If the exclusion is denied, the Director will confirm that the value study is scheduled and budgeted for conduct. If the exclusion is recommended for approval, the Director will promptly send a copy of the recommendation and the exclusion to the Reclamation Value Program Manager, who will submit it to the Reclamation-wide VERB for review and, if approved, to the Department's Value Engineering Program Manager (MRPS-VEPM), in the Department's Office of the Secretary, Office of Managing Risk and Public Safety (MRPS).

c. All procurement actions other than Construction and O&M of \$1,000,000 or more

The Director will confirm that value studies are scheduled and budgeted for all remaining procurement actions of \$1,000,000 or more unless it is documented that:

- 1) Return on Investment (ROI) is expected to be less than 5:1 over study and redesign costs, or that improved processes or efficiencies may not be reasonably expected, and
- 2) that the activity is not over budget, and
- 3) is not requested by management.

If a study is shown to be unjustified, the Director will document that the conditions above apply to the procurement action and report the determination to not conduct the study promptly to the Reclamation Value Program Manager.

d. The activity manager will schedule each mandatory study to optimize the opportunity for the Value Method to be successful. Generally the earlier a study is conducted in the planning of a procurement action, the greater the opportunity for improvements to performance, reliability, quality, safety, and life-cycle costs. Frequently a study conducted for planning and a study conducted for design prior to award (Concept C) yield the best (maximum) benefits.

e. The activity manager, in consultation with the Coordinator and Review Board will determine the type of study (VP, VE, VA, VM) to be conducted and make an initial determination which studies are to be done in-house, by the TSC, and/or by A-E firms. All study types use a common value methodology, but differ in the detail to which the process is applied.

VP (Value Planning) studies are usually conducted on less well defined topics such as planning concepts, where a project is contemplated but planning has not advanced to the preliminary design stage.

Value Engineering (VE) studies are usually conducted on well defined topics such as projects, where a preliminary or better design exists and a preliminary cost estimate has been prepared. These studies are more likely to address life-cycle costs and compare competing alternatives by objective measures.

VA (Value Analysis) (VA) and Value Management (VM)) studies are usually conducted on administrative procedures, organizational structures, or management systems. These studies emphasize information gathering and function analysis efforts and compare alternatives by less objective means.

## **D. Prepare a Value Program Plan of Action for the Coming Fiscal Year**

Each fiscal year, using information developed by/for the Director in Section 2. C. 3. and the criteria of 2. C. 4. above, the Coordinator will prepare a Value Program Plan of Action (VPPA) for review by the Board and approval by the Director. The Plan of Action includes the Value Program goals for the Director's office (minimum 4 percent Interior/Reclamation goal, or higher if so established by the RSO), the activities selected for study by the office, a schedule for completing the studies, and the training needs plan for the office. A generic VPPA is at:

[www.usbr.gov/pmts/valuprog/form\\_vppa.pdf](http://www.usbr.gov/pmts/valuprog/form_vppa.pdf).

The Director will send the approved Plan of Action to be received by the Reclamation Program Manager no later than November 15 each year. The Program Manager will consolidate the Plans of Action from the Regional and DO Directors into a Reclamation Plan of Action and submit it to the RSO for review and approval.

The RSO will send the approved Reclamation Plan of Action to be received by the Department's Value Program Manager (and a copy to the Commissioner) no later than December 15 each year. Upon request from OMB, the Department is required to send a VPPA to OMB for review.

## **E. Provide Training in Value Program Techniques**

DM 369-1, 1.9C (6) states "Bureau/Office Heads will provide training in VE techniques to bureau/office staff responsible for coordinating and monitoring VE efforts and for staff responsible for conducting VE studies and developing, reviewing, analyzing, and carrying out VE proposals, change proposals, and evaluations."

### **1. Minimum Training Requirements**

As a minimum, Directors, Review Board members, Coordinators, RSO and RVPM must carefully read the RM CMP P05 and the RM CMP 06-01.

As a minimum, all Contracting Officers must carefully read FAR Part 48 and Clauses 52.248-1, -2, and -3; the RM CMP P05; and the RM CMP 06-01.

Value Program Coordinators, RVPM, and Reclamation Value Study team leaders must have completed a 40-hour SAVE International certified Module 1 course and must carefully read this handbook.

Reclamation Value Study Team Leaders must also have completed a 24-hour SAVE International certified Module II course, the Reclamation Value Study Team Leader/Facilitator Course and have performed satisfactorily as a Reclamation Assistant Team Leader for no less than 8 days (two studies). Reclamation strongly suggests that their in-house study team leaders complete SAVE International certification as Certified Value Specialist (CVS) or Value Methodology Practitioner (VMP).

A-E firm Value Study team leaders must have current SAVE International certification as a CVS.

## **2. In-house Training Courses**

The Reclamation Value Program Manager and the TSC's Value Program staff offer the following training:

- a. Executive Orientation - 2 to 4 hours of training on policies, management responsibilities and roles, and administering the Value Program to minimize costs and optimize benefits. This training is recommended for Directors.
- b. Manager Orientation - 4 to 8 hours of training on policies, management responsibilities and roles, and administering the Value Program to minimize costs and optimize benefits. This training is recommended for Review Board members, Contracting Officers, and Coordinators.
- c. Value Fundamentals - 16 hours of general training for staff identified as potential study team members, and managers who want a better understanding of VE.
- d. Value Fundamentals Plus - 24 hours of general training for people who want to be study team leaders. This training is recommended for Coordinators. An additional two day course in facilitation and team leading techniques and apprenticing as an Assistant Team Leader would be needed before becoming a study team leader. This additional training/apprenticing is also recommended for Coordinators.

SAVE International, certifies a number of 40-hour Module 1 and 24-hour to 40-hour Module 2 classes. These classes are for individuals who aspire to be study team leaders. In addition to completion of a Mod 1, Mod 2 and Reclamation Study Team Leader/Facilitator class, apprenticing as an Assistant Team Leader would be needed, to become a study team leader. Information about SAVE International classes and Bureau training is available from Coordinators, the Program Manager, or TSC Value Program staff.

## **F. Provide People, Resources, and Budget for Studies**

DM 369-1, 1.9, C. requires Reclamation to “budget sufficient funds to pay for all VE activities, including: VE staff; VE studies conducted by Government personnel and/or A-E firms under contract ...and incidental costs ...”

RM CMP P05 paragraph 5, E. requires Leadership Team, Area Offices, Project and Program Managers, and Design Leaders to schedule, budget, and staff for all required value studies.

Typically 2 to 3 months before the conduct of a study (scheduled in the current Plan of Action or otherwise), the Coordinator will request the activity manager (or other

individual(s) responsible for the activity to be studied) to prepare an activity description and to assemble pertinent background information for the study.

Note: A study Contact Questions and Checklist is available at [www.usbr.gov/pmts/valuprog/form\\_contactquestions.pdf](http://www.usbr.gov/pmts/valuprog/form_contactquestions.pdf) to help activity managers and coordinators organize and prepare studies.

The activity manager and Coordinator also discuss and agree on the study budget (using a Task Based Estimate, service agreement, Task Order or other budget documents, as appropriate). They discuss and agree on the number of team members and team member disciplines, and may even prepare a list of preferred individuals. If applicable, they identify and arrange for availability of study consultants. See Section 3.E. for more on study consultants.

The activity manager and Coordinator will confirm with the Review Board whether the study will be done with Government personnel, facilities, and materials or by an A-E firm already under contract or some combination of both.

With the Board's guidance, the Coordinator and or activity manager will contact appropriate personnel to confirm that study personnel, facilities and resources (in-house and/or A/E) are available and arrange for the study to be conducted.

Typically the direct costs of studies are funded from the activity being studied.

**Note: A detailed discussion on study conduct is in SECTION 3.**

### **G. Review and Act on Study Proposals**

The last two steps in a study are 1) presentation of the study proposals to responsible managers and decision makers and 2) issuing a final report to the Review Board, the activity manager, and the appropriate Area Office, Project or Program Manager. Proposals in the presentation report may be revised after discussions during the presentation before they are included in the final report.

DM 369-1 states that the Review Board "must consist of personnel having decision-making authority that allows immediate action to be taken on each VE proposal/recommendation presented before it."

The responsible activity managers document their decisions to approve, approve with changes, or to disapprove each of the study proposals in an Accountability Report to the appropriate Area Office, Project or Program Manager for review and signature. The accountability report is due to the signatory 60 days prior to acquisition award or acceptance of services. A generic Accountability Report is at:  
[www.usbr.gov/pmts/valuprog/form\\_sample.html](http://www.usbr.gov/pmts/valuprog/form_sample.html).

The signatory forwards the accountability report and concurrences/non-concurrences to the Coordinator for recording and submission to the Reclamation Value Program Manager 15 days prior to acquisition award or acceptance of services.

## **H. Implementation**

The activity managers implement all approved value study proposals in a timely manner. In many cases project redesign or activity reconfiguration may begin shortly after the formal study presentation, even before the accountability memo has been prepared. Implementation costs (e.g. redesign costs to incorporate accepted proposals) are typically charged to the activity studied. Budgeting for these costs is required by DM 369-1, paragraph 1.9, C.(3). The activity manager may need assistance from the Review Board to implement some proposals. DM 369-1, paragraph 1.9, C. (5) states the Review Board is to “provide management assistance in implementing proposals and recommendations.”

## **I. Promote and Process Value Engineering Change Proposals (VECPs)**

The Federal Acquisition Regulations (FARs) require federal agencies to promote and process VECPs in all contracts specified in FAR 48.201 and 48.202. This effort is to encourage contractors to submit VECPs and requires Contracting Officers (COs) to quickly process the proposals with the support of technical personnel in the agency.

COs will notify their Coordinator and Review Board of all planned contracts of \$500,000 or more; promote contractor participation under the contract Value Engineering Incentive Clause; ensure the Incentive Clause is included in all applicable contracts; coordinate with their Coordinator to process contractor VECP; and report VECP results annually.

Contracting Officers are encouraged to refer directly to the current edition of Part 48 of the FARs and to clauses 52.248-1, -2, and -3. Acquisition Offices and Contracting Officer's Representatives (CORs) may use information fact sheets to promote VECPs. The fact sheets are available from the Value Program Coordinators or at [www.usbr.gov/pmts/valuprog/VECPfactsheet.pdf](http://www.usbr.gov/pmts/valuprog/VECPfactsheet.pdf).

## **J. Prepare a Value Program Summary of Actions for the Fiscal Year Just Ended**

OMB Circular A-131 states “Each agency shall report the Fiscal Year results of using VE annually to OMB. The report format is provided in the Attachment.”

DM 369-1 states “Bureau/Office VEPCs [Coordinators] will Develop and assemble ... summary reports...”

RM CMP P05, paragraph 5, G states that Boards are to “Act as the Director’s action team to ensure that the Value Method is applied to organizational programs.”

All Coordinators will prepare Value Program Summary of Activity reports (VPSA) for their Board’s review and Director’s approval. The Director will submit the VPSA to be received by the Reclamation Value Program Manager no later than November 15 each year. Readers are encouraged to review the generic VPSA Report and instructions at the web site in the Reference. The Coordinators will consolidate information for studies performed in-house, by A-E firms, and by the TSC, and for

VECPs processed by all Contracting Officers responsible for acquisitions within the Director's offices. A generic Value Program Summary of Activities (VSPA) Report [www.usbr.gov/pmts/valuprog/form\\_vpsa.pdf](http://www.usbr.gov/pmts/valuprog/form_vpsa.pdf)

The RVPM will consolidate the summary reports from all the Regions and the DO for review and approval by the RSO. The RSO will send the approved Reclamation Summary Report to be received by the Interior VE Program Manager and a copy to the Commissioner) no later than December 15 each year.

## **K. Document Value Program Activities**

At a minimum, Coordinators will retain copies of Plans of Actions, value studies, accountability reports, Summaries of Actions, IG Audit reports, and written responses to IG report findings to document an office's value program activities. Offices are encouraged to keep selected other documents in organized files, and readily available that "validate the accuracy of agency reported value ... savings" or that demonstrate "the adequacy of agency ... policies, procedures and implementation of [Circular A-131]."

RM CMP P05, paragraph 5, C states the RSO, among other things, is responsible for "Preparation and implementation of Reclamation directives, standards, and guidelines for the Value Program" and "Determination of annual Program goals." As the need arises the RSO will notify the Region and DO Directors of changes in the Reclamation Value Program.

## SECTION 3 - Responsibilities of and Guidance for Value Study Teams

This section provides guidance on how to conduct value studies.

### A. Value Study Definition

A Value Study is creative problem solving that follows a *value method job plan*, using an optimized team for a period of typically 5-10 work days.

The problem (or subject) may be any plan, program, or activity selected by management for value study (see Section 2. C. “Select Activities for Study”, for details). The *value method job plan* is a five phase process using a selection of several value method techniques. The phases and many techniques are described in this section. The team includes a leader (trained in value study techniques) and several subject matter experts (usually 4-6 people) selected specifically for each study by management. See Section 2. F. for more on team selection. The qualifications and characteristics of the team are described in paragraphs B. and C. below.

### B. Study Team Leaders, Qualifications, and General Comments

The study team leader, Regional or DO Coordinator, and activity manager cooperate to bring the team, facilities, and activity information together. The activity manager may be a design team leader, project, program or Group manager or other individual responsible for the activity being studied.

The leader guides the team through the study process and prepares the presentation and final reports. Team leaders are encouraged to use Reclamation’s report template and instructions for using the report file and many powerful macros, to simplify FAST diagramming, cost modeling and life cycle comparisons. Team leaders should also review the value methodology techniques learned in Module 1, Module 2, or other training. This handbook does not provide detail on the techniques discussed nor does it cover all techniques available.

Study team leaders are most often selected from qualified staff members of a Region or the DO, typically the Value Program Coordinator. To be qualified, Reclamation team leaders must have completed a 40-hour SAVE International certified Module 1 course, a 24-hour SAVE International certified Module 2 course, the Reclamation Study Team Leader/Facilitator Course, AND have performed satisfactorily as a Reclamation Assistant Team Leader for two studies (no less than 8 days). Typically a staff member qualifies by assisting on one study and leading a second with a qualified team leader as assistant. Reclamation strongly suggests that their staff members, who serve regularly as in-house study team leaders, complete SAVE International certification as a CVS, or Value Methodology Practitioner (VMP). Study team leaders provided by A-E firms must have current SAVE International certification as a CVS.

### C. Study Team Members

Study team members (either in-house or A-E) require no special value analysis training, although Mod I training is useful. Ideally, they are selected by management specifically for each study because of abilities and knowledge of the specialties or disciplines relevant to the study. For construction studies team members are typically chosen from design, materials, operations, maintenance, cost estimation, construction (or installation, as appropriate), and procurement. Often stakeholders are helpful additions to the team, especially if they contribute as full-time team members. Program and activity value study teams also have a cross functional make up.

Attitudes and personal traits are as important as technical expertise. Team members should also be individuals who listen to others, actively contribute, support ideas and build on them, and have positive attitudes. Teams can be further enhanced if one member acts as a “constructive skeptic” and another provides field input or other input from outside the organization.

Team members work together under the guidance of a team leader. They create, evaluate and refine alternatives to solve the problem under study. Studies are usually a “high performance team” environment. It is not uncommon for study teams to work more than eight hours on some days. During the brief and busy study period, team members need to concentrate solely on the study and minimize or eliminate interruptions from their normal duties.

#### **D. A Place to Work and Other Resources**

The team needs a separate place to meet. A conference room or work room, large enough to allow all team members to spread out study materials, is usually best. The room should have one or two “flip chart” easels, plenty of wall space to hang up “flip chart” paper, an erasable board and markers, and tables or desktop space for working. Outlets for laptop computers, access to printers and the internet are usually needed. For the introductory briefing and the study presentation (discussed later in this section) an overhead projector and projection screen, or other presentation equipment, may be needed. A larger room may be needed to accommodate attendance at these activities.

The team will need access to one or more phones in the room or nearby, copy machines, and common office supplies such as paper, stapler, tape, paper clips, “post-it” notes, pens, and markers.

Reclamation provides a useful report template (in Word) and instructions for using the report file and the many powerful macros embedded in the template. Although the template is primarily intended for PC use, it can be printed out and filled in by hand. The report is available as an electronic file or hard copy from Value Program Coordinators, or the Value Program staff.

#### **E. Study Consultants**

During a study, the study team leader and members typically contact other subject matter experts (consultants) to gather specific information about the problem or about alternatives being considered. Team members keep a record of these contacts and

include them in the study report. At times consultants will have been identified and asked to be available in advance. Often the need for specific consultants is not anticipated in advance. These consultants are contacted directly by the study team.

## **F. The Value Study Job Plan**

The Value Method Job Plan covers Pre-Study, the Value Study, and Post-Study. The Pre-Study activities, including “Select Activities for Study,” and “Supply the Personnel, Resources and Budget to Conduct Studies,” have been addressed in SECTION 2. The Post-Study activities, including “Review and Act on Approved Proposals,” have also been addressed in SECTION 2. The Value Study Job Plan activities are discussed here.

Reclamation Value Studies are conducted following a five phase Value Study Job Plan that includes an;

- Information Phase
- Creativity Phase
- Evaluation Phase
- Development Phase, and
- Presentation Phase.

Each phase of the job plan has different objectives and uses different value method techniques and tools. On the following pages, each of the phases is discussed in detail. Although no two studies are alike, they all share the same job plan sequence and objectives. The following descriptions are deliberately generalized so they may be used with a wide variety of study activities, whether well-defined or undefined.

## 1. Information Phase

The purposes of this phase are:

- |             |  |
|-------------|--|
| Objectives: | To define the problem to be studied, including objectives, Criteria, requirements, and constraints.<br>To identify the key components or process steps of the activity.<br>To functionally describe the key components/process steps.<br>To identify the component costs, where possible.<br>To identify the functional relationships of the components/process in a FAST diagram.<br>To relate the component/process costs in a cost model. |
| Techniques: | Problem Identification<br>Criteria/Requirements Identification<br>Data Collection and Analysis<br>Component Identification<br>Cost (or Risk, Quality) Modeling<br>Group Dynamics<br>Function Analysis<br>FAST Diagramming<br>Process Mapping<br>Fishbone, Scatter Diagrams, Trend Plots, etc.  |

When a study starts it usually begins with introductions, and any relevant administrative announcements (where the restrooms are, what phones can be used for incoming/outgoing calls, where e-mail can be accessed/sent, places for lunch, and the like).

At the very start of the study, the activity manager or someone familiar with the study subject briefs the study team. The brief includes current framing decisions, plans, objectives, schedule, and budget information. The leader records the description of the subject/problem in the study report, including drawings or sketches showing the location, organization, or concept related to the study subject.

Throughout the study, the team leader is primarily responsible to promote constructive behavior within the group and to recognize and minimize behaviors that detract from the team's performance. The leader is responsible to keep the team on task, on time, producing quality work, following the Study Job Plan, and on track for a professional Presentation.

The leader may use a variety of group behavior techniques (Personnel Management Skills; Supervision Skills; Managing by Objective; Role Playing, Situational Leadership; theatrical skills; etc.).

Criteria and Requirements - In addition to gathering direct information about the subject being studied, the team gathers information about the purpose or objectives of the subject. The team also needs to know about any controlling legislation, codes, and standards. Other limits to “acceptable” alternatives include controlling contracts or agreements, such as Water rights, land use restrictions, political decisions, interests and expectations.

The team may find that assumptions about criteria and requirements may have unnecessarily narrowed the options previously considered for the problem. Similarly, the team can avoid making unrealistic recommendations, by recognition of the relevant criteria and requirements.

Component/Process Analysis - The team identifies the significant components and sub-components of the problem. The components may be listed in any logical sequence (chronological, alphabetical, system, size, bid item number, risk, cost, quality, etc.). This effort increases the number of areas the team can consider when thinking of alternatives.

Process analysis starts with a process map - typically presented in sequence. It begins with the “inputs” to the process being studied and ends with the “desired outcome”.

Where actual or estimated costs can be assigned to each component, the key components can be defined as the few most costly components (usually one-fifth of all components) whose costs add up to about 80 percent of the total. By starting with the single most costly component, adding the next most costly component, and keeping a cumulative total, the team will soon have a list of the largest components that account for about 80 percent of the total cost. If a high cost component also has low apparent importance/need, that is, we seem to be paying a lot for that component’s contribution, it is considered a “value mis-match” and becomes a target for replacement. Conversely, if a low cost item has a high apparent importance/need and has a high user satisfaction, it is considered a “value” and may be kept unchanged.

Any individual study will typically use only selected component/process analysis steps, as deemed appropriate for the activity by the study team leader and team members.

There is less likelihood the team can make significant improvements within the many smaller cost components that account for the remaining 20 percent of the total, so these components are typically dropped from further consideration in favor of the “big ticket” components. The technique or concept of focusing on the fewer high importance or high cost components is referred to as Pareto’s Law.

Risk models, quality models, or other techniques may be used as needed to define the components of the problem and rank them by need or value. The goal is to focus on those components of the problem that are most sensitive to change and user improvement. The team also identifies criteria and limits affecting the study, and if necessary, ranks and/or assigns values to them. The measurement of cost

and user satisfaction/importance may be determined in advance of the study. This can be done through use of surveys, logs, or small group research interviews. Larger research sessions, with different stake holders (Target of Opportunity Panels, TOPs) may also be used.

**Function Analysis** - The team defines the key components/process elements in terms of the functions they perform. Function analysis is a critical and unique aspect of value studies. The leader explains (often through examples) how components or processes can be defined by simple active verb and measurable noun word pairs that describe the function(s) the component/process performs. The functions can be grouped as primary or secondary. A primary function answers the question “What must it do?” A secondary function answers the question “What else does it do?” Occasionally the secondary function is an undesirable function that needs some mitigation, adds complexity, or increases initial or life-cycle cost.

For example, typical functions of a culvert pipe are to: contain water, convey water, intercept runoff, protect road, prevent washout, promote drainage, support loads, shape opening, and shape concrete. Considering functions, not components, tends to overcome preconceived ideas of how the function will be accomplished.

Since most problems will have several components, many with multiple functions, understanding the inter-relationship of the functions is important to ensure all needed functions are satisfied and that the least duplication of functions occurs. Also, the team may be able to identify, simplify, reduce, or eliminate undesirable or costly secondary functions. With the guidance of the team leader, the team prepares a Function Analysis System Technique (FAST) diagram. FAST diagrams are a form of logic diagram that show relationships between the functions.

Starting with the most general (highest order) function, the team develops the FAST diagram to the right answering the question “How is this function accomplished?” with a next lower order function. For example, if the most general function is to “Improve Lighting,” a series of next lower functions might be “Add Fixture,” “Purchase Fixture,” and “Select Fixture.” In this example, the question “How do we improve lighting?” is answered by “Add Fixture.” Continuing to the right the question “How do we add fixture?” is answered by “Purchase Fixture.” The team checks the function relationships in the diagram from the right to the left by answering the question “Why do we \_\_\_\_\_?” For example, “Why do we Add Fixture?” is answered by “Improve Lighting.”

To quote Mr. Charles Bytheway, the creator of the technique, “when we ask ‘How’ we are looking for solutions and moving to lower levels of opportunity. When we ask ‘Why’ we are looking for reasons and moving to higher levels of opportunity.” For more information about developing FAST diagrams, please refer to Module I course materials or almost any value method text.

It may be appropriate to use a “user oriented” or “customer oriented” FAST diagram. Some of the terms, definitions, and structure differ from those outlined above, but the how-why logic remains the same.

With either type of diagram, the teams focus their attention on the defined functions with the highest apparent opportunity for improvement. In some cases, the selected functions will be higher order primary functions. In other cases the selected functions are expensive but serve only secondary or possibly unnecessary roles. To conserve time and effort in the creativity phase, the team typically concentrates on specific functions with the greatest apparent potential for improvement, or cost savings.

## **2. Creative Phase.**

**Objective:** To generate a large number of unconstrained ideas to satisfy selected verb-noun functions; that is different ways to achieve or accomplish selected functions.

**Techniques:**      Creative Thinking  
                         Brainstorming  
                         List Making

The team leader encourages the team to be open-minded, inquisitive and creative, and to suspend judgment and critical thoughts entirely. The leader may use “creative thinking” exercises and examples of creative behaviors and thinking that explore program boundaries to encourage the team. The leader should be energetic and positive to encourage the team to behave with energy and enthusiasm. Caution the team against habitual, perceptual, cultural, and emotional blocks to creative thinking. A fun, light-hearted, free-wheeling atmosphere, fostering mutual respect and trust in each other can kindle great imaginations to generate great ideas. It is essential that analysis and critical thinking (“That can’t be done” or “That won’t work”) be suspended and deferred to the next phase.

Often, because of the team members’ diverse backgrounds and perspectives, one idea triggers new and different ideas in others. Piggy-backing is encouraged, as is combining of ideas. Among other things the team answers the questions “What else will do the job?, How else could we do this?, Is there anything we must add or could eliminate?” The team leader or a member records all ideas, no matter how unlikely or strange may they seem. The object is to foster and sustain creative thinking and collect a large number of ideas.

There are a number of ways to conduct brainstorming sessions. The leader may ask the team to shout out ideas as fast as he/she can write them down. The leader may go around the team one by one, to promote/force participation from everyone. The leader may ask everyone to write five or ten ideas on a piece of paper, then have the ideas read one at a time. Another useful technique for collecting ideas is to leave an “Idea Log” in the room and ask the team to record any ideas they have whenever they occur. No matter how the session is conducted, the leader should ensure that all members have the chance to contribute and that the team is pressed to come up with a few more ideas than are produced in the first sustained effort.

### **3. Evaluation Phase.**

Objectives:        Develop screening and selection criteria for identifying the “best” ideas. Select the “best” ideas.

Techniques:        Critical Analysis  
                         Screening Criteria  
                         Selection Criteria  
                         Criteria Weighting  
                         Criteria Matrices

This phase allows the team to agree on which ideas to develop into proposals, which to refer to activity managers (ideas with merit but insufficient time for the study team to develop), and which ideas to abandon. The team should select as many ideas as it has time to develop into proposals.

Confronted with a long list of ideas, the team enters the analytical, judgmental, and critical phase. A “tried and true” approach is to first combine similar ideas and screen out ideas that are unfeasible or technically impossible. To do this the team examines each idea and asks “How can we make this idea work?” or “Will it work?” “Does it, or can it, improve value?” The screening process allows the team to focus on the more viable ideas.

Another technique is to apply identified selection criteria (those criteria that separate poor performance from great performance). The team rates the ideas against each selection criterion, and then ranks the ideas. The team then selects the highest ranked ideas for further development. The selection criteria, rating, and ranking process may be very formal or informal, as the team determines is necessary.

Formal methods include recording screening criteria by a short title or name, a definition, and a “required” statement in absolute terms, “must have/not have.” Selection criteria are recorded by short title or name, a definition, a unit of measure, a threshold at which point the criterion becomes an advantage, a formula stating that more/less of the unit of measure is better.

Formal ranking methods include using weighted and unweighted criteria matrices.

### **4. Development Phase.**

Objective:        Develop ideas into proposals with sufficient detail to provide a reasonable basis for decision makers to select the best solution to their problem.

Techniques: Alternative Development  
Narrative Description  
Critical Analysis  
Advantage/Disadvantage Identification  
Cost Estimating

For each idea the team develops a proposal that includes a description, including a list of critical items to consider, ways to implement the idea, and the changes from the baseline proposal or component. The team should prepare sketches or drawings to help illustrate the proposal.

Often the team forms several one or two person groups to work on several proposals simultaneously because the time allotted for all study activities is usually short. Proposals may be assigned to “Champions” on the team who want to develop a favorite idea.

The team identifies the advantages and disadvantages of the proposal, potential risks or hazards, and/or problem areas that might be encountered implementing the proposal. The team usually prepares cost estimates or receives cost estimating support to identify the initial costs/savings compared to the baseline approach and/or life cycle costs/savings. Implementation costs and non-monetary benefits of the proposal should also be defined. The proposals must include enough detail for others to understand, evaluate, and ultimately implement them.

With the team leader’s guidance the team assembles the Presentation Report. Team leaders may use the Reclamation report template to prepare the report or as a checklist to ensure all phases of the study effort are clearly documented. The whole team should proofread the report and the team leader should make all corrections and arrange for enough copies to be made for all attending the Presentation.

## **5. Presentation Phase.**

Objective: To present the team’s proposals clearly and objectively to the decision makers.

Techniques: Written Presentation  
Oral Presentation  
Group Discussion  
Question/Answer

Most often the Oral Presentation is held for 1 to 2 hours during the last half-day of the study. The study room may be suitable for holding the Presentation. If not, a more suitable room should be used. Each attendee (study team members, activity managers/staff, other decision makers including stakeholders, users, and owners) receives a copy of the Presentation Report and signs in on an attendance sheet.

The team leader and all team members use the report as a guide to introduce themselves, the study effort, and to present its proposals in detail to the activity

managers. Usually questions are taken throughout the presentation to allow full discussion and understanding of the proposals.

This phase effectively ends the activities of the study team. The team leader incorporates corrections, clarifications and other changes into a Final Report and distributes copies of the Final Report to the activity managers, team members, Coordinator, Review Board, and Reclamation Value Program Manager.

After the presentation the activity manager with their staff, the VP Coordinator, Review Board, and study team leader, and clients or stakeholders, as needed, decide whether to accept, reject, or accept with modifications each of the study proposals. The activity manager is responsible to document these decisions and any savings or benefits in an Accountability Report. These activities are outlined in Section 2. G. "Review and Act on Study Proposals" and Section 2. H. "Implementation."

## References

Most of these references can be accessed through the Reclamation Value Program internet web site at

[www.usbr.gov/pmts/valuprog](http://www.usbr.gov/pmts/valuprog).

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