RECLAMATION

Managing Water in the West

Project Management Framework

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center

September 2012

Mission Statements

The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Abbreviations and Acronyms

AC	Actual Cost
ANSI	American National Standards Institute
BAC	Budget at Completion
CMP	Comprehensive Program Series
COG	Coordination and Oversight Group
CPI	Cost Performance Index
CV	Cost Variance
DCO	Deputy Commissioner, Operations
DOI	U.S. Department of the Interior
EAC	Estimate at Completion
ESAM	Electronic Service Agreement Module
EV	Earned Value
EVM	Earned Value Management
FAC-P/PM	Federal Acquisition Certification for Program and Project Managers
FAI	Federal Acquisition Institute
FY	Fiscal Year
IT	Information Technology
NEPA	National Environmental Policy Act
O&M	Operation and Maintenance
OMB	Office of Management and Budget
OMB 300	Office of Management and Budget Circular A-11, Part 7, Section 300
PM Framework	Project Management Framework
PMBOK®	*A Guide to the Project Management Body of Knowledge,* fourth edition, 2008
PMI	Project Management Institute
PMIT	Project Management Implementation Team
PMO	Project Management Office
PMP	Project Management Plan
PMT	Project Management Team
PRB	Project Review Board
PV	Planned Value
RAX	Replacements, Additions, and Extraordinary Maintenance
Reclamation	Bureau of Reclamation
SOP	Standing Operating Procedures
SPI	Schedule Performance Index
SV	Schedule Variance
TSC	Technical Service Center
U.S.C.	United States Code
WBS	Work Breakdown Structure

Executive Summary

Project performance and success can be significantly improved by applying project management knowledge, processes, skills, tools, and techniques. This is increasingly accepted across all industries. This integrated Project Management Framework (PM Framework) is intended to add value to the organization by outlining a body of knowledge, processes, skills, tools, and techniques that, when used, will improve the Bureau of Reclamation's (Reclamation) performance in conducting its work.

The PM Framework integrates existing Governmentwide and U.S. Department of the Interior (DOI) project management requirements and clarifies project management practices for those projects for which no specific mandates already apply. The PM Framework also establishes metrics that will enable Reclamation to measure how well it is administratively instituting project management and how well this practice is improving the agency's actual performance in accomplishing its workload.

While Reclamation is efficient in accomplishing projects, it can improve the way it manages its workload. Some portions of the organization are very successful in managing projects to reach completion on time and within budget and can provide "best practices" for other portions to overcome challenges.

To maximize the success of projects throughout the organization, Reclamation is committed to implementing effective project management at all levels and for all types of project work, including construction projects, Information Technology (IT) projects, and other projects. In certain cases, project management processes are already mandated by DOI or higher level governmental policy. This document does not supersede any of the mandated processes; rather, it provides guidance for, and specifically focuses on, providing scalable requirements for situations in which Reclamation retains discretion on the level and type of project management requirements.

The principles laid out in this PM Framework can be used for almost any kind of activity, including environmental efforts, water contracting or marketing actions, planning studies, or even short-term assignments dealing with specific resource management issues.

In 2007, the Office of Management and Budget (OMB) issued directives for Executive Branch agencies to establish a structured development program for program and project managers. Since then, DOI and OMB have refined and developed additional requirements that must be integrated into Reclamation's business practices. In 2009, Reclamation first issued policies and directives and standards for project management. In June 2011, Reclamation's Deputy Commissioner, Operations, directed the Coordination and Oversight Group (COG) to establish the Project Management Implementation Team as a subteam

of the COG and tasked the team with developing an integrated Project Management Framework with the objective to guide the consistent administration and practice of project management for all programs, projects, investments, and initiatives. This document is the culmination of that work.

Key guiding principles of this PM Framework include:

- The PM Framework must add value to the performance of the agency in conducting its work by clarifying project management practices for those projects where no specific mandates apply.

- The application of project management to individual activities must be scalable to the size, sensitivity, scope, and complexity of the project, while also using common means to execute, track, and report project status.

- Implementation of the PM Framework must balance the need for a fundamental level of consistency across the agency by providing flexibility to each directorate to implement and apply the project management principles that work best for its organization.

Terminology

In many professions and disciplines, terminology can have specific meanings or different meanings for the same terms. This applies also to project management and how it affects current language used in Reclamation. Many terms are used throughout Reclamation that relate to the discipline of project management. To ensure consistency, minimize confusion, and promote common understanding across Reclamation, critical terms have been identified in Section II, Terminology, and Section V, Glossary.

Administration

Having an administrative and governance structure within each directorate is critical for establishing an organizational framework that incorporates project management principles into its operations. Each directorate is responsible for establishing policies, procedures, and organizational structures that promote the application of project management. Within this context, this PM Framework provides the flexibility necessary for directorates/offices to implement project management principles to meet their unique business needs. The PM Framework establishes guidelines for defining and managing projects categorized as Basic, Standard, Complex, and Complex with OMB 300 and recommends the type of training and certification requirements aligned with each category. The Complex with OMB 300 category applies the higher level DOI and OMB requirements to

projects subject to Circular A-11 and DOI policy, while the other three categories provide a framework for Reclamation directors to exercise the discretion left to them.

Project Management Processes

To understand the value of project management, it is necessary to understand the fundamental nature of a project; the core characteristics of project management processes; how success is evaluated; the roles, responsibilities, and activities of a project manager and the expertise required; and the context in which projects are performed.

The PM Framework references a certification known as Federal Acquisition Certification for Program and Project Managers (FAC-P/PM). This is a set of common, essential competencies developed by the Federal Acquisition Institute (FAI) for the program and project management community. While the FAI has established the training, experience, and competencies required for certification, it does not provide detailed project management process guidance.

To define project management processes, the PM Framework integrates the concepts set forth by the Project Management Institute in its publication, *A Guide to the Project Management Body of Knowledge*, fourth edition, 2008, along with the requirements set forth in Governmentwide, DOI, and Reclamation policies.

The project management processes are organized into five process groups: initiating, planning, executing, monitoring and controlling, and closing:

- **Initiating** defines and authorizes the project and defines how the overall project will be managed from start to finish.

- **Planning** defines and refines objectives and develops the Project Management Plan (PMP), which is the course of action required to attain the project's objectives and scope.

- **Executing** integrates people and other resources to carry out the PMP activities for the project.

- **Monitoring and controlling** regularly measures and monitors progress to identify variances from the baseline PMP so that corrective action can be taken, when necessary, to meet project objectives.

- **Closing** formalizes acceptance of the product, service, or result; brings the project, or a project phase to an orderly end; and transitions to operations or to the next project phase.

These processes are used throughout the life cycle of a project.

Project Management Process Guidelines

The five groups of processes include a very broad range of individual processes. It is important for practitioners within Reclamation to understand the individual processes that must be adapted and applied to suit each individual project. Smaller, simpler projects may require the use of less formal processes, whereas larger and more complex projects typically require more structured processes. In short, although project management follows standard practices and guidelines, it is scalable and adaptable to each particular project.

Project Life Cycle

The project life cycle for a Reclamation project may include multiple phases or subprojects within the context of a single overall project. Project phases in a complete project life cycle are not the same as project management process groups. In fact, the process groups may need to be repeated for each phase.

The end of each phase is marked by a milestone. There are a multitude of phases and milestones currently in use throughout Reclamation, depending on the organization and the type of project. Despite the differences, all projects will follow the agency project life cycle, which consists of four broadly defined project phases:

1. **Starting the Project:**

   Example Activities: Developing the project charter, authorizing memo or email, obtaining output from another project, formulating service agreements, etc.

   Example Outputs: Project charter developed, including designation of project manager, identification of project category (Basic, Standard, Complex, or Complex with OMB 300), and preliminary project cost estimate.

   Example Milestones: Review of project charter, decisions, preliminary costs. Go/no-go decision made to proceed to next phase of project.

2. **Organizing and Preparing:**

   Example Activities: Preparing the PMP, appraisal study, feasibility study, planning study, value planning study, etc.

   Example Outputs: Signed PMP, environmental and other required processes and permits, appraisal design, feasibility design, final design, and significant acquisitions/procurement events.

   Example Milestones: Milestone review of outputs, authorization of recommendations, and approval to move to next phase.

3. **Carrying Out the Work:**

   Example Activities: Executing work orders, design, acquisition, delivery, construction, etc.

   Example Outputs: Product or system, results, and documentation that work is complete.

   Example Milestones: Review of deliverables and artifacts, and construction or delivery results. Authority to proceed to deployment, operations, or operation and maintenance (O&M).

4. **Closing the Project:**

   Example Activities: Review and approval of deliverables, developing delivery memo and other final reports, commissioning, transfer of facilities, as-built drawings, Standing Operating Procedures, O&M manuals, contract closeout, and COG closeout report.

   Example Outputs: Closeout report completed, lessons learned, and team closure.

   Example Milestones: Post Implementation Review, Termination/Change Review, Decommissioning, or Succession Review.

The wide range of phase activities, outputs, and milestones that are developed for any particular type of project throughout Reclamation falls within these overarching high-level phases. A given activity may fall into a different phase, depending on the type of project. For example, for a design and construction project, the environmental approvals and permits may be part of the "Organizing and Preparing" phase, where for a strictly environmental project, they would fall into "Carrying out the Work." The five groups of project management processes (as previously defined) are applied during each phase to efficiently guide the accomplishment of any particular project.

Metrics

The PM Framework establishes standardized metrics to measure progress toward establishing a project management program Reclamationwide, beginning in fiscal year (FY) 2013. Two types of metrics will be collected: one set will measure Reclamation's progress toward implementing a project management program; the other set will measure the effectiveness of that program. The COG will collect data on the performance metrics, which will be included in the COG FY reports.

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I. Introduction

A. Goals and Objectives for Implementing Project Management Throughout Reclamation

Applying project management knowledge, processes, skills, tools, and techniques can significantly improve effectiveness and efficiency in achieving project goals. This is increasingly accepted across all industries. In order to maximize the success of its projects, the Bureau of Reclamation (Reclamation) is committed to implementing effective project management at all levels and in all disciplines of the agency ranging from planning to construction, as well as human resources, acquisitions, and Information Technology (IT). It is Reclamation's goal to improve the way it accomplishes its workload. Some portions of the organization are very successful in managing projects to reach completion on time and within budget, and they can provide "best practices" for other portions of the organization to overcome the challenges discussed below:

- Large percentages of Reclamation's budgets continue to be awarded in the last quarter of the fiscal year, increasing the risks of decreased quality of the deliverable, delayed schedules, or loss of budgeted funding.
- There are often delays in project schedules and increases in budgets. Those changes may be formally approved, but the agency loses sight of the original baseline schedules and budgets. Either it does not take the time, or it loses its ability to assess whether these projects could have been performed more effectively to get them done within original schedules and budgets.

In certain cases, project management processes are mandated by U.S. Department of the Interior (DOI) or governmental policy. This document does not supersede any of the mandated processes, but it provides guidance for those areas in which Reclamation has discretion.

This integrated Project Management Framework (PM Framework) is intended to address project management for all types of projects. It specifically focuses on providing scalable requirements for projects where each office retains discretion.

B. History

From 2005 through 2006, The National Research Council of the National Academies evaluated Reclamation's organization, practices, and culture, which culminated in a 2006 National Research Council report, *Managing Construction and Infrastructure in the 21st Century Bureau of Reclamation*. This report served as a catalyst, driving Reclamation to examine its core capabilities in a number of key areas in an effort referred to as Managing for Excellence. (For specific

citations, see appendix A.) This examination included an assessment of the practice and use of project management methodologies. In December 2006, Reclamation's Commissioner signed a Decision and Documentation Paper that accepted the recommendations of the Reclamation Leadership Team and directed the implementation of project management consistent with the recommendations outlined in the Decision and Documentation Paper. In July 2009, Reclamation issued policy establishing the use of project management practices within Reclamation.

During the same time period, Governmentwide project management improvement efforts were also underway. In November 2003, Congress amended the Office of Federal Procurement Policy Act (41 United States Code [U.S.C.] 403) and broadened the definition of the acquisition community to include program and project managers. On April 15, 2005, the Office of Management and Budget (OMB) issued Policy Letter 05-01, which established a Governmentwide framework for creating and developing a Federal acquisition workforce using common standards and including program and project managers. On April 25, 2007, OMB issued a memorandum to Executive Branch agencies establishing a structured development program for program and project managers to be administered by each agency.

Reclamation moved forward with implementing the identification and development of project managers in accordance with the Commissioner's December 2006 memorandum. Since that time, OMB and DOI have refined or developed additional requirements that must be integrated into Reclamation's business and project management practices.

In March 2009, Reclamation chartered the Coordination and Oversight Group (COG). The COG was chartered to support Reclamation's leadership in implementing the business model for managing engineering and other technical services that had been developed as part of the Managing for Excellence effort that grew out of the National Academies' study in 2006. The COG was formed to assist the Deputy Commissioner, Operations (DCO), in ensuring that Reclamation maintains the technical capability to fulfill all of its responsibilities to deliver water and power, while executing program and project requirements within scope, budget, and schedule in a manner that fosters Reclamationwide collaboration, coordination, and sharing of technical resources.

Recognizing the need to integrate OMB and DOI refinements and additional requirements to develop project managers, and to conduct an assessment of Reclamation's deployment and use of project management practices, in June 2011, Reclamation's DCO chartered the Project Management Implementation Team (PMIT) as a subgroup of the COG. The team was tasked with developing the PM Framework.

The COG sponsored the development of software, Electronic Service Agreement Module (ESAM), for nine technical service organizations within the agency to track their performance and efficiency in accomplishing workload under service agreements developed with clients. This PM Framework overarches these current efforts of the COG. In addition, the PM Framework incorporates OMB, DOI, and Reclamation policy requirements, research results based on analysis of industry standards, and other best practices.

C. Objective

The objective of the PM Framework is to guide the consistent administration (training, use, evaluation, and control, etc.) and practice of project management for all programs, projects, investments, and initiatives. The PM Framework will integrate the concepts set forth by the Project Management Institute (PMI) in its publication, *A Guide to the Project Management Body of Knowledge (PMBOK®),* fourth edition, 2008,[1] along with the requirements set forth in Governmentwide, DOI, and Reclamation policies.

Throughout this document, references are made to the PMBOK®. Developed over the past 30 years, the PMBOK® is a collection and organization of knowledge of best practices used in the project management profession. It is widely accepted to include the core elements of successful project management practices. It is updated every 4 years, is an internationally referenced standard (American National Standards Institute [ANSI]/ PMI 99-001-2008), and provides a basis for universal discourse on practices. Most modern academic and practical publications on the subject of project management reference the PMBOK®, adopt its methodology, and incorporate its terminology.

The PM Framework references a certification known as Federal Acquisition Certification for Program and Project Managers (FAC-P/PM). This is a set of common, essential competencies developed by the Federal Acquisition Institute (FAI) for the Federal program and project management community. While the FAI has established the training, experience, and competencies required for certification, it does not provide detailed project management process guidance.

This PM Framework focuses solely on **project management**, rather than **program management**, and includes the following elements:

- Element 1: Establish consistent project management practices, by:
    - Defining key project management terminology and practices
    - Defining a project life cycle and fundamental project management principles

[1] Hereafter referred to as "PMBOK®."

- Element 2: Establish and administer Reclamation's project management efforts, including:
    - Clarify external and internal policies
    - Provide guidelines on how each directorate will establish its project management program
    - Define a framework for project management training
- Element 3: Establish metrics to track:
    - Implementation of project management governance across Reclamation offices
    - Effectiveness of project management on individual projects
- Element 4: Facilitate appropriate revisions to *Reclamation Manual* Policy, Comprehensive Program Series (CMP) P07 and Directive and Standard CMP 07-01 to reflect the new project management requirements.

D. Project Management Implementation Team

This PM Framework was developed by the PMIT. In October 2011, a charter formally established and authorized the PMIT as a subproject team to the COG. The DCO is the Executive Sponsor.

The PMIT is composed of one voting member from each region; the Technical Service Center (TSC); the Security, Safety, and Law Enforcement Office; the Chief Information Office; and the Policy and Administration Office. Members are familiar with their directorates' project management practices and are appointed by respective Directors for a term through the conclusion of the PMIT's activities.

The PMIT's future activities are anticipated to include:

- Develop future phases of the PM Framework
- Assist the COG in measuring the implementation and effectiveness of Reclamation project management efforts
- Update the PM Framework in light of future developments
- Support directorates by providing guidance in establishing project management practices as outlined by this PM Framework

II. Terminology

In many professions and disciplines, terminology can have specific or different meanings for the same terms. This applies also to project management and how it affects current language used in Reclamation. For example, there are key terms for project management which may have varying meanings within Reclamation. To ensure consistency, minimize confusion, and promote common understanding across Reclamation, critical terms have been identified in Section II, Terminology, and Section V, Glossary. Most of the definitions listed in the glossary are taken from the PMBOK®. This list is not all inclusive, but it highlights the need for a common project management language within Reclamation when applying project management.

A. Key Project Management Terms

It is important to keep in mind that the term "project," as used throughout this document, differs from the term "Project" as it is typically used in Reclamation. A "Project" in Reclamation is typically a congressionally authorized or directed activity that allows Reclamation to build a water and/or power facility or group of facilities. Traditionally, "Projects" are groups of infrastructure, such as the Central Arizona Project, the Lower Colorado Dams Project, or the Central Valley Project. Reclamation has hundreds of official "Projects." Reclamation "Project" activities would range from the traditional planning, designing, and building of structures to negotiating and signing delivery contracts, developing operations plans, and completing environmental compliance documents. In historic Reclamation vernacular, the operation and maintenance (O&M) of the completed "Project" is also often considered as part of the "Project."

People managing these "Projects" may be called area office managers or facility managers, while the people managing projects, as defined in this document, are often referred to as something other than project managers (they may be called team leaders, coordinators, activity managers, or program managers). Due to these connotations, care should be taken to distinguish between Reclamation "Projects" and projects that fit the project management definition as discussed in this document and defined below.

Project: Fundamentally, a project is a "temporary endeavor undertaken to create a unique product, system, service, or result."[2] Projects are distinguished from operations and from programs as defined below. The following characteristics further clarify the definition of a project:

[2] PMBOK®, p. 5.

Temporary Endeavor: A temporary endeavor has a discrete and definable commencement and conclusion.

Unique Deliverable: The scope for a particular project has deliverables that must be produced within constraints, through risks, with specific resources, at a specific place, and within a certain period. Therefore, the process to produce the deliverable, as well as the deliverable itself, is unique.

Project vs. Program: A project is a discrete effort which may or may not fall within a program. A project differs from a program in that "a program is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually."[3]

Project vs. Operations: The primary difference between project and operations is that operations are continuing and repetitive activities that are executed to achieve a goal and mission, and to sustain the business, while a project is temporary and unique.

Project Management: "The application of knowledge, skills, tools, and techniques to project activities to meet project requirements."[4]

Progressive Elaboration: Progressive elaboration allows a Project Management Team (PMT) to manage a project to a greater level of detail as the project evolves. Progressive elaboration involves continuously improving and detailing a plan as more-detailed and specific information and more accurate estimates become available.[5]

Project Life Cycle: Collection of generally sequential project phases that include the major steps involved with conceptualizing, initiating, designing, developing, executing, and closing of the project's deliverables, but not including the continued operations such as for a system or service after closeout.

Project Phases: Collection of logically related activities, usually resulting in a major deliverable or reaching a milestone. Project phases are usually completed sequentially, but they can overlap in some project situations that may require iterations or incremental execution. A project phase is a component of a project life cycle.

Project Management Processes: A set of interrelated actions and activities performed to achieve a prespecified product, system, result, or service. Each process is characterized by its inputs, the tools, and techniques that can be applied, and the resulting outputs.

[3] PMBOK®, p. 9.
[4] PMBOK®, p. 443.
[5] PMBOK®, p. 7.

Process Groups: Project management processes are grouped into five categories known as Project Management Process Groups:[6]

Initiating: Processes performed to define a new project or phase of an existing project by obtaining approval to start the project or phase.

Planning: Processes performed to establish the scope, schedule, and budget of the effort; define and refine the objectives; and develop the course of action required to attain those objectives.

Executing: Processes performed to complete the work defined in the Project Management Plan (PMP) to satisfy the project objectives.

Monitoring and Controlling: Processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

Closing: Processes performed to finalize all activities across all process groups to formally close the project or phase, and to document lessons learned.

Baseline: An approved plan for a project, including approved changes. It is compared to actual performance to determine if performance is within acceptable variance thresholds.

Earned Value Management (EVM): A project management methodology to integrate scope, schedule, and resources (budget) for objectively measuring project performance and progress.

Directorates: The organizational component of Directors, (e.g., the Director, Technical Resources; Regional Directors; Director, Security, Safety, and Law Enforcement; Director, Policy and Administration; Director, Program and Budget; Director, Management Services Office; and Director, Information Resources Officer).

Responsible Charge: The overall control, guidance, and oversight of a project's initiation, planning, executing, monitoring and controlling, and closing project management process groups. For example, one certified project manager may have responsible charge of a project, with a noncertified project manager assigned as the frontline manager of "day-to-day" project activities. A certified project manager may also have responsible charge of a project, while other individuals obtain or complete any required project management training or certification.

[6] PMBOK®, p. 6.

FAC-P/PM: Federal Acquisition Certification for Program and Project Managers. Certification requirement for responsible charge project manager oversight on those projects determined by the Director to require compliance with OMB Circular A-11, Part 7, Section 300 (OMB 300).

III. Administration

A. Governance

1. Introduction

Each Reclamation Director shall be responsible for establishing internal directorate policies, directives, procedures, best practices, and structures for implementing the PM Framework within their office. This section explains what items should be covered in those directorate policies and procedures.

Appendix A includes the minimum requirements established by existing laws, policies, and guidelines at the Governmentwide, DOI, and Reclamation levels.

2. Areas to be Addressed

a. Directorate process for project governance, including how and by whom the following will be performed:

- Identifying and categorizing projects (see section b., below)
- Assigning project managers and determining qualifications
- Developing charters
- Approving project plans
- Controlling changes
- Measuring, monitoring, and tracking project progress, analyzing performance, and compiling and reporting metrics
- Administering training programs/requirements (see section c., below, Section III.B., Training, and appendix B)
- Sharing organization process assets (forms, sample documents, "lessons learned," etc.)

b. Directorate process for defining the following categories, as illustrated in figure 1:

- **Basic:** Recommended for projects valued at under $1 million unless they are defined in one of the categories below.

- **Standard:** Recommended for projects valued at $1 million to $10 million or larger that do not warrant special management attention, for higher-cost projects that are very straightforward, or for lower-cost projects that do warrant special management attention because of their importance to the agency mission, high risk, high return, high visibility, or their significant role in the administration of agency programs, finances, property, or other resources
- **Complex:** Recommended for projects valued at over $10 million that warrant special attention, or for lower-cost projects that warrant special attention
- **Complex with OMB 300:** Required for major acquisitions where an OMB 300 is required to be submitted to OMB, as defined in OMB Circular A-11 (see section 3., below). Contact the Maintenance Service Division in the Policy and Administration Office for the Capital Planning Guide and other supplemental guidance on OMB Circular A-11.

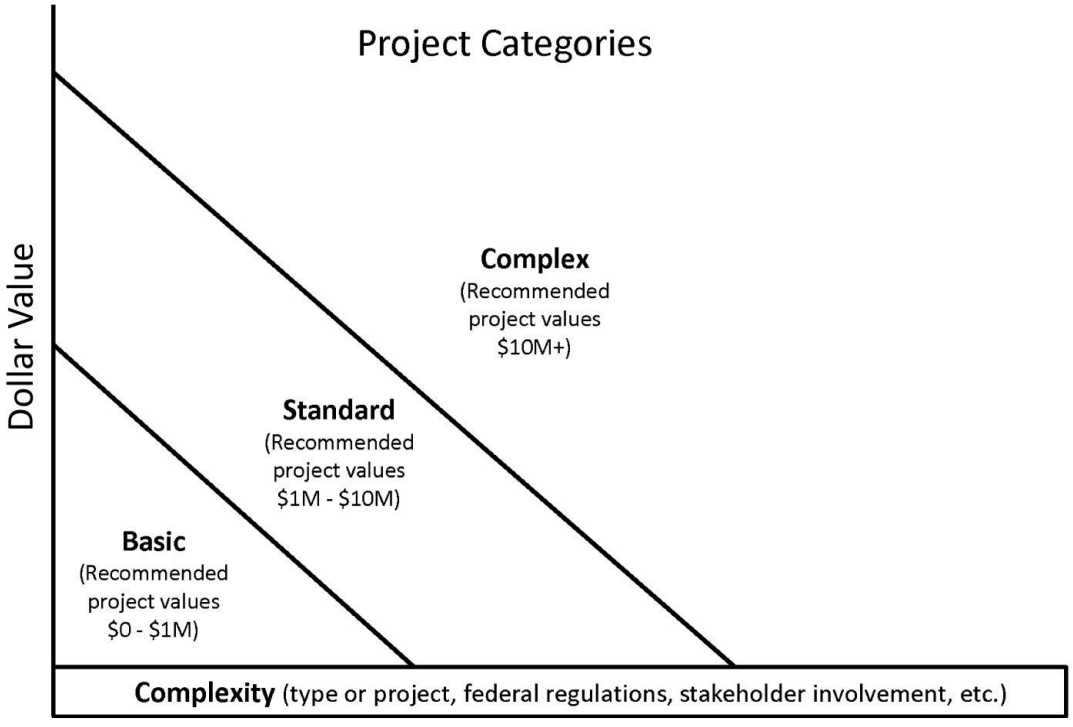


Figure 1. Project category types.

Appendix C contains a project management level selection guide to help classify projects into their appropriate categories.

c. Project management training and certification required for various types of employees:

- Each directorate will develop necessary training requirements for staff managing the types of projects identified above. Training requirements will also be defined for members of project teams and for managers, supervisors, and other staff not directly involved in project teams.
- Each directorate will also determine the level of certification of project managers, where not otherwise mandated
- Projects in the category of Complex with OMB 300 must be under the responsible charge of a project manager certified at the appropriate FAC-P/PM level. For IT projects in this category, the project manager must also be a PMI certified project management professional. For non-IT projects, the level of PMI certification is at the discretion of the director.

See Section III.B., Training, and appendix B for more information.

d. The roles, responsibilities, and authorities of project managers:

- Managers of projects categorized as "Basic"
- Managers of projects categorized as "Standard"
- Managers of projects categorized as "Complex"
- Managers of projects categorized as "Complex with OMB 300"

See Section IV.A.3., The Role of a Project Manager, and Section IV.C., Project Management Roles and Responsibilities, for more information.

e. Tracking/reporting requirements:

- For projects categorized as "Basic"
- For projects categorized as "Standard"
- For projects categorized as "Complex"
- For projects categorized as "Complex with OMB 300":
    - Reporting includes the requirements of OMB Circular A-11 and use of the EVM

See Section IV.D., Performance Metrics, for more information.

3. Requirement for OMB 300

An OMB 300 is required for any major investment as defined below.

a. IT Projects

A major IT project requires special management attention because of its importance to the mission or function of the agency, a component of the agency, or another organization; because it has significant investment implications; has

high executive visibility; has high development, operating, or maintenance costs; is funded through other than direct appropriations; or is defined as major by the agency's capital planning and investment control process. OMB may work with the agency to declare other investments as major investments. Agencies should consult with their OMB agency budget officer or analyst about which investments to consider as "major." Investments/projects not considered "major" are "nonmajor."

b. Non-IT Projects

A major investment means a system or acquisition requiring special management attention because of its importance to the mission or function of the agency, a component of the agency, or another organization. In consultation with the Maintenance Services Division, the directors shall determine the need for OMB 300 requirements for non-IT projects based on OMB Circular A-11 guidance. For example, Safety of Dams modifications generally require an OMB 300. Title XVI; Rural Water; Replacements, Additions, and Extraordinary Maintenance (RAX); and routine O&M items do not require an OMB 300.

4. Organizational Structure and the Project Management Office

The organizational structures and leadership/management styles within Reclamation will influence project management practices and culture, as will the extent to which a directorate implements a Project Management Office (PMO). These influences are described separately below.

a. Organizational Structure

The PMBOK® recognizes functional, matrix, and projectized organizational structures and describes how each influences project characteristics (see table 1). Generally, Reclamation's organizational structure fits the functional organization or weak matrix category. These structures typically have project managers dispersed among the organizational units of the directorate office. To varying degrees, the project managers share responsibility with the functional managers for assigning priorities and for directing the work of persons assigned to the projects. Project managers work within their various offices to ensure that workload planning occurs on a fiscal year basis. The project manager works with the program office management structure to make sure projects are executed and quality products are delivered on time and within budget.

Fundamentally, it is the responsibility of the leadership of each directorate to determine the best organizational structure within their particular organization to advance best project management practices. Table 1 does not imply that one type of organizational structure is better than another. In Reclamation's environment of tending towards functional or matrix oriented organizational structures, it is imperative to recognize the need for strong teamwork, clear definition of authority, and clearly identified roles and responsibilities in carrying out each project. These factors will drive success regardless of the type of organizational structure. Some Reclamation offices are moving towards a strong matrix

approach by co-locating project managers within a PMO and providing full-time support for project management activities. While some Reclamation organizations are moving in this direction, the philosophy is not universally accepted, and it remains an option that directorates may choose to adopt.

Table 1. Various organizational structures and their influence on the project.[7]

Organizational Structure	Functional	Matrix			Projectized
		Weak Matrix	Balanced Matrix	Strong Matrix	
Project Manager's Authority	Little or None	Limited	Low to Moderate	Moderate to High	High to Almost Total
Resource Availability	Little or None	Limited	Low to Moderate	Moderate to High	High to Almost Total
Who Controls the Project Budget	Functional Manager	Functional Manager	Mixed	Project Manager	Project Manager
Project Manager's Role	Part-time	Part-time	Full-time	Full-time	Full-time
Project Management Administrative Staff	Part-time	Part-time	Part-time	Full-time	Full-time
Probability of Success	low	low/moderate	moderate	moderate/high	high

b. Project Management Office

The PMO is also commonly referred to as a project management organization. The PMO will have various responsibilities related to the coordinated management of projects within the directorate, with responsibilities that can range from providing project management support functions, monitoring, tracking, and reviewing multiple projects, to actually being responsible for the direct management of projects. Within the PM Framework, each directorate has the flexibility to define its own PMO structure.

The PMO within a directorate may range from being a centralized and well-defined office, in which project managers are co-located and supported, to a very decentralized organizational structure, where the project managers follow general PMO guidance and are spread throughout many functional organizational units.

Under a centralized PMO approach, which the PMBOK®[8] defines as a strong matrix organization, a distinct PMO office is established. This organizational unit includes project managers who are responsible for managing all projects across the directorate or office. The PMO may also include support staff such as clerks, asset managers, work planners, budget analysts, schedulers, and estimators. The PMO is responsible for life-cycle management of projects, which includes long- and short-term planning, as well as overall cradle-to-grave execution of projects. The PMOs should accomplish work planning on a fiscal year basis through coordination of project priorities, budget, and execution capacity. The

[7] PMBOK and *PM Magazine*, December 2000.
[8] PMBO*K*®, p. 30.

PMOs should monitor execution of projects using a standardized tracking system and report individual project status to organizational leaders. The PMO's focus is on overall project success, with an emphasis on delivering quality projects that are on time and within budget. In this structure, it is the responsibility of the PMO to coordinate and collaborate with the appropriate area office, or other program office, to ensure that mission goals and objectives are met.

5. Oversight and Review

Oversight and review are important components of managing Reclamation projects. The level of oversight and review is scalable to the size, complexity, and sensitivity of the project to external influences. In order to be successful, oversight and review need to occur throughout the life cycle of the project on a real time basis, while achievement of the various phases and milestones is being carried out.

Oversight review teams at all levels provide the following benefits:

1. Gather and present data on project performance. Use team members' experience and knowledge to help identify and overcome potential execution problems.

2. Provide opportunities for early resolution of project issues.

3. Prevent misinformation – participants see the same information and hear the same discussions.

4. Provide a forum for open communication and discussion of project issues.

5. Allow for more informed decisions.

6. Provide opportunities for learning, team work, and synergy.

7. Provide decisionmaking support to the project manager.

Oversight review teams should be formed with the intent of adding value and are defined in the charter or PMP. The level of oversight should be determined on a project-by-project basis and may include the following levels. The names of these oversight review teams vary across Reclamation; however, the functions are as defined below.

a. Project Management Team

Generally, the project manager establishes a PMT, which is responsible for doing the actual work of the project, holding itself accountable for the work it is responsible for performing, and ensuring that its work receives proper technical peer review. The project manager is responsible for managing the work of this team in accordance with the project plans to ensure that the project is on track.

b. Project Management Oversight Team

Often in Reclamation, higher level oversight and review teams are established to assist the project manager and PMT in accomplishing the project. These teams are led by the project manager and are called by various names such as the Project Management Oversight Team or the Oversight Management Group. The oversight team should consist of an appropriate mix of three to five senior and/or mid-level leaders, such as the area manager, deputy managers, program/client office point of contact, special assistant, group managers or division chiefs, and regional office managers or division chiefs. These teams may also include members from outside stakeholder groups. Generally, the representatives of these oversight teams are one to two supervisory levels above the technical working team and project manager. The team members at this level have management authority over resources and have the authority to set work priorities, establish project priorities, and resolve problems that could not be resolved at lower levels.

c. Executive Management Team

At times, depending on the complexity of the project, an additional oversight and review team may also be established at an organizational level higher than the project management oversight team. This type of oversight team is sometimes called an Executive Management Team. The team members at this level are generally executive level management such as area office managers, assistant or deputy regional directors, or, in some cases, regional directors. Executive level representatives of the sponsor and outside stakeholders are typically included. This team functions as an executive oversight or steering committee to provide executive level decisionmaking, guidance and policy direction.

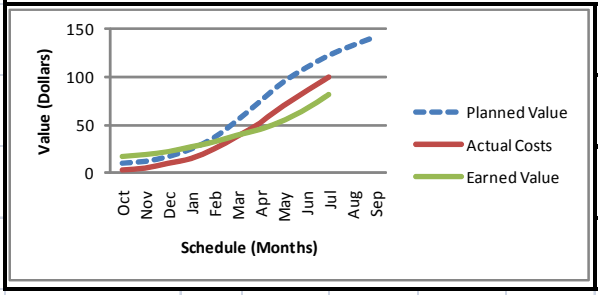
d. Project Review Board

Projects may also be monitored through a Project Review Board (PRB). PRBs are generally more program management oriented than project oriented, and they provide additional oversight review. PRBs usually review a suite of projects and provide management an opportunity to assess each project in the context of a larger program. PRBs offer opportunities for management to prioritize a group of projects. The makeup of the PRB should include key management personnel from the office to which the project is assigned. This may include the area manager, deputy or special assistant, budget, facility managers, engineering, etc. The makeup can be adjusted as needed for the specific project(s) and include subject matter experts, management, and other key stakeholders as deemed beneficial. The PRB members represent both their respective organizations and the greater organization, with the goals of providing the support, collaboration, insight, or clarification needed to promote success of the projects and adherence to standards, laws, and other requirements. Frequent PRB meetings, as often as monthly, are preferred. The PRB may also act as a control board, reviewing specific modifications to project deliverables based on scope or requirement changes. The general status of each recognized project may be presented at the PRB meetings, with project managers giving more detailed presentations for their project(s) when requested by management.

At the PRB, status reporting should consist of budget and schedule charts, with simple notes regarding project status, issues, Earned Value (EV) reports (if required), and proposed actions for recovery (if needed). See figure 2. The PRB should be scheduled to occur prior to regional status reviews.

Job/Mgr/Phase	Status	Completion Schedule				Activities	Risks/Issues/Actions
		Scoping	Design	Award	Const.		
TPP Overhaul, RFP Ross Contracting	Green	Done	~~29-Oct-09~~ ~~16-Jan-10~~ ~~29-Jan-10~~ ~~12-Feb-10~~ Done	~~6-Sep-10~~ ~~26-Jan-11~~ ~~28-Jan-11~~ ~~18-Mar-11~~ 13May13	~~25-Apr-17~~ ~~19-Sep-17~~ 29-Sep-17	**Recent:** Solicitation issued 30 July **Next:** Schedule/coordinate Contractor site visits.	Under Budget Behind Schedule Working overtime to recover schedule, budget is adequate to cover.

Cost Data through 31 July 2010



FY10 Budget	$142
FY10 Planned Value	$123
FY10 Actual Costs	$100
FY 10 Earned Value	$82

Figure 2. Example of a PRB slide.

Management should determine which projects will be briefed in detail at the PRB meetings, giving consideration to project importance, history, risks, input from project stakeholders, etc. Project managers should be informed well in advance of the PRB if a detailed briefing is needed for their project(s).

B. Training

Each directorate shall establish a project management training program that applies the guidelines defined in appendix B.

1. Training Purpose

The purpose of establishing a Reclamationwide project management training program is to promote efficient and consistent project management practices throughout Reclamation. Through the efforts to develop, establish, and execute proven and consistent project management principles and best practices, Reclamation will realize increased productivity and increased stakeholder and public value and satisfaction.

2. Tailoring Training Programs

Each directorate's training program should incorporate and support the PM Framework. The PM Framework represents the collected and recommended project management practices endorsed by Reclamation. These project

management processes will be transitioned to, and aligned with, Reclamation's current business processes, missions, and goals to the extent practicable. The training program should:

- Be tailored to meet specific requirements of the directorate and its organizations.
- Provide Reclamation with an effective and consistent set of project management practices, principles, and methodologies to deliver and achieve more successful and timely projects.

3. Core Project Management Knowledge Areas

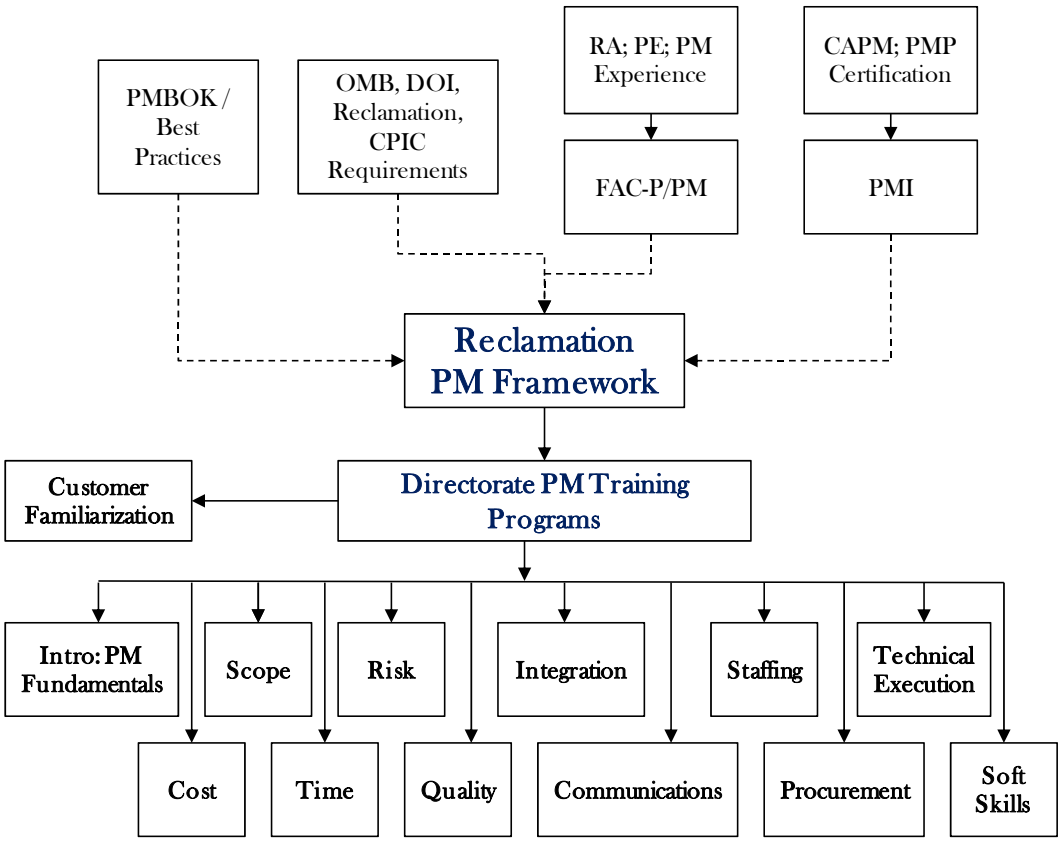
Figure 3 shows a hierarchy of the PM Framework Training Program components. The training program incorporates project management skills and requirements as defined by the PMI, Reclamation, DOI, OMB, and industry. An introduction module on PM Fundamentals is suggested as a basis before the skills training. Customer Familiarization training is also recommended for customers who are decision makers and other key stakeholders involved in project activities or reviews in order to build a common foundational understanding of PM activities. Captured at the lowest level of the hierarchy are the critical project management skills; application of these skills is considered a best practice to be performed throughout a project's life cycle. Critical project management skills are to be included in each directorate's PM training program to enhance effectiveness, efficiency, and consistency of project management execution.

4. Who Should Be Trained

The ideal approach to ensure that the PM Framework is used consistently and effectively across Reclamation incorporates multiple levels of training: from beginner to experienced project managers, key stakeholders, executive sponsors, business owners, system owners, and involved customers and organizations who are considered key decisionmakers.

Since the end result of the project life-cycle execution supports Reclamation's mission essential functions, operations, communications, and infrastructure capabilities, it is a definite advantage to both the project team and the project's goal if decisionmakers are knowledgeable in the content of the project, as well as in the processes and practices executed by the project team in order to achieve successful results.

Key stakeholders provide necessary resources and references to assist project managers and their teams with tools necessary to consistently apply project management practices and deliver projects successfully.



Notes: ***CPIC*** *– Capital Planning & Investment Control;* ***FAC-P/PM*** *– Federal Acquisition Certification for Program & Project Managers;* ***PMI*** *– Project Management Institute;* ***RA*** *– Registered Architect;* ***PE*** *– professional Engineer;* ***CAPM®*** *– Certified Associate in Project Management;* ***PMP*** *– Project Management Professional*

Figure 3. PM Framework training program.

Trained and knowledgeable decisionmakers are better able to support project management activities, system development life-cycle processes, management oversight milestones, review and acceptance of deliverables, and go/no-go decisions.

C. Project Management Metrics

Project management is the discipline of planning, organizing, and managing resources and activities to achieve the specific goals which will define project success. The primary challenge of project management is to achieve all project goals and objectives, while adhering to predefined constraints. Typical constraints are scope, quality, schedule, budget, resources, and risk. The secondary, and more ambitious, challenge of project management is to optimize resource allocation by scheduling activities, and the resources required by those activities, to meet predefined objectives within predefined constraints.

Similarly, much of Reclamation's workload is defined in the context of completing specific projects within predefined constraints. Further, Reclamation's appropriations-funded projects are managed within the constraints of the United States Government's fiscal year, which begins on October 1 and ends on September 30. Reclamation's goal is to accomplish all planned and scheduled tasks for appropriations-funded projects within this defined period of time by obligating (or expending) 100 percent of the budget allocated to the project tasks in a particular fiscal year. In many offices, such as power facilities, much of the budget is direct-funded by power utilities served by the powerplants. In these cases, budget can be programmed for multiple years or carried over from year to year.

It is necessary to verify and validate that project management practices, as specified in this PM Framework, are implemented and embedded within the day-to-day business practices of Reclamation. In addition, project management practices must be used appropriately and implemented in a way that accomplishes the intended purpose. This will facilitate a more consistent use of project management Reclamationwide and develop a foundational project management culture within the organization. The verification and validation actions defined below are intended to add value to the organization. The added value will be to drive the organization into a project management culture that enables more efficient accomplishment of its missions and goals with higher quality in the products and services that it provides.

The metrics listed below will be collected at a directorate level in accordance with directorate governance structure and reported to the COG for review and analysis of how agencywide project management practices can be improved. The COG will also incorporate these data into its annual report and maintain a trend analysis of project management performance.

1. Project Management Implementation Metrics – Phase 1

a. Verify and validate whether directorates have governance structures and policies instituting project management principles:

- Does the directorate have a written policy on project management and an associated organizational structure? Specification is validated by directorate letter or other written policy that applies principles of the Reclamationwide policies and directives and standards at a regional level.

- Has the directorate put in place a governance structure to monitor and track project management? Specification is validated by directorate letter or other written policy that formally establishes a governance structure.

b. Verify and validate whether directorates have training and certification programs established:

- Does the directorate have a written policy on project management certification? Certification requirements are established by written, directorate letter or policy that specifies project management training requirements and certification requirements.
- Does the directorate have a formal training/project management certification program? Specification is validated by a documented and defined training program.

c. Verify and validate that projects have been appropriately identified and assigned to one of the four categories (Basic, Standard, Complex, Complex with OMB 300):

- In the first year, both ongoing and newly-initiated projects will be identified and categorized.
- In subsequent years, projects will be identified and categorized as they are initiated.
- Evidence of project identification is captured in project documentation such as a charter, scope or project management plan.
- See section III.A.2.b for a description of the categories.

d. Verify and validate whether directorates have a policy in place to review and track specific project performance:

- Does the directorate have a policy requiring periodic reviews of project management practices for specific projects? Specification is validated by evidence that periodic reviews of project management practices are being conducted. Periodic reviews will assess how consistently project management is being implemented across a directorate and how well project management standards are being applied.

e. Verify and validate whether directorates have an established system for tracking, managing, and reporting on project performance:

- Does the directorate have a clearly articulated and actively used system for tracking, managing, and reporting on project performance? Specification is validated by a tracking system that is actively being used.

f. Verify and validate whether project sponsors and project managers are being formally identified:

- Are project charters being prepared for projects? Specification is validated by a documented project charter that identifies the project sponsor, project manager, and the purpose of the project.

g. Verify and validate whether projects are being established with appropriate statements of work (scope) and PMPs:

Are PMPs scaled to the category of the project? Specification is validated by the documented use of appropriate PMPs, including the elements below:

- Objectives/scope statement
- Scope definition
- Scheduling
- Estimate costs/determine budget (financial plan)
- Roles and responsibilities/staffing plan
- Communication plan
  - External
  - Internal
- Stakeholder management plan
- Change management plan
- Quality plan
- Risk management plan
- Acquisitions management
- Project closeout
- Signatures

2. Project Management Assessment – Phase 2

Phase 2 metrics are subject to redefinition based on the results from Phase 1.

a. Verify and validate ability of each directorate to identify all the resources necessary to support completion of project life cycles:

- Does the directorate have a readily identified project management workforce? Specification is validated by the ability of each directorate to identify specific personnel who are assigned project management responsibilities, and validated through a staffing management plan and/or project management plans for smaller projects.

- Does the directorate have a process for assigning qualified project managers who have the required qualifications/certifications to appropriate projects? Specification is validated by the ability of each directorate to identify specific project management personnel who are assigned to projects.

- Does the directorate have defined (in writing) roles and responsibilities for project managers and PMT members? Specification is validated by a documented written policy or guidance document that defines the roles and responsibilities of project sponsors, supervisors, project managers, program managers, and executive management.

- Is the directorate using multidisciplinary teams with representatives from all appropriate functions necessary to support completion of the project life cycle? Specification is validated by documented project charters that identify team members from appropriate disciplines.

b. Objective measure of the percentage of major milestones/project phases that are completed in accordance with the baseline schedule:

- Calculated as the total number of major milestones/project phases completed by the agreed upon completion baseline date divided by the total number of major milestones/project phases in all projects.

    - Major milestones/project phases completed by agreed upon revised completion dates will be reported as within schedule.

    - Only the final completion date of a particular major milestone/project phase will be reported. The metrics on individual milestones within a phase will not be objectively reported.

c. Percentage of major milestones/project phases that are completed within the baseline budget estimate:

- Calculated as the total number of project phases completed within the agreed upon completion baseline budget divided by the total number of project phases.

    - Major milestones/project phases completed within ±10 percent of the agreed upon baseline budget will be reported as within budget.

    - Major milestones/project phases completed within an approved revised baseline budget will be reported as within budget.

d. Percentage of projects reaching final completion within schedule:

- Calculated as the number of projects reaching final completion by the agreed upon completion date divided by the number of all projects reaching final completion.

- Projects reaching final completion by an approved revised completion date will be reported as within schedule.

e. Percentage of projects that reach final completion within budget:

- Calculated as the total number of projects reaching final completion within the agreed upon baseline budget divided by the total number of projects reaching final completion.
- Projects completed within an approved revised baseline budget will be reported as within budget.

f. Percentage of project phases with completion reports:

- Calculated as the total number of project phases completed with completion reports divided by the total number of project phases completed.

g. Percentage of projects reaching final completion with completion reports:

- Calculated as the total number of projects reaching final completion with completion reports divided by the total number of projects reaching final completion.

IV. Reclamation Project Management Process

A. Project Management Overview

The purpose of this section of the PM Framework is to describe key project management processes and concepts to provide a common language for use in Reclamation. To understand the value of project management, it is necessary to understand the fundamental nature of a project; the core characteristics of project management processes; how success is evaluated; the roles, responsibilities, and activities of a project manager and the expertise required; and the context in which projects are performed (see figures 4 and 5).

1. Definition of a Project

As stated in Section II, Terminology, the fundamental nature of a project is that it is a "temporary endeavor undertaken to create a unique product, service, or result."[9] A project is completed by using processes from each of the five process groups defined in Section II, Terminology. Figure 5 illustrates the relative depth, breadth, and interrelationship between these PMBOK process groups. Each of these process groups may be repeated and executed within each phase of a project's life cycle.

[9] PMBOK®, p. 5.

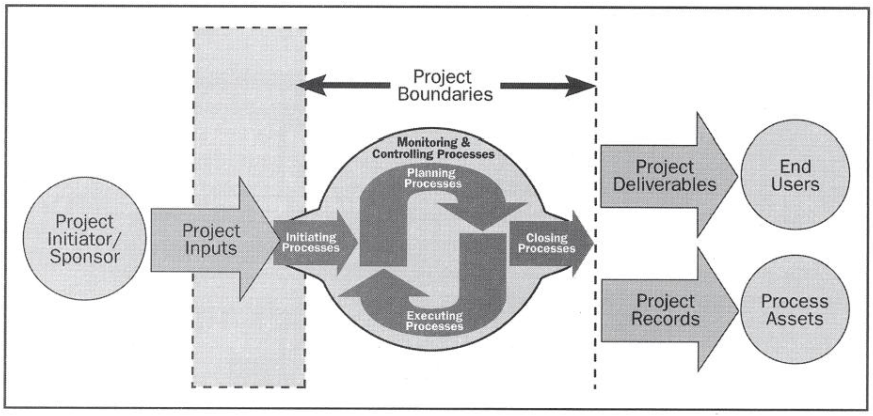


Figure 4. Key processes from project initiation to project deliverables and closeout.[10]

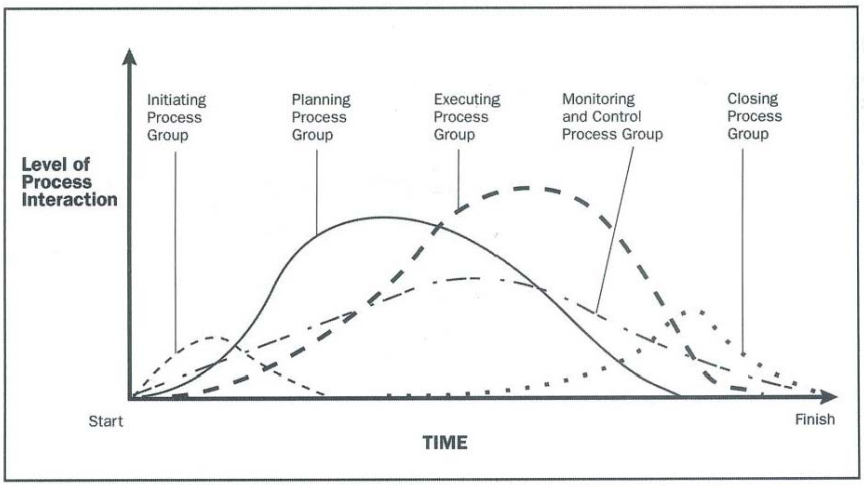


Figure 5. Level of process group interactions over time.[11]

Several significant observations regarding the nature of project management can be made from figure 5. The breadth or range of project management is comprehensive, which means that it begins with initiating and continues through closing. These processes may coincide with the start and end of the specific project itself, or within each phase of a larger project, respectively. Monitoring and controlling occurs throughout the duration of the project and has a range relatively similar to that of executing. Planning, and monitoring and controlling, have a collective depth similar to that of executing because these activities require a level of effort and have implications similar to constructing the product, providing the service, or producing the result.

[10] PMBOK®, p. 44.
[11] PMBOK, p. 41.

a. Process Group Interaction

The level of interaction of the five processes indicates a strong relational dependence that is not exclusive of one another. One process does not simply end and the next one begins.

As a project continues, the interrelated process groups are used to increase knowledge and awareness and to ultimately improve corresponding work plans. This process group interaction promotes both work efficiency and beneficial use of progressive elaboration. The process allows projects to be executed in increments and with minimal wasted effort, allowing details and objectives to be developed over time. In the process, discoveries are made; investigations, studies, and surveys are completed; analysis is performed; constraints are changed; resources are amended; contingencies are exercised; changes are managed; risks are mitigated; and Force Majeure (unforeseeable or unpreventable circumstances) occurs.

To manage the breadth or range of a project, active and proactive project management is required throughout the duration of the project. It cannot be simply initiated and/or planned, and then left alone. It must be continually planned, monitored, and controlled. If planning and/or monitoring and controlling are incomplete or absent, project management will be reactive and, hence, less effective.

b. Project Phases vs. Process Groups

Project management process groups are not the same as project phases in a complete project life cycle. In fact, the process groups may need to be repeated for each phase. This PM Framework defines four life cycle phases: starting the project, organizing and preparing, carrying out the work, and closing the project. Subphases may be used to provide greater segregation and control of the project, provided they are clearly mapped to the PM Framework life cycle. For example, a life cycle could include subphases such as initiation, planning, analysis, design, construction, integration and testing, implementation, and steady state, but the subphases need to be organized and tracked to align with the PM Framework life cycle. Specific disciplines may develop subphases to suit their specific environments and needs. Figure 6 displays the PM Framework life cycle phases and the PMBOK® process groups.

2. Project Success

A standard must be established by which to define and measure project success. Quality is fundamental to success. Quality can be looked at from two perspectives. First, is there quality in the management of the project? Second, is there quality in the product or result of the project?

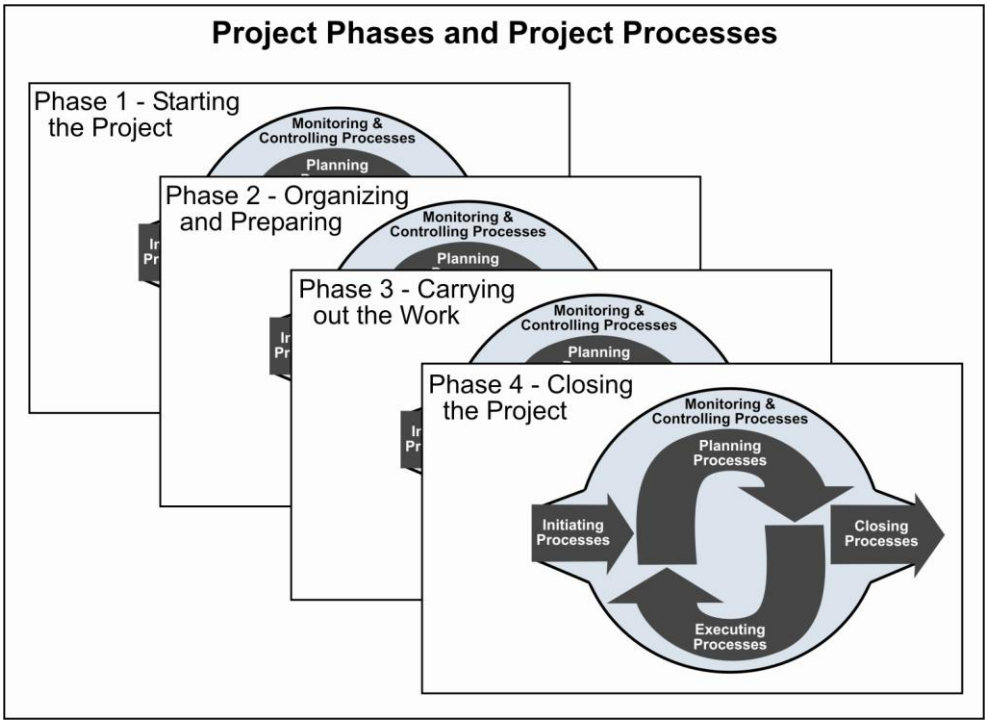


Figure 6. Relationship of phases to project processes.

Fundamentally, project success from a perspective of the management of the project is the delivery of the required product, system, service, or result, as defined in the scope of the project, on time and within budget. To meet these objectives is to deliver a quality, successfully managed project. Project quality (both managing of the project and product quality) can be illustrated through the concept of the project constraints, sometimes also referred to as a quadruple constraint (time, cost, scope, and quality). Project quality is affected by balancing these interrelated factors. The relationship among these factors is such that if any one of the factors changes, at least one other factor is likely to be affected. Figure 7 illustrates this constrained relationship.

The relationship between cost and time is intuitive, but the role played by scope warrants further discussion. To understand the significance of scope, one must appreciate the relationship between scope and the project objectives. For the scope to contribute to project quality, it must be managed to meet the demands of the project objective by reliably providing the required functions: nothing more or nothing less. It is not simply a matter of keeping the scope from creeping, or a matter of completing the cheapest and fastest project; it is establishing the appropriate scope (hence, defining the required quality of the product produced) and delivering the commensurate product, system, service, or result. Delivering the commensurate product, system, service, or result, as defined in the scope, relates to the issue of product quality. Generally speaking, a change to any factor of the constraints will require change to at least one of the other factors (i.e., if the scope is changed, either the cost or time, or both, will also require a change).

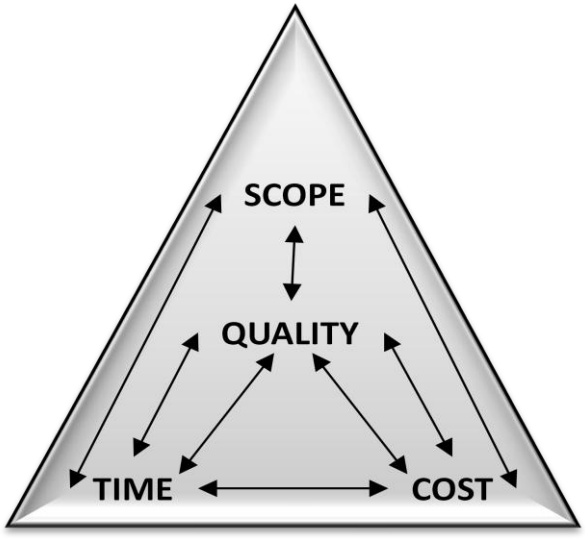


Figure 7. The quadruple constraint triangle.

3. The Role of a Project Manager

The directorate's project management policy and the project charter assign the project manager and define the project manager's responsibilities and authority. The key responsibility of the project manager is to successfully accomplish the project objectives by balancing the competing demands for quality, scope, time, risks, resources, and cost. Ideally, the project manager will direct the project from initiation through all phases. The project manager's roles include administrator, entrepreneur, facilitator, arbitrator, mediator, liaison, and coordinator. The project manager should also be skilled in evaluating risks that could impact the project and in proactively managing project risks for successful project completion.

The project manager must lead teams to operate cross-functionally towards a common objective, while ensuring cohesiveness and continuity as the project progresses through project processes and project phases. The project manager acts as the key catalyst to stimulate effective communication and coordination between life-cycle phases and activities.

In order to effectively manage these responsibilities and assume these roles, a project manager must be effective in the following project management knowledge areas: scope, time, cost, quality, risk, communications, project integration, human resources, and procurement management. The project manager is responsible for development, coordination, and distribution of the project charter, PMP, and other related project documents.

The project manager must also ensure that adequate technical management is provided to ensure quality deliverables and accomplishment of project objectives. Sometimes the project manager may fulfill both technical manager and project

manager roles, or a portion of the technical roles, while at other times, the project requires separate technical management. Regardless, it is important that the project manager ensures that the bases are covered.

4. Project Charter

The project charter is the document that formally authorizes a project or phase and documents initial requirements, project category (Basic, Standard, Complex, or Complex with OMB 300), and the project manager, sponsors, and stakeholders. The project charter is used to kick off the project by authorizing the project manager and project team to begin work. It may take the form of a Memorandum of Agreement, Memorandum of Understanding, or other document that accomplishes the purpose of a charter, as defined in Section IV.B.3., Project Charter.

5. Project Management Plan

A PMP is a fundamental tool for the project manager to manage the project successfully. Essentially, it is a guide for executing the project and a method by which to gain support from stakeholders and sponsors prior to commencement. This document is a strategic and formalized roadmap to accomplish the project's objectives by describing how the project is to be executed, monitored, and controlled.

Developing the PMP includes creating the project scope, a Work Breakdown Structure (WBS), schedule, and budget; identifying and planning to mitigate risk; identifying how to effectively communicate with project team members and other stakeholders; planning for acquisitions; and developing a plan to manage changes.

The schedule and cost identified in the original PMP may serve as the project baseline, or the initial PMP may be modified later, as appropriate, to include the baseline. Regardless, the baseline needs to be established in order to measure project performance (cost, schedule, and progress).

The PMP is signed by the project manager, the project sponsor, and responsible client management, as defined by the PMP. The PMP is amended as change occurs through the change management process defined in the PMP. At major milestones/project phases, the PMP may be rewritten and signed by the approver as prescribed in the PMP. The PMP will vary based on size, complexity, risk, and/or sensitivity of the project. See Section IV.B.4., Project Management Plan, for more information. Example PMP and project forms will be available at a future Intranet site.

6. Project Organization

As detailed in Section III.A.4.a., Organizational Structure, the organizational structure for executing a project and functioning as a project manager is different from that of operating an organization or managing a program. Typical organizations are structured by disciplines, such as finance, human relations,

engineering, production, and maintenance, that report to a functional leader. There are many variations of this type of organization ranging from a pure vertical hierarchy (projectized organization) to a matrix organization (functional units). When a project is initiated, the organization must assign appropriate personnel to work on the project, either by formal agreements (such as a PMP) or by assignment to the project organization.

7. Summary

A project is temporary, unique, and the product of a multifaceted and comprehensive process that produces a solution for a specific objective. For the endeavor to be successful, the project must be accomplished on time, within budget, and to the appropriate scope required to satisfy the objective. For success to be achieved, the project manager must be skilled and operate in an organizational structure that enables a project team to function.

B. Reclamation Project Management Process Guidelines

1. General

All projects will use the PMBOK® project process groups for managing projects:

1. Initiating
2. Planning
3. Executing
4. Monitoring and controlling
5. Closing

The five groups of PMBOK® processes include a very broad range of individual processes. It is important that practitioners within Reclamation understand the individual processes that must be adapted and applied to suit each individual project. Smaller, simpler projects may require the use of less rigid processes, whereas larger and more complicated projects will typically require more processes. In short, although project management follows standard practices and guidelines, project management needs to be scalable and adaptable to each particular project.

2. Project Life Cycle and Milestones

The life cycle, milestones, and metrics applied to a project are important because together they define the basic outline needed to organize the project, execute the project, and track and report the project status. There are many possible variations of life cycle, metrics, and milestones that may be applied to any given project. Standardization of these three parameters, broad enough to allow scalability in applying project management processes, yet specific enough to create a common outline, is necessary for Reclamation to establish project management that flows smoothly from the Commissioner's Office to the field and

across each region. The standard will serve as a basic guideline for executives, project managers, resource providers, and workers to follow. It will enable a unified understanding of the current status of any given project and help to ensure that the critical common tasks have been accomplished for each project. While the standard provides the basic guideline for all projects to follow, additional milestones and metrics may be used as deemed necessary to ensure project success.

The project life cycle for a Reclamation project may include multiple phases or subprojects within the context of a single overall project; however, all projects will follow the agency project life-cycle phases. The end of each phase is marked by a milestone, which may vary by the type and size of project. Reclamation has adopted the following project life cycle consisting of four broadly defined project phases:

1. **Starting the Project:**

    - ***Typical activities:*** Developing the project charter, authorizing memo or email, obtaining output from another project, formulating service agreements, etc.

    - ***Typical outputs:*** Project charter developed, including designation of project manager, identification of project scope and category (Basic, Standard, Complex, or Complex with OMB 300), and project initiation budget

      Milestone examples: Review of project charter, decisions, preliminary costs. Go/no-go decision made to proceed to next phase of project.

2. **Organizing and Preparing:**

    - ***Typical activities:*** Preparing the PMP, appraisal study, feasibility study, planning study, value planning study, etc.

    - ***Typical outputs:*** Signed PMP, environmental and other required processes and permits, appraisal design, feasibility design, final design, and acquisitions/procurement.

    - ***Milestone examples:*** Milestone review of outputs, authorization of recommendations and approval to move to next phase.

3. **Carrying Out the Work:**

    - ***Typical activities:*** Executing work orders, design, development, acquisition, delivery, construction, etc.

    - ***Typical outputs:*** Product, system, results, and documentation that work is complete.

- ***Milestone examples:*** Review of deliverables and artifacts, and construction or delivery results. Authority to proceed to deployment, operations, or O&M.

4. **Closing the Project:**

- ***Typical activities:*** Review and approval of final deliverables, developing delivery memo and other final reports, commissioning, transfer of facilities, as-built drawings, Standing Operating Procedures (SOP), O&M manuals, contract closeout, and COG closeout report created.

- ***Typical outputs:*** Closeout report completed, lessons learned, and team closure.

- ***Milestone examples:*** Post Implementation Review, Termination/Change Review, Decommissioning, or Succession Review

The wide range of phases, outputs, and milestones that are developed for any particular type of project throughout Reclamation falls within these overarching high-level phases. The five groups of project management processes (as defined previously), are applied during each phase to efficiently guide the accomplishment of any particular project.

3. Project Charter

The project charter is an important document that provides the initial official authorization for the project. The charter is often the very first project document created as the kickoff for the project. The project charter uses a very high level definition of the scope and schedule, and it usually includes a ballpark estimate of budget, or simply the startup budget to develop the PMP. The PMP will define and authorize the actual scope, schedule, and budget of the project. The PMBOK® describes the elements of the charter as follows:[12]

a. Project history, purpose or justification

b. Project category (Basic, Standard, Complex, or Complex with OMB 300)

c. Measurable project objectives and related success criteria

d. High-level requirements

e. High-level project description and product characteristics

f. Known risks, assumptions, constraints

[12] PMBOK®, p. 351.

g. Summary milestone schedule

h. Summary budget (preliminary or startup funding for planning)

i. Project approval requirements (what constitutes success, who decides it, who signs off)

j. Name and responsibility of the person(s) authorizing the project charter

In Reclamation, the project charter should identify the responsible program office, assign the project manager (usually, but not always, responsible for development of the charter), the PMT, and all other oversight teams, sponsors, and stakeholders. The project charter is usually signed by the project manager, program manager (funding sponsor), PMT, and any other entity that will be held accountable for the success of the project.

The initial components for developing the project charter are the statement of work, business case, contract, legislation, or other drivers that make initiation of the project necessary (a business case definition is provided in Section V, Glossary). The project charter becomes the primary input to the development of the PMP. Examples of project charters will be available at a future Intranet site.

4. Project Management Plan

A PMP should consider each of the following sections as relevant to the size and complexity of the project. At a minimum, a PMP should have Scope, Schedule, Budget, Quality, Performance, Roles and Responsibilities, Risks, Communications, and Change Management sections. The extent of these sections will vary according to whether the project is Basic, Standard, Complex, or Complex with OMB 300. For a larger project, some of these sections may be covered in separate subsidiary project documents to the PMP. Links to sample PMPs will be available on a future Intranet page.

a. Objectives/Scope Statement: A sentence or phrase describing the product of this work. A review, a report, a study, a collection of data, a model, an inspection, a design specification, etc.

b. Scope Definition: A detailed narrative describing what, when, where, how, how much, and by whom. Where it is anticipated that the limits of the scope may be unclear, it may help to describe specific items that are **not** included in the scope. On Standard and Complex projects, a WBS should be included.

c. Schedule: A list of milestones and who is responsible for the milestone deliverables. The WBS from the scope definition can be used to create a Gantt chart or network type schedule. Note: Also include items for which the client is responsible.

d. Budget/Financial Plan: A list of tasks, work groups, and their associated labor and nonlabor costs tied to the schedule forms the basis for the project baseline and can be used as the Planned Value (PV) for EVM, as applicable. This section will define performance management.

e. Staffing Plan/Roles and Responsibilities: A list of the key players and their titles and roles. Use a separate table when more than one or two staff are assigned: project engineer, project technical specialist, group representative, group managers, team members, etc. Address the need to staff or contract resources throughout the project. Key stakeholders generally include the project manager, sponsor, project team, customer, and end user.

f. Quality Control: Determines the quality level and describe the quality control process. Client review of work in progress, peer review, peer reviewer, checker, etc.

g. Change Management: Describes the change management process to include: forms to be used, thresholds of change for schedule and budget, use of contingency funding, contingency funds forms, update to service agreement, etc.

h. Communication: Lists regularly scheduled team meetings, conference calls, and status reports. Describes the content, frequency, and distribution of status reports:

- External
- Internal

i. Stakeholder Plan: Lists each stakeholder and describes their relationship to the project. Lists level of participation, decisionmaking authority, planning involvement, etc. Addresses potential impacts that the project will have on each stakeholder. The stakeholder analysis is used to develop the stakeholder plan.

j. Risk Management: Identifies potential risks which might affect the project, assesses the impact, assigns responsibility for risk, and plans risk responses.

k. Acquisitions Management: Addresses acquisition background and objectives; required clearances, reviews, justifications, and approvals; market research and conditions; number of contracts and contract types (e.g., firm-fixed price/lump sum, cost reimbursable/time and materials, unit price, target price etc.); source selection procedures (e.g., low price, low price technically acceptable, best value/negotiated, qualifications based, etc.); delivery method (e.g., design-bid-build, design, design-build,

construction management at risk, construction management agency, etc.); business utilization development program objectives; milestones; contract administration; and other acquisition considerations.

l. Project Closeout: Identifies how the final product will be delivered. Includes final reports, feedback survey, team debriefing meeting, client closeout meeting, project records, financial closeout, etc. Note: The new software, ESAM, will contain a project closeout checklist.

m. Signatures: Must have the project manager, project manager's supervisor, and client contact signatures. Client sponsor signature is optional but strongly advised.

5. Earned Value Management

EVM is a methodology used as part of the monitoring and controlling process to compare cost performance and schedule performance to the baseline cost and schedule for the project. EVM is reported at predetermined reporting intervals throughout the project life cycle, usually monthly as prescribed by the PMP. EVM produces standardized, quantitative project performance indicators at each reporting interval. Since formal EVM can be costly to prepare and perform, it is not usually required on Basic or Standard type projects. It is fundamentally important that an EV type philosophy of estimating cost performance and schedule performance, and comparing them to the budget and schedule baseline, be applied to all projects, even if formal EVM is not required.

a. Earned Value Management Data Elements

For Complex and Complex with OMB 300 projects, EVM should be used to monitor and control the project starting when the baseline is established and continuing through the life cycle. The following are the basic EVM data elements used to measure project performance. A brief description of each element appears below. The application will be scalable according to the size and complexity of the project. More detailed instruction is provided at: (http://intra.usbr.gov/tsc_pm/templates.html)

- Reporting Interval: Time interval for regular EVM reporting:
  - Usually monthly, but can also be by pay period, quarterly, semiannually, or even yearly
  - Defined by the PMP
- Planned Value (PV) (the project budget versus time):
  - Sum of all tasks in the project plotted by reporting interval (see figure 8).

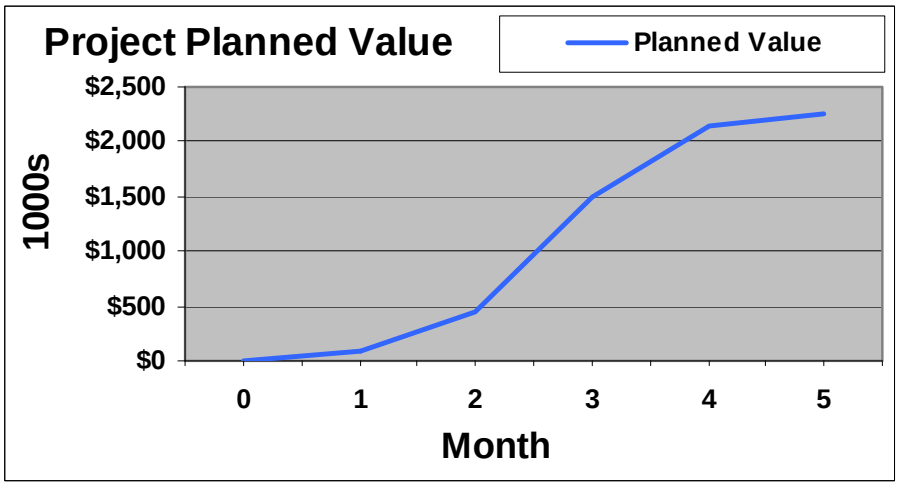


Figure 8. PV budget.

  - Plotted as a graph by reporting interval, usually monthly
  - Aligned with major milestones/project phases

- Earned Value (EV):
  - Reported to the project manager as percent complete for assigned tasks, group of tasks, or total project
  - Collected by reporting interval
  - EV=% complete x total value of the task (group of tasks or total project)
  - The sum of all EV for all tasks is plotted by reporting interval (figure 9).

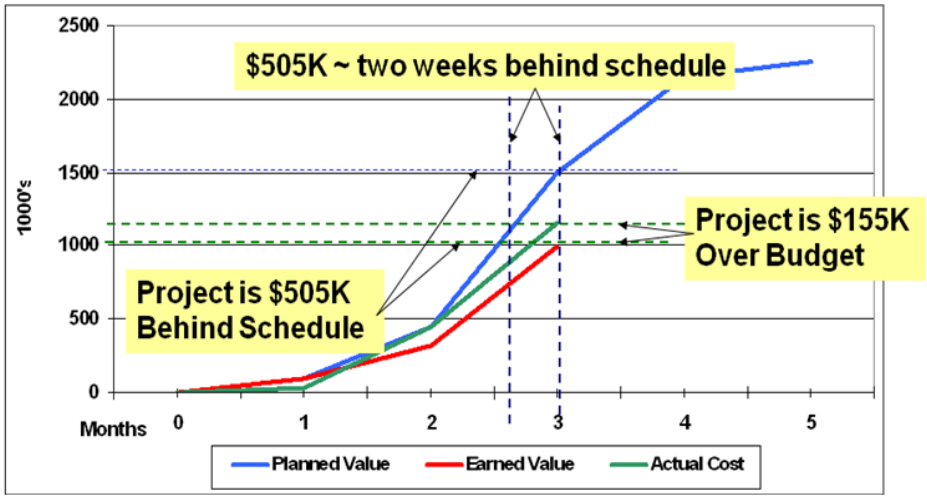


Figure 9. EV is often presented as a graph, which shows the project current status, as well as history and future requirements.

- Actual Cost (AC) (actual cost of work performed):
    - The accumulated AC of the task, group of tasks, or total project
    - Acquired from the financial system by the project manager or support office at each reporting interval
    - The accumulated AC for the project is plotted by reporting interval (figure 9)
- Cost Variance (CV) (CV=EV-AC):
    - Comparison of work accomplished with AC
    - Reported in dollars and indicates budget performance
    - A positive (under budget) or negative (over budget)
- Cost Performance Index (CPI) (CPI=EV/AC):
    - Greater than one is under budget; less than one is over budget
- Schedule Variance (SV) (SV=EV-PV):
    - Comparison of work accomplished with work planned
    - Reported in dollars and indicates schedule performance
    - A positive (ahead of schedule) or negative (behind schedule)
- Schedule Performance Index (SPI) (SPI=EV/PV):
    - Greater than one is under budget; less than one is over budget
- Budget at Completion (BAC) (total PV):
    - Value of all tasks to be performed – total plan
    - Total cost of the project baseline
- Estimate at Completion (EAC):
    - Forecast of cost at completion – latest revised estimate
    - There are several methods to calculate EAC
        - EAC=AC+BAC-EV
        - EAC=BAC/cumulative CPI
        - EAC=AC+new bottom-up estimate to complete

6. Example Outline for Project Documentation

The following is an example documentation structure to support preparation of key project documents such as the specific milestones, plans, and artifacts that will typically be needed. This example is based on a construction project, and not all milestones listed may be applicable to other types of projects. The milestones are typically the higher level text indicated below (for example, preparation of

PMP). Subordinate text represents activities to consider in determining completion status of the milestone and may serve as specific project artifacts.

A smaller project's PMP may capture all relevant project management information, whereas a larger project may require subsidiary documents to the PMP in order to capture the strategies and detail related to such areas as risk (Risk Management Plan), staffing, change management, performance management, quality control, acquisition management, and others.

1. Completion of authorizing document (charter, memo, etc.)
2. Preparation of PMP complete, including:
    a. WBS (for Standard and Complex projects)
    b. Objectives/scope statement
    c. Scope definition
    d. Schedule
    e. Budget/financial plan
    f. Staffing plan/roles and responsibilities
    g. Quality control
    h. Change management
    i. Communication
        (1) External
        (2) Internal
    j. Stakeholder analysis/plan
    k. Risk management
    l. Acquisitions management plan
    m. Project closeout or operations
    n. Signatures
3. Compliance and permits complete (National Environmental Policy Act [NEPA] environmental assessments, etc.)
4. Design complete:
    a. Required reviews complete
5. Cost estimate complete
6. Risk register updated and risk mitigation plans prepared
7. Procurement activities complete:
    a. Advertisement
    b. Award
    c. Delivery (supply, construction, project install, etc.)
8. Baseline established
9. Testing and commissioning completed
10. Closeout:
    a. Shop drawings
    b. SOPs
    c. O&M manuals
    d. Completion of punch list
    e. Lessons learned
    f. Budget rollup

7. Project/Phase Completion Reports

Completion reports will include a measure/assessment of:

- Project scope management
    - A quantitative assessment of the number of baseline changes to a particular project or key milestone/project phase
    - A quantitative assessment of the number of primary requirements added or removed from the scope after completion of the planning phase
    - A qualitative or quantitative assessment of the number and severity of scope changes that were acknowledged deviations from the plan that do not change the baseline
- Quality of products and performance
- Effective risk management
- Issue management
- Opportunities to more effectively accomplish future projects by capturing lessons learned

8. Fiscal Year Work Planning Process

Reclamation offices are expected to use a fiscal year work planning process to align fiscal year budgets with priority work and their ability to execute the work. Development of a fiscal year work plan starts with long-range planning. Reclamation offices should use a long-range plan to show rough costs and schedules for significant capital, O&M, and nonroutine projects. The plan should cover the project life cycle and identify the fiscal year funding needs and sources, as well as the proponent for each project. Early each calendar year, the program office should solicit input and update the long-range plan. With the long-range plan updated, the program office should focus on upcoming fiscal year(s), seeking input regarding the human resources required to implement the projects identified for the year, considering risks associated with the projects, and prioritizing them. It is important that the project manager look at their project in the context of the overall strategic plan for the program.

Based on the priority, budget, and capacity information, and giving consideration to nontechnical parameters such as public perception and agency goals, the program office will determine which projects to execute and budget for in the upcoming fiscal year. Projects are subsequently assigned to project managers. The result is a common framework for the upcoming year from which additional coordination can occur (regional, TSC, Reclamationwide, etc). This will be a

dynamic process that considers other budget and planning requirements such as those for RAX, irrigation, and capital projects.

C. Project Management Roles and Responsibilities

Every project has specific components and requirements; therefore, it is essential to identify the specific roles and responsibilities for each project at the various organizational levels to ensure project success. The following information provides guidance and examples for describing the responsibilities at the general organizational levels and identifying the associated types of positions. It is important to document authority and responsibility relative to cost and schedule in the WBS using a responsibility assignment matrix or other method appropriate for the project.

1. Reclamation Leadership, Management, and Supervisors

Various categories of leaders, managers and supervisors are defined below. They typically serve as members of the Oversight Review Teams defined in section III.A.5:

- Responsible for making key decisions with the overall authority and responsibility for the Reclamation project and project management. Example positions: Deputy Commissioner, Director, Power Manager, Area Office Manager.

- Responsible for implementing project management through the organization and supervising those within it. Leads efforts to develop long- and short-term plans and coordinates the plans with priorities, budgets, and capabilities to develop fiscal year work plans. Example positions: Assistant Directors, Deputy Managers.

- Responsible for promoting facility participation in scope development and review of projects because the projects affect their facilities, and they are the customer and key stakeholder for the projects. Work with project managers to develop work needs, priorities, schedules, and budgets. Responsible to create work orders for the proposed projects. Example position: Facility Superintendent.

- Responsible for providing technical resources needed to execute the projects, performing supervision and technical review, and providing critical input for developing long-range and fiscal year plans. Example positions: Section Manager, Group Manager, Program Manager, Division Chief.

2. Project Manager/Responsible Charge

a. Project Manager for Complex Projects and Complex with OMB 300

Responsible for providing project management services for large, complicated projects that are typically multiyear and programmatic due to the numerous interrelated contracts, subprojects, and activities and for maintaining cradle-to-grave involvement. Responsible for conducting a broad level of coordination, as there are many internal and external stakeholders involved. Responsible for performing tracking and status reporting.

b. Project Manager for Standard Projects

Responsible for providing project management services for numerous, simultaneously active projects that are typically smaller in scope and magnitude than Complex and Complex with OMB 300 projects and for maintaining cradle-to-grave involvement. Responsible for conducting coordination, tracking, and status reporting.

c. Project Manager for Basic Projects

Responsible for providing project management services for projects that are typically smaller in scope and magnitude than standard projects and for maintaining cradle-to-grave involvement. May also be the assigned project manager for a phase within the larger project. Responsible for conducting coordination, tracking, and status reporting.

3. Project Management Team Members

- Responsible for providing general coordination and broad support for the execution of assigned projects; preparing and maintaining work plans, schedules, and budgets; and performing tracking and status reporting. Responsible and accountable for contributing to team decisionmaking. Example positions: Activity Manager, Client Liaison, Account Manager.

- Technical expert assigned for the project, responsible for providing a broad range of technical services such as troubleshooting, technical coordination, testing and data acquisition, and technical analysis. Responsible for leading the effort to prepare and review procurement packages including drawings and specifications, requests for proposal, or requests for qualifications. Example positions: Project Engineer, Project Hydrologist, Study Manager.

- Responsible for developing means and maintenance for tracking and reporting budget execution, trends, and forecasts as needed for various projects; identifying and resolving budget abnormalities; and maintaining a working knowledge of Reclamation budget processes, systems, and methods to support the project manager. Example positions: Budget Analyst, Budget Technician.

- Responsible for providing mutually agreed upon services for the respective project within scope, on time, and within budget and for promptly communicating with the project manager if there are changes to scope, quality, schedule, or cost. Example positions: Scheduler, Cost Estimator, NEPA Specialist, Archeologist, Contract Analyst, Designer.

D. Performance Metrics

Effective project management requires an effective feedback loop that sustains the overall health of a project (measurements of past, current, and future project performance). These metrics enable teams to make timely, informed decisions. The range of metrics used to measure progress and determine the health of a project, and to warn about factors needing attention, consists of measuring the following seven criteria:

- **Cost** (How is the project progressing against budget?)
- **Time/Schedule** (How is the project progressing against schedule?)
- **Scope** (Is the scope in line with expectations?)
- **Resources** (How much time is being spent on the project?)
- **Quality** (Are we reviewing and fixing quality problems?)
- **Progress on Activities** (Are any action items outstanding?)
- **Risk** (Have we identified events or conditions that could impact the project's objectives and made plans to address them?)

Developing performance metrics usually follows a process of:

1. Establishing critical processes/customer requirements
2. Developing measures
3. Establishing targets, which the results can be scored against

Using project metrics establishes a historical record that aids in planning and forecasting future projects; serves to identify and prevent potential problems, such as schedule slippage and overexpenditures; and is used as an indication of model stability, which signals the time to proceed into the next project life-cycle phase. Consequently, a mix of metrics should be used to provide a status of project performance (e.g., project dashboard). A project dashboard provides the ability to view the parts of the project that are OK and the parts that are not OK. The range of metrics used to measure progress determines the health of a project and provides warning about factors needing attention.

Project metrics are used to measure project status at periodic briefing time intervals (weekly, monthly, quarterly, or at milestones, depending on project

needs). Ultimately, establishing metrics associated with the practice of project management allows Reclamation to measure how well it is accomplishing its workload.

Metrics must be used throughout a project life cycle to ensure that problems or inefficiencies are identified early, so that actions can be taken to correct them while there is still time to make the overall project successful. For purposes of this PM Framework, it is essential to track and measure the project management constraints of cost, schedule, and scope as a minimum. Performance metrics are defined below for these areas.

1. Project Metrics

The following metrics will aid in the management of all projects, whether Basic, Standard, or Complex. For Standard and Complex projects, the metrics will be reported to the COG on an annual basis. If more rigorous reporting is already being made to other entities (such as to the IT Investment Council), it may be used to meet these requirements as well.

- Cost, time/schedule (see section IV.B.5):
    - PV (project baseline)
    - AC
    - EV
    - CPI when required to use EVM
    - SPI when required to use EVM

- Changes to scope, cost, schedule (change orders):
    - Number requested
    - Number approved
    - Number of baseline revisions

- Documented milestone review at the end of each phase

- Completion reports will include a measure/assessment of project scope management, quality of products and performance, effective risk management, issue management, and the use of lessons learned to more effectively accomplish projects. These reports will be prepared in the format of COG Service Agreement Completion Reports as documented in CMP 10-02I.

V. Glossary

Authority. The right to apply project resources, expend funds, make decisions, or give approvals.

Baseline. An approved plan for a project, plus or minus approved changes. It is compared to actual performance to determine if performance is within acceptable variance thresholds. Generally, it refers to the current baseline, but it may refer to the original or some other baseline. Usually used with a modifier (e.g., cost performance baseline, schedule baseline, performance measurement baseline, technical baseline). The initial baseline will be retained as a project artifact to allow comparison to the final baseline.

Budget. The approved estimate for the project or any WBS component or any schedule activity. See also *estimate.*

Business Case. The business case is essential as input to a project charter, in that it is designed to coordinate OMB's collection of agency information for its reports to the Congress required by the Federal Acquisition Streamlining Act and Clinger Cohen Act to ensure that the business case for investments are made and tied to the mission statements, long-term goals and objectives, and annual performance plans developed pursuant to the Government Performance and Results Act. For example, Exhibit 300's capture the business case for IT organizations.

Change Control System. A collection of formal documented procedures that define how project deliverables and documentation will be controlled, changed, and approved. In most application areas, the change control system is a subset of the configuration management system.

Change Request (Change Order). Requests to expand or reduce the project scope; modify policies, processes, plans, or procedures; modify costs or budgets; or revise schedules.

Control. Comparing actual performance with planned performance, analyzing variances, assessing trends to result in process improvements, evaluating possible alternatives, and recommending appropriate corrective action as needed.

Cost Performance Index (CPI). A measure of cost efficiency on a project. It is the ratio of earned value (EV) to actual costs (AC). CPI=EV divided by AC.

> **Actual Cost (AC).** Actual cost of work performed. The accumulated AC of the task, group of tasks, or total project. Acquired from the financial system by the project manager or support office at each reporting interval. The accumulated AC for the project is plotted by reporting interval .

Cost Variance (CV) (CV=EV-AC). Comparison of work accomplished with AC. Reported in dollars and indicates budget performance. A positive (under budget) or negative (over budget)

Schedule Variance (SV) (SV=EV-PV). Comparison of work accomplished with work planned. Reported in dollars and indicates schedule performance A positive (ahead of schedule) or negative (behind schedule).

Duration. The total number of work periods (not including holidays or other nonworking periods) required to complete a schedule activity or WBS component. Usually expressed as workdays or workweeks. Sometimes incorrectly equated with elapsed time. Contrast with *effort*.

Earned Value (EV). The value of work performed expressed in terms of the approved budget assigned to that work for a schedule activity or WBS component. Also referred to as the budgeted cost of work performed.

Earned Value Management (EVM). A management methodology for integrating scope, schedule, and resources, and for objectively measuring project performance and progress. Performance is measured by determining the budgeted cost of work performed (i.e., EV) and comparing it to the actual cost of work performed (i.e., AC).

Effort. The number of labor units required to complete a schedule activity or WBS component. Usually expressed as staff hours, staff days, or staff weeks. Contrast with *duration*.

Estimate. A quantitative assessment of the likely amount or outcome. Usually applied to project costs, resources, effort, and durations and is usually preceded by a modifier (i.e., preliminary, conceptual, feasibility, order-of-magnitude, definitive). It should always include some indication of accuracy (e.g., ± x percent). See also *budget.*

Exhibit 300. Used as one component of the agency's total performance budget justification. OMB uses the Exhibit 300 to make both quantitative decisions about budgetary resources consistent with program priorities, and qualitative assessments about whether the agency's programming processes are consistent with OMB policy and guidance.

FAC P/PM. Federal Acquisition Certification for Program and Project Managers. Certification requirement for responsible charge project manager oversight on those projects determined by the Director to require compliance with OMB Circular A-11, Part 7, Section 300 (OMB 300).

Functional Manager. Someone with management authority over an organizational unit within a functional organization. The manager of any group that actually makes a product or performs a service. Sometimes called a line manager.

Functional Organization. A hierarchical organization where each employee has one clear superior, and staff are grouped by areas of specialization and managed by a person with expertise in that area.

Major Milestone. A scheduled event signifying the completion of a major deliverable or key schedule milestone.

Objective. Something toward which work is to be directed, a strategic position to be obtained, or a purpose to be achieved, a result to be obtained, a product to be produced, or a service to be performed.

Planned Value (PV). The authorized budget assigned to the scheduled work to be accomplished for a scheduled activity or WBS component. Also referred to as the budgeted cost of work scheduled.

Process Groups. Project management processes are grouped into five categories known as Project Management Process Groups:

> **Initiating Process Group.** Processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.
>
> **Planning Process Group.** Processes performed to establish the total scope, schedule, and budget of the effort; define and refine the objectives; and develop the course of action required to attain those objectives.
>
> **Executing Process Group.** Processes performed to complete the work defined in the PMP to satisfy the project objectives.
>
> **Monitoring and Controlling Process Group.** Processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.
>
> **Closing Process Group.** Processes performed to finalize all activities across all process groups to formally close the project or phase.

Progressive Elaboration. Progressive elaboration allows a Project Management Team to manage a project to a greater level of detail as the project evolves. Progressive elaboration involves continuously improving and

detailing a plan as more detailed and specific information and more accurate estimates become available.[13]

Project. The fundamental nature of a project is that it is a "temporary endeavor undertaken to create a unique product, service, or result."[14] Projects are distinguished from operations and from programs as defined below. The following characteristics further clarify the definition of a project:

Temporary Endeavor. To be temporary signifies that there is a discrete and definable commencement and conclusion. The management of a project requires tailored activities to support this characteristic. As such, a key indicator of project success is how it performs against its schedule (i.e., does it start and end on time?).

Unique Deliverable. The uniqueness of the deliverable, whether it is a product, service, or result, requires a special approach because there may not be a preexisting blueprint for the project's execution, and there may not be a need to repeat the project once it is completed. Uniqueness does not mean that there are not similarities to other projects. It means that the scope for a particular project has deliverables that must be produced within constraints, through risks, with specific resources, at a specific place, and within a certain period. Therefore, the process to produce the deliverable, as well as the deliverable itself, is unique.

Project Artifacts. Formal documentation of components of the project management process (e.g., project charter, PMP, and subsidiary documentation).

Project Levels:

Basic. Recommended for projects valued at under $1 million unless they are defined in one of the categories below.

Standard. Recommended for projects valued at $1 million to $10 million or larger that do not warrant special management attention, for higher-cost projects that are very straightforward, or for lower-cost projects that do warrant special management attention because of their importance to the agency mission, high risk, high return, high visibility, or their significant role in the administration of agency programs, finances, property, or other resources

Complex. Recommended for projects valued at over $10 million that warrant special attention, or for lower-cost projects that warrant special attention.

[13] PMBOK®, p. 7.
[14] PMBOK®, p. 5.

Complex with OMB 300. Required for major acquisitions where an OMB 300 is required to be submitted to OMB, as defined in OMB Circular A-11 (see section 3., below). Contact the Maintenance Service Division in the Policy and Administration Office for the Capital Planning Guide and other supplemental guidance on OMB Circular A-11.

Project Life Cycle. The project life cycle for a Reclamation project may include multiple phases or subprojects within the context of a single overall project; however, all projects will follow the agency project life-cycle phases. The end of each phase is marked by a milestone, which may vary by the type and size of project. Reclamation has adopted the following project life cycle consisting of four broadly defined project phases: (1) starting the project, (2) organizing and preparing, (3) carrying out the work, and (4) closing the project.

Project Management. PMBOK® defines project management as "the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements."[15] Project management is an interrelated group of processes that enables the project team to achieve successful project deliverables and objectives. These processes manage inputs to, and produce outputs from, specific activities. The progression from input to output is the nucleus of project management and requires integration and iteration.

For example, a feasibility report could be an input to a design phase. The output of a design phase could be a set of plans and specifications, which are the input to a construction contract. This progression requires project management expertise, tools, and techniques such as schedule and budget development, risk management, contingency development, and change control.

Project Management Processes. A set of interrelated actions and activities performed to achieve a prespecified product, result, or service. Each process is characterized by its inputs, the tools, and techniques that can be applied, and the resulting outputs.

Project Manager. A project manager is the person assigned by the organization to achieve project objectives and to deliver the project on schedule, within budget, and to the appropriate scope. The project manager leads teams to operate cross-functionally towards a common objective, ensures cohesiveness and continuity as a project progresses through process groups and project phases, and elicits effective communication and coordination of all project activities.

Project Phases. Collection of logically related activities, usually resulting in a major deliverable or reaching a milestone. Project phases are usually completed sequentially, but they can overlap in some project situations. A project phase is a component of a project life cycle.

[15] PMBOK®, p. 443.

Project Scope. The work that must be performed to deliver a product, service, or result with the specified features and functions.

Project vs. Operation. The operations of an organization are continuing and repetitive activities that are executed to achieve its mission and sustain the business, but without a definable end to their performance and without a unique output. An organization's day-to-day operations are not considered a project because they are not unique and have no beginning or end. O&M at Reclamation water and power facilities are programs containing the ongoing activities to sustain the facilities. The activities in an O&M program can be ongoing maintenance items and can be groups of projects, such as the replacement of equipment or the installation of new features of the facility.

Project vs. Program. A project differs from a program in that "a program is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs may include elements or related work outside the scope of discrete projects in the program."[16] Furthermore, programs often involve a series of repetitive or cyclical undertakings.

In Reclamation, a program is typically a group of projects administered by Reclamation. Reclamation programs do not have to be specifically authorized, and a program's schedule may continue past any individual project. Examples of Reclamation programs are the Safety of Dams Program; the Replacements, Additions, and Extraordinary Maintenance Program; Power Program Services; the Research and Development Program; and the Title XVI Program. The overall management of an area or regional office is also a program.

Resource. Skilled human resources (specific disciplines either individually or in crews or teams), equipment, services, supplies, commodities, material, budgets, or funds.

Responsible Charge. The overall control, guidance, and oversight of a project's initiation, planning, executing, monitoring and controlling, and closing project management process groups. For example, one certified project manager may have responsible charge of a project, with a noncertified project manager assigned as the frontline manager of "day-to-day" project activities. A certified project manager may also have responsible charge of a project, while other individuals obtain or complete any required project management training or certification.

Schedule Performance Index (SPI). A measure of schedule efficiency on a project. It is the ratio of EV to PV. The SPI = EV divided by PV.

Scope. The sum of the products, services, and results to be provided as a project. See also *project scope*.

[16] PMBOK®, p. 9.

Validate. To ensure that a product, service, or system meets the needs of the customer and other identified stakeholders. It often involves acceptance and suitability with external customers. Contrast with verify. Validation is a quality assurance process of establishing evidence that provides a high degree of assurance that a system accomplishes its intended requirements. Validation can be expressed as "Are you building/implementing the right thing?"

Variance. A quantifiable deviation, departure, or divergence away from a known baseline or expected value.

Verify. A quality control process that is used to evaluate whether a system complies with specifications imposed at the start of a development or implementation phase. Verification can be expressed as "Are you building/implementing it right?"

Appendix A

Authorities and Guidance for Project Management

Authorities and Guidance for Project Management

The following authorities and guidance were used as a basis for defining the Project Management approach.

Governmentwide

The Services Acquisition Reform Act of 2003, Title XIV of the National Defense Authorization Act for Fiscal Year 2004, Public Law 108-136, November 24, 2003 (SARA): (http://www.gpo.gov/fdsys/pkg/PLAW-108publ136/pdf/PLAW-108publ136.pdf). This law amended the Office of Federal Procurement Policy (OFPP) Act (41 United States Code [U.S.C.] 403) and broadened the definition of the acquisition community to include program and project managers.

Clinger-Cohen Act (40 U.S.C. §1401(3)), amending section 37 of the OFPP Act (41 U.S.C. § 433), Division E, Section 5001, ‘‘Information Technology Management Reform Act of 1996’’: (https://www.fismacenter.com/Clinger%20Cohen.pdf)

Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity, Exposure Draft, General Accountability Office (GAO), Version 1, May 2000: (http://www.gao.gov/special.pubs/ai10123.pdf)

GAO Report to the Subcommittee on Interior and Related Agencies, Committee on Appropriations, House of Representatives - Information Technology: Departmental Leadership Crucial to Success of Investment Reforms at Interior, September 2003: (http://www.gao.gov/new.items/d031028.pdf)

Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity, Executive Guide, GAO, Version 1.1, March 2004: (http://www.gao.gov/new.items/d04394g.pdf)

Office of Management and Budget (OMB) Policy Letter 05-01, April 15, 2005: (http://www.whitehouse.gov/omb/procurement_policy_letter_05-01). This Policy Letter formalizes the requirements of SARA, by:

- Making the heads of all Executive agencies responsible for developing and maintaining an acquisition career management program, led by an Acquisition Career Manager, identified to the Federal Acquisition Institute (FAI) by October 1, 2005.

- Calling for a cross-agency and cross-functional working group to be formed to assist FAI in developing recommendations for the establishment of certification programs for program and project managers. FAI was to develop these recommendations not later than October 1, 2006.

- Requiring that the agency Chief Acquisitions Officer identify program and project managers who will be subject to the requirements of the Policy Letter and establish appropriate timeframes and policies for applying the certification program requirements not later than January 1, 2007.

OMB Memorandum for Chief Acquisition Officers, April 25, 2007: (http://www.whitehouse.gov/sites/default/files/omb/procurement/workforce/fed_acq_cert_042507.pdf). This memorandum and the attached document establish the Federal Acquisition Certification for Program and Project Managers (FAC-P/PM). It states that:

- Certification is required for program and project managers who are assigned to major acquisitions as defined in OMB Circular A-11, Part 7, exhibit 300: Planning, Budgeting, Acquisition, and Management of Capital Assets.

- Program and project managers assigned to information technology (IT) investments must also meet the technical requirements of the Federal IT Project Manager Guidance Matrix (located at the end of this appendix).

In addition to the requirements stated in the cover memo, the attached document:

- Makes FAI responsible for program oversight and administration

- Makes each agency responsible for the certification process, including assessment of applications, and for administering the program within the agency

- States that no specific curriculum is articulated and that the training plans included in the appendix are included to "help agencies and individuals determine training and development needs"

- Allows an applicant to "satisfy the competency requirements through successful completion of suggested training, completion of comparable education or certification programs, or demonstration of knowledge, skills, and abilities"

- Defines the three levels of certification: entry/apprentice, mid-level/journeyman, and senior/expert and the required competencies and experience at each level

- Sets forth the requirement for 80 continuous learning points every 2 years to maintain certifications

- Defines the relationship between Program Management and Project Management

OMB Circular A-11, Part 7, Planning, Budgeting, Acquisition, and Management of Capital Assets, August 2011:
(http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/s300.pdf)

Supplement to OMB Circular A-11, Capital Programming Guide, August 2011

OMB Circular A-11, Part 8, Appendix J, Principles of Budgeting for Capital Asset Acquisitions, August 2011:
(http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/a_11_2011.pdf)

OMB Circular A-11, Part 8, Appendix K., Selected OMB Guidance and Other References Regarding Capital Assets, August 2011:
(http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/a_11_2011.pdf)

Capital Programming Guide, Supplement to OMB Circular A-11, August 2011:
(http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/capital_programming_guide.pdf)

OMB Circular A-130, Management of Federal Information Resources.

Guidance on Exhibit 300—Planning, Budgeting, Acquisition, and Management of Information Technology Capital Assets, 2011:
(http://www.whitehouse.gov/sites/default/files/omb/assets/egov_docs/fy13_guidance_for_exhibit_300_a-b_20110715.pdf)

Instructions for the Planning, Budgeting, Acquisition and Management of Non-IT Capital Assets, FY 2013:
(http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/non_it_capital_assets.pdf). Defines Major Acquisition for non-IT Projects.

Capability Maturity Model Integration, CMMI for Development, V1.3, November 2010, CMU/SEI-2010-TR-033:
(http://www.sei.cmu.edu/reports/10tr033.pdf

Office of Personnel Management Contracting Policy No. 34.2 – Earned Value Management System, Federal Acquisition Regulations (FAR) 34.202, Integrated Baseline Reviews

OMB Memorandum M-04-19, Information Technology (IT) Project Manager (PM) Qualification Guidance, July 21, 2004

Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management

OFPP Policy Memorandum on FAC-P/PM Memorandum April 25, 2007 – Establishment of a Structured Development Program for Program and Project Managers

Note: The U.S. national standard for Earned Value Management is Earned Value Management Systems (EVMS) (American National Standards Institute [ANSI] 02). U.S. Government policies for performance-based acquisition management require the use of performance-based management systems that meet the guidelines of EVMS. OMB also requires all agencies of the Executive Branch of the Government that are subject to Executive Branch review to use performance-based management systems that meet the EVMS standard [OMB 02].

U.S. Department of the Interior

Department of the Interior Capital Planning and Investment Control Guide, Version 1.0, December 2002: http://www.doi.gov/pam/programs/acquisition/upload/CPICComplete3.pdf (This document covers constructed assets and construction projects and does not cover or refer to Capital Planning and Investment Control (CPIC) for IT assets or IT projects. Beyond the detailed CPIC process description, this Guide also includes:

- Board procedures for the U.S. Department of the Interior (DOI) decisionmaking bodies, a model for the DOI agencies' investment review boards, and the associated operating procedures necessary to conduct investment
- The scoring criteria to be used by the executive decisionmaking and investment review boards during investment reviews
- Guidance on preparing a benefit-cost analysis, calculating earned value, assessing risk, using value engineering, etc.
- A glossary of terms, key personnel, and acronyms used throughout this document
- A list of references used to create this document

Department of the Interior Capital Planning and Investment Revisions to the Construction Guide, January 2008

Department of the Interior Federal Acquisition Certification in Contracting Program Manual, March 2008: (http://www.doi.gov/archive/pam/revFACmanual308.pdf)

Associate Deputy Secretary's memorandum: Federal Acquisition Certification, September 11, 2008

Department of the Interior Federal Acquisition Certification for Program and Project Managers, May 2009

Department of the Interior Acquisition Policy Release (DIAPR) 2009-13, August 13, 2009: (http://www.doi.gov/pam/programs/acquisition/upload/DIAPR-2009-13.pdf). This DIAPR implements the FAC-P/PM Program. The Department of the Interior's FAC-P/PM Program Policy Guide is included with the DIAPR as an attachment.

Department of the Interior Memorandum to Assistant Secretaries and Heads of Bureaus and Offices from Director, Office of Acquisition and Property Management and Chief Information Officer, regarding Federal Acquisition Certification for Program and Project Managers, May 21, 2010 (http://intra.usbr.gov/mso/aamd/downloads/acquisition-fac-p-pm_manual_april_2010.pdf). This memorandum and the attached policy document request agencies to begin implementing the FAC-P/PM certification process. FAC-P/PM certifications were anticipated to be issued starting October 29, 2010.

Department of the Interior Office of Chief Information Officer (OCIO) Directive 2004-019 – Project Management Certification Requirements for Managing Information Technology Investments, June 23, 2004.

Department of the Interior OCIO Directive 2008-016 – Integrated Baseline Review Policy, DOI CPIC Guidelines

Office of the Secretary Order 3309 - Standardization of Information Technology Functions and Establishment of Funding Authorities

Department of the Interior Departmental Manual (375 DM 7, and 376 DM 4)

Bureau of Reclamation

Managing Construction and Infrastructure in the 21st Century, Bureau of Reclamation, National Academy of Sciences, National Research Council (NRC), 2006: In 2004, the Bureau of Reclamation (Reclamation) asked the National Academy of Sciences' NRC to review Reclamation's organization, business practices, culture, and capabilities for managing construction and infrastructure in the 21st century. As a result, the NRC published this report in early 2006. Project management was one of the nine issue areas recommended for Reclamation action. Specifically, the NRC identified three project management issues: (1) Each phase of project development has a different management process; (2) The Reclamation Manual is incomplete regarding project management, and there is insufficient oversight of its implementation; and (3) project management as a discipline is not well recognized in Reclamation.

Managing for Excellence: The Status of Project Management in Reclamation, January 2007: (http://www.usbr.gov/excellence/Finals/FinalReportProjectMgmt.pdf). A Project Management Team was assembled to address the three project management issues identified in the 2006 NRC report. The Managing for Excellence report summarizes the team's findings and presents the team's recommendations.

Reclamation Decision and Documentation Paper – Project Management Implementation, December 5, 2006: In December 2006, Reclamation's Commissioner signed a Decision and Documentation Paper accepting the recommendations of its Reclamation Leadership Team and directing the implementation of the recommendations outlined in the Decision and Documentation Paper.

Memorandum from the Commissioner, "Project Management Implementation – Action Items 20 through 23 – Managing for Excellence," December 22, 2006: This memorandum directed the Director, Office of Program and Policy Services, to proceed with implementation of project management by developing and issuing appropriate Policy and Directives and Standards with the characteristics below. Other Directors were to begin implementation of these recommendations immediately:

- All Reclamation actions taken under the Safety of Dams Act shall require the practice of project management. For other projects, allow the appropriate Director, as delegated, to require project management to be practiced for all work that meets the definition of a project, allowing for the degree of project management application to fit the work to be performed. The "oversight" group noted below shall consider future guidance for the application of additional limits/thresholds.

- Incorporate project management into the existing organizational structure.

- Adopt the Project Management Institute's (PMI) Project Management Book of Knowledge (PMBOK®), an ANSI standard, as a source of definitions, concepts, principles, and philosophy.

- Provide training tailored around PMI; however, implement it as a supervisor/employee responsibility.

- Certification will be on a case-by-case basis as specifically determined by the line manager in consultation with the program manager, if applicable.

- Provide for a sponsored representative group of project managers to hold a periodic oversight forum of issues and experiences. This group would report to the Deputy Commissioner of Operations annually on the process of project management in Reclamation.

Managing for Excellence Concept Paper: An Introduction to Project Management, January 2007: (http://www.usbr.gov/excellence/Finals/FinalIntroPM.pdf). This document defines "project," "project management," "project success," "project manager," and "project management plan."

Reclamation Manual Policy, Comprehensive Program Series (CMP) P07, July 2, 2009: (http://www.usbr.gov/recman/cmp/cmp-p07.pdf). This Policy establishes the use of project management practices within Reclamation. It:

- Applies to all Reclamation offices and does not supersede any existing Department, OMB, or other legal requirements regarding project management

- Defines the responsibilities of the Deputy Commissioner, Operations; Deputy Commissioner, Policy, Administration, and Budget; the Directors; the Director, Policy and Program Services; and the Chief Information Officer

- Requires the use of standardized project management processes and certified project managers

- Requires the use of formal, standardized project management practices and processes for all actions taken under the Reclamation Safety of Dams Act of 1978

- Requires that Reclamation adopt applicable project management terminology, principles, and methodologies as presented in the current edition of PMI's PMBOK®.

- Calls for establishment of a Project Management Coordination Group

Reclamation Manual Directives and Standards (D&S), CMP 07-01, July 23, 2009: (http://www.usbr.gov/recman/cmp/cmp07-01.pdf). This D&S establishes procedures for standardized project management use, training, and certification within Reclamation. It:

- Defines the terms capital assets, completion report, engineering and other technical services work, major acquisition, major system, program, project, project management, project manager, project sponsor, project stakeholders, project team member, responsible charge, service agreement, statement of work, and transferred works

- Defines the responsibilities of Directors, the Chief Information Officer, and the Project Manager

- Requires that all actions taken under the Safety of Dams Act follow formal, standardized project manager practices and processes

- Outlines the project manager required for major acquisitions and identifies major acquisitions and certification of project managers

- Outlines the practice of the project manager for projects other than major acquisitions

- Requires projects that involve engineering or other technical services (other than IT) to include statements of work, service agreements, and completion reports

Reclamation Manual Policy, Reclamation Information Technology Management Program, Information Resources Management (IRM) P03.

Federal IT Project Manager Guidance Matrix

Level	Description/Complexity	Competencies	Suggested Experience	Suggested Education, Training and Development Sources
1	Projects with low-to-moderate complexity and risk. **Example:** ▪Bureau-level project such as a stand-alone information system that has low-to-moderate complexity and risk.	As a minimum: ▪An understanding of PM and IT-PM competencies listed in the *OPM 2210 Series IT Project Manager Guidance* (pages 6,7). ▪Fundamental PM knowledge, skills and abilities that include an understanding of principles, practices and terminology. ▪Fundamental IT PM skills *in applicable IT-PM competencies.* ▪Skills required for respective bureau or business area.	As a minimum: 1 year previous, successful technical or PM experience	1. IT employees and supervisors can utilize the IT Workforce Development Roadmap at http://itroadmap.golearn.gov to identify specific competency training requirements and resources. 2. A list of PM training sources can be found in the *Project Management Training Directory* sponsored by the Federal CIOC at http://www.cio.gov. 📖 **Federal PM training sources include:** ▪USDA Grad School PM/IT PM courses ▪OPM-sponsored PM training seminars ▪GSA STAR Program ▪DoD's Information Resources Mgmt College (IRMC) ▪DoD's Defense Acquisition University 3. Training programs aligned to the ANSI-recognized *PMBOK 2000* knowledge areas and management processes provide a PM foundation. Additional IT–PM competency requirements, e.g., architecture, capital planning and investment, etc., are outlined in the OPM *Interpretive Guidance for Project Management Positions.* Training for these IT areas can be found in the IT Workforce Development Roadmap. 4. Clinger-Cohen Core Competency-based training sources include: ▪GSA's CIO University Program ▪DoD's IRMC certificate programs 5. Agencies are expected to identify specific organization and business area training required. This guidance reflects the minimal standard. Due to mission needs or legislative requirements, agencies may need additional credentials for PM validation. 6. Agency credentialing may include other criteria, e.g. continuing education or professional society certifications. 7. Agencies are responsible for validating applicable training for IT Project Managers or issuance of an Agency waiver.
2	Projects with high complexity and/or risk which are critical to the mission of the organization. **Examples:** ▪Projects that are part of a portfolio of projects/systems that impact each other and/or impact mission activities. ▪Department-wide projects that impact cross-organizational missions, such as an agency-wide system integration that includes large scale Enterprise Resource Planning.	Built on Level 1: ▪High proficiency in both PM and *applicable* IT PM competency skills listed in the *OPM 2210 Series IT Project Manager Guidance* (pages 6,7). --Advanced PM knowledge skills and abilities. --Advanced IT PM skills. ▪Developed systems perspective delineated in Clinger-Cohen Core Competencies, including life cycle mgmt, capital planning and investment, mission alignment, strategic planning, political ramifications, enterprise architecture, statutory and regulatory reqmts, systems of systems integration, etc. ▪Agency-specific skills and knowledge, e.g. DoD's Global Information Grid or NASA's Space and Ground Network.	As a minimum: 2-4 years combined previous, successful PM and technical experience, depending on project complexity	
3	Projects that have high complexity, and/or risk, and have government-wide impact. **Examples:** ▪Government-wide initiative --E-GOV --President's Management Agenda ▪High interest projects with Congress, GAO, OMB, or the general public. ▪Cross-cutting initiative --Homeland Security		As a minimum: 2-4 years combined previous, successful PM and technical experience, with prior experience in managing a Level 2 IT Project.	

Appendix B

Project Management Training

Contents

Training Introduction

The Bureau of Reclamation (Reclamation) Project Management Framework (PM Framework) training approach has been developed to provide and promote efficiency and consistency in the way project management is performed and executed within Reclamation.

The competent project manager will progressively seek to mature in areas of Knowledge (credentials and certifications), Performance (as defined through project results), and Personal Competencies (soft skills such as leadership or building high performance teams) through continuous training, updating, and experience.

Components within the PM Framework training address key project management skills and knowledge areas such as Scope Management, Time (Schedule Management), Cost Estimating/Management, Quality Management, Risk Management, Communications, Integration, Staffing, Procurement, and Technical Execution.

Training Approach Overview

The following sections discuss the PM Framework training approach, guidelines, project management core knowledge areas, project management skill requirements, and a mapping of training modules, guides, and templates.

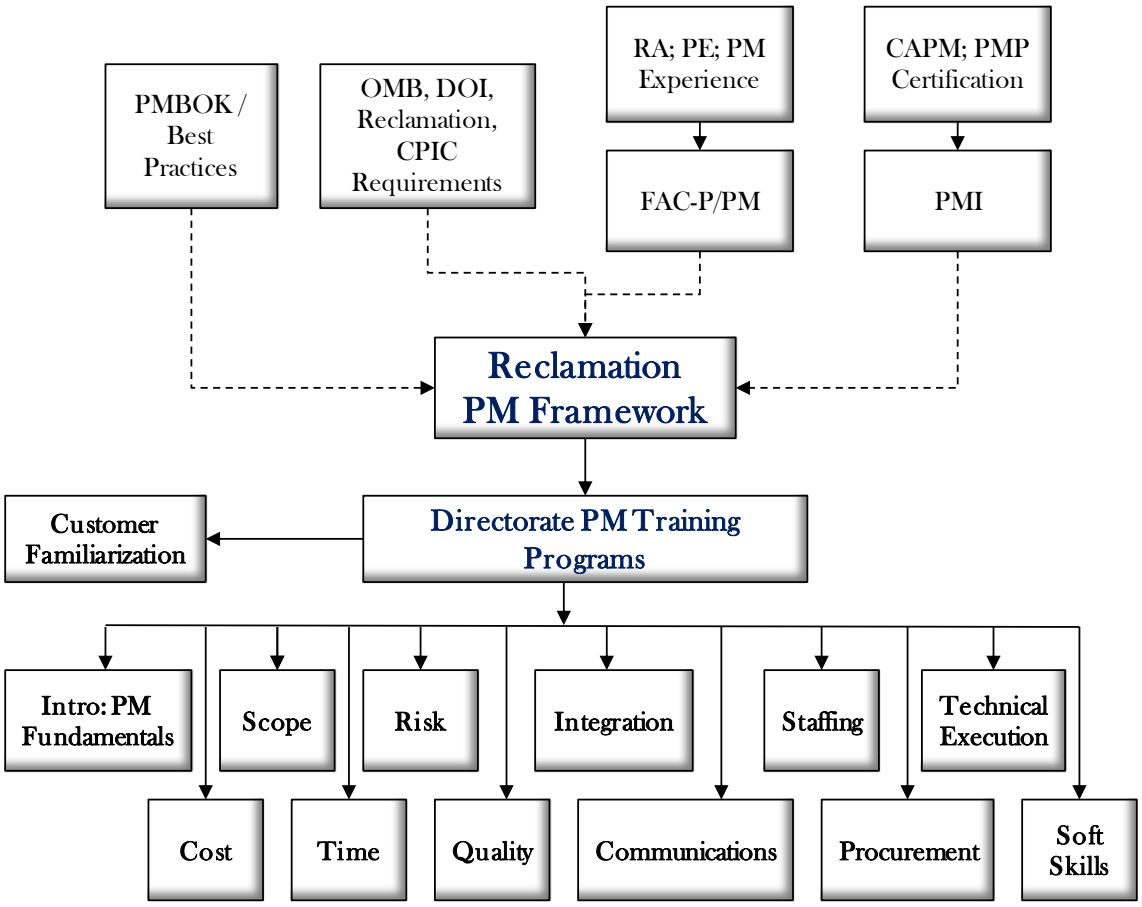
Each training module and related plans, templates, and guides can be tailored to the specific needs of a project, an organization, or a directorate. The training approach addressed in these sections considers current project management industry standards (such as the Project Management Institute's [PMI] *A Guide to the Project Management Body of Knowledge* [PMBOK®])[1], as well as Reclamation, U.S. Department of the Interior (DOI), and Office of Management and Budget (OMB) guidelines, and Federal training requirements.

Each directorate will provide guidance to its organizations and related projects. The types of training provided and the level of training required should mirror the needs of the organizations, customers, and project efforts. Each training program should include instructional templates, plans, and forms for consistency, repeatability, and standardization.

Figure 1 provides a hierarchy of Reclamation's training categories for the PM Framework as established by the Coordination and Oversight Group/Project Management Implementation Team. The training program incorporates project management skills and requirements as defined by the PMI, Reclamation, DOI, OMB, and industry considerations. An introduction module on PM Fundamentals is suggested as a preliminary step before the skills training. Customer Familiarization training is also recommended for customers who are decision makers and other key stakeholders involved in project activities or reviews to build a common

[1] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, fourth edition, Newtown Square, Pennsylvania, 2008.

foundational understanding of PM activities. Third tier boxes in figure 1 indicate those knowledge areas and skills required for establishing project management as a best practice.



Notes: ***CPIC*** *– Capital Planning & Investment Control;* ***FAC-P/PM*** *– Federal Acquisition Certification for Program & Project Managers;* ***PMI*** *– Project Management Institute;* ***RA*** *– Registered Architect;* ***PE*** *– professional Engineer;* ***CAPM®*** *– Certified Associate in Project Management;* ***PMP*** *– Project Management Professional*

Figure 1. Hierarchy of Reclamation's PM Framework based training.

In addition to project management core training requirements, each directorate will be responsible for tailoring its specific training program to meet additional requirements as defined by mission or organizational goals and objectives.

Introduction to PM Fundamentals

Introduction to PM Fundamentals includes the basics of project management including processes, skills, and activities required to manage a project's life cycle successfully.

Table 1 addresses project management principles and concepts with related training modules that introduce project management benefits, skills, standards, and best practices that are required to be a project manager at Reclamation.

Table 1. Intro: PM Fundamentals

Core PM Basics	Activities	Training Modules	Tools/Templates
PM Fundamentals	1. Monitor and manage the ***scope*** of work 2. Develop, maintain, and update the ***project management plan*** and subsidiary documentation 3. Establish service and interagency ***agreements*** 4. Develop and maintain ***project cost*** estimations, schedules, and performance measures 5. Conduct, coordinate, and manage ongoing and integrated ***activities*** 6. Perform ***quality assurance*** activities continuously to ensure project objectives are being met or achieved 7. Work as a ***technical*** subject matter expert with project leads to ensure an integrated approach throughout the life-cycle activities 8. Present periodic results, ***performance*** metrics, progress status, and risks at key milestone reviews 9. ***Monitor*** identified risks for triggering events and implement containment, mitigation, or contingency strategies as necessary 10. Manage ***change*** to the project requirements, scope, solution, or resources 11. Manage ***personnel*** skills and development as they relate to the project 12. Manage ***vendors*** as part of the team	• Why PM Training is Important Module • Benefits and Purpose of Project Management Module • PM Principles and Concepts Module • PM Roles and Responsibilities Module • Stakeholder Roles and Responsibilities Module • Projects, Programs, and Portfolios Module • Projects Versus Operations Module • Project Life-Cycle Phases, Activities, and Deliverables Module • Project Constraints Module • PMBOK Process Groups Overview Module • Commonly Used PM Tools Module • PM Qualifications and Certifications Module	• Project Management Instructional Templates and Plans • Technical Instructional Templates, Plans, and Training • PMBOK Training

Customer Familiarization

Customer Familiarization includes training to customers, key stakeholders, and other decisionmakers to extend insight into project management and project execution activities for the purpose of building a common foundation of understanding for enabling better communications, support, and decisionmaking.

Table 2 addresses project management, project life-cycle management, and related training modules that allow customers to fully understand the roles, responsibilities, and skills of the project manager, as well as the interrelated activities of successful project execution.

Table 2. Customer Familiarization

Core PM Basics	Activities	Training Modules	Tools/Templates
Customer Familiarization	1. Selecting Project Management Team 2. Reviewing Project Manager Qualifications and Certifications Related to Project Level 3. Reviewing Monthly and Quarterly Project Status 4. Reviewing Project Performance (progress, scope, cost, schedule, resources, risks) 5. Major Milestone Reviews 6. Key Decisionmaking	• Benefits and Purpose of Project Management Module • PM Terminology Module • Projects, Programs, and Portfolios Module • Projects Versus Operations Module • PM Skills, Qualifications, and Certifications Module • PM Roles and Responsibilities Module • Key Stakeholder Roles and Responsibilities Module • PM Knowledge Areas/Best Practices Module • Project Life-Cycle Phases, Activities, and Deliverables Module • PMBOK Overview Module • PM Tools, Methods, and Techniques Module	• Takeaway Overview of PMBOK Processes • Takeaway Overview of Project Life Cycles • Takeaway Overview of Project Management Knowledge Areas • Takeaway Overview of Key Stakeholder Roles and Responsibilities

Scope Definition/Management

Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Managing the project scope is primarily concerned with defining and controlling what is, and is not, included in the project.[2]

Table 3 addresses general ***Scoping*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 3. Scope Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Scope	1. Planning 2. Boundaries and Definition 3. Verification 4. Change Control	• Mission Needs Statement Module • Exhibit 300 Business Case Module • Project Charter Module • Scope Management Module • Trades/Feasibility Module • Analysis of Alternatives Module	• Instructional Templates/Plans • Methodology and Workflows • Impact Assessment Forms/Guide • Evaluation Form

Time (Schedule) Management

Project Time Management includes the processes required to manage timely completion of the project. The project schedule contains predicted activities, milestones, task dependencies, resource requirements, activity durations, and deadlines.

Table 4 provides examples of ***Scheduling*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

[2] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, fourth edition, 2008, page 103.

Table 4. Time (Schedule) Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Time	1. Activity Definition 2. Activity Sequencing 3. Duration Estimation 4. Schedule Development 5. Schedule Control	• Schedule Management Module	• Instruction Template/Plan • Work Breakdown Structure Template

Cost Management

Project Cost Management includes the processes involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget.[3] Cost management training will incorporate the fundamental concepts and techniques of cost estimating as a discipline.

Table 5 addresses ***Cost Management*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 5. Cost Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Cost	1. Resources 2. Estimating 3. Budgeting 4. Control	• Cost Estimation Management Module • Earned Value Management Module • Metrics and Measures Module	• Instructional Guide/Plan • Work Breakdown Structure Template • Budget Request Form Template • Cost Benefit Analysis Template • Earned Value Management Template • Metrics and Measures Instructional Template

[3] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, fourth edition, 2008, page 165.

Integration Management

Project Integration Management includes the processes and activities needed to identify, define, combine, unify, and coordinate the various technical and project management activities within the project management life cycle. In the project management context, integration includes characteristics of unification, consolidation, articulation, and integrative actions that are crucial to project completion, successfully managing stakeholder expectations, and meeting requirements.

Table 6 addresses general ***Integration Management*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 6. Integration Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Integration	1. Project Plan Development 2. Project Plan Execution 3. Overall Change Control 4. Life Cycle Management	• Project Management Planning Module • Configuration Management Module • Integrated Change Management Module • Integrated Baseline Review Module • Deployment Planning Module • Performance Metrics Management Module • Operations Management Planning Module • Succession Planning Module • Decommissioning Module • Life-Cycle Module	• Instructional Templates/Plans • Self-Assessment Template • Forms

Quality Management

Project Quality Management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. It implements the quality management system through policy and procedures with continuous process improvement activities conducted throughout, as

appropriate.[4] Quality Management also supports verification (of customer needs and requirements) and operational validation to ensure that performance and quality goals are achieved.

Table 7 addresses common ***Quality Management*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 7. Quality Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Quality	1. Quality Planning 2. Quality Assurance 3. Quality Control 4. Verification and Validation	• Quality Management Planning Module	• Instructional Template/Plan • Checklists

Risk Management

Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning/mitigation, and monitoring and control on a project. The objectives of Project Risk Management are to increase the probability and impact of positive events and decrease the probability and impact of negative events during the project.[5]

Table 8 provides examples of ***Risk Management*** processes and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 8. Risk Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Risk	1. Identification 2. Quantification 3. Mitigation 4. Control	• Risk Management Module • Security Management Module	• Instructional Template/Plan • Forms

[4] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide*), fourth edition, 2008, page 189.
[5] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, fourth edition, 2008, page 273.

Communications

Project Communications Management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Project managers spend the majority of their time communicating with team members and other project stakeholders, whether they are internal (at all organization levels) or external to the organization. Effective communication creates a bridge between diverse stakeholders involved in a project, connecting various cultural and organizational backgrounds, different levels of expertise, and various perspectives and interests in the project execution or outcome.[6]

Table 9 addresses ***Communications*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 9. Communications

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Communications	1. Communications Planning 2. Information Distribution 3. Performance Reporting 4. Administrative Closure	• Communications Planning Module • Monthly Status Reporting Module • Quarterly Status Reporting Module • Business Decision Document Module • Post-Implementation Review Module • Operational Performance Management Module • Operational Analysis Module • User Survey Module	• Instructional Templates/Plans • Forms

Staffing/Resource Management

Project Staffing/Resource Management includes the processes that organize, manage, and lead the project team. The project team is comprised of individuals with assigned roles and responsibilities for completing the project. The type and number of project team members can change frequently as the project progresses. While the specific roles and responsibilities of the project team members are assigned, the involvement of all team members in project planning and

[6] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, fourth edition, 2008, page 243.

decisionmaking is recommended. Early involvement and participation of team members add their expertise and experience during the planning process and strengthen their commitment to the project.[7]

Table 10 provides examples of general ***Staffing/Resource Management*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 10. Staffing/Resource Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Staffing	1. Organizational Planning 2. Staff Acquisition 3. Team Development 4. Team Closure	• Staffing Management Plan Module • Project Closeout Module • Lessons Learned Module	• Instructional Templates/Plan • Forms

Procurement/Acquisition Management

Project Procurement/Acquisition Management represents the service, system, or product acquisition requirements, as well as contract management processes. Procurement/Acquisition Management helps ensure that acquisitions and procurements related to a project are captured and managed in an effective, compliant, and efficient manner. Acquisitions can be planned or approved for out years. Procurements must be planned as early as the initiation phase in order to ensure that services (subcontractors), hardware, software, or firmware is provided at the necessary point within the project's life cycle.

Table 11 addresses ***Procurement/Acquisition*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

[7] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, fourth edition, 2008, page 215.

Table 11. Procurement/Acquisition Management

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Procurement	1. Procurement Planning 2. Solicitation Planning 3. Solicitation 4. Source Selection 5. Contract Administration 6. Contract Closeout	• Acquisition Management Module	• Instructional Template/Plan • Forms

Technical Execution

Project Technical Execution includes Life-Cycle Management (across life-cycle phases and activities for each role and responsibility). The project manager manages the technical execution of the project's life cycle from early mission/requirements analysis through test and integration, and, finally, deployment to ensure that requirements are met.

Table 12 addresses general ***Technical Execution*** activities and related training modules to help facilitate consistency and effectiveness in executing this project management activity.

Table 12. Technical Execution

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Technical Execution	1. Analysis 2. Architecture 3. Design 4. Development 5. Test 6. Integration 7. Deploy 8. Maintain	• Requirements Analysis/ Traceability Module • Concept of Operations Module • Architecture/Enterprise Module • Design Module • Implementation/Construction Management Module • Test Module • Integration Module • Independent Verification and Validation Module • End User Acceptance Process Module • Operations and Maintenance Planning Module	• Instructional Guide and Specification Template

Soft Skills

Managing projects requires leadership, management, and personal skills, also known as soft skills or personal competencies that will enable project managers to perform effectively. These can include: problem solving, negotiations, decisionmaking, critical thinking, conflict management, communications, delegation, team building, time management, people management, leadership, workforce generation, and diversity awareness.

Table 13 provides examples of general project management ***Soft Skills*** and related training modules that promote personal effectiveness in executing projects.

Table 13. Soft Skills

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Soft Skills	1. Problem Solving 2. Negotiations 3. Decisionmaking 4. Critical Thinking 5. Conflict Management 6. Communications 7. Delegation 8. Team Building 9. Time Management 10. People Management 11. Workforce Generation 12. Diversity Awareness	• Problem Solving Module • Conducting Negotiations Module • How to Make Effective and Timely Decisions Module • Critical Thinking Module • Managing Conflicts Module • Multi-Level Communications Module • Delegating Within and Across Teams Module • Team Building Module • Time Management Module • People Management Module • Workforce Generations/ Diversity Awareness Module	• Instructional Scenarios • Forms

Tailoring Project Life Cycles

In system, product, or service development, the "one size fits all" methodology does not apply to every project. Organizations expect project managers to follow a standard set of project life-cycle processes to deliver project deliverables on time and within budget. Projects tailor the life cycle based on the scope of the project. Mature methodologies recognize these differences, and adept project managers tailor and customize life-cycle processes to the scope of the project or program, or to key stakeholder expectations and requirements. Tactically, the life cycle is often customized by identifying the inventory of tasks and process deliverables that will be removed or customized to fit the scope of the project.

Table 14 addresses basic life cycles, phases, and activities common to all projects and how to perform ***Life-Cycle Tailoring*** and related training modules to help facilitate consistency and effectiveness in accomplishing this activity.

Table 14. Tailoring PMBOK Life-Cycle Phases and Activities

Core PM Knowledge Areas	Activities	Training Modules	Tools/Templates
Life-Cycle Tailoring	1. Understanding Key Stakeholder Requirements 2. Understanding Project Life-Cycle Phases and Activities 3. Understanding Integrated Project Team Disciplines and Perspectives 4. Tailoring the Project Life Cycle to Meet Expectations	• Overview/Refresh of PMBOK® Processes Module • Overview of Project Life-Cycle Phases and Activities Module • Overview of Phase Reviews and Deliverables Module • Overview of Integrated Project Team Disciplines Module • Tailoring Methodology Module	• Example Tailoring Outcomes • Tailoring Methodology/Process • Tailoring Checklist

Training Resources and Certifications

Industry Certifications

The following PMI certification programs are good examples of project management training for the various categories of projects. Project management certifications include Certified Associate in Project Management (CAPM®) and Project Management Professional (PMP®), which are discussed below. A Program Management Professional (PgMP®) is also available but is outside the scope of this document. Additional details and links are provided in this document.

Certified Associate in Project Management – CAPM^{R}

CAPM^{R} must first meet specific educational and project management related experience requirements and then pass a comprehensive, 150-question, computer-based examination.

Table 15 gives an overview of the background, experience, and education necessary to be eligible for CAPM^{R}.

Table 15. Eligibility Overview - CAPM®

Educational Background	Project Management Experience	Project Management Education
High school diploma or equivalent	1,500 hours of work on a project team	23 hours of formal education

http://www.pmi.org/careerdevelopment/pages/aboutcredentialscapm.aspx

Project Management Professional – PMP®

To be eligible for a PMP®, individuals must first meet specific educational and project management experience requirements and agree to adhere to a code of professional conduct. The final step to becoming a PMP is passing a rigorous, multiple-choice examination designed to objectively assess and measure the candidate's ability to apply project management knowledge in the following six domains: project initiating, planning, executing, monitoring and controlling, closing, and professional and social responsibility.

Table 16 gives an overview of the background, experience, and education necessary to be eligible for PMP®.

Table 16. Eligibility Overview - PMP®

Educational Background	Project Management Experience	Project Management Education
High school diploma or equivalent*	7,500 hours in a position of responsibility leading and directing specific tasks** and 60 months of project management experience	35 hours of formal education

*Applicants who hold a baccalaureate degree (or equivalent) are only required to have 4,500 hours leading and directing specific tasks and 36 months of project management experience.

**Specific tasks are identified in the PMP® examination specification, and project management experience must have been accrued within the previous 8 consecutive years from the date of application.

http://www.pmi.org/Certification/Project-Management-Professional-PMP.aspx

Reclamation Certification Training – FAC-P/PM

In 2007, the Federal Acquisition Institute (FAI) developed common, essential competencies for the program and project management community, and defined them in the Federal Acquisition Certification for Program and Project Managers (FAC-P/PM). FAI has mapped the program and project management competencies to learning objectives that will be used to assess current training or develop new training to meet these requirements. The FAC-P/PM program is recognized and accepted by, at a minimum, all civilian Executive Branch agencies. The FAC-P/PM is not mandatory for all program and project managers; however, at a minimum, program and project managers assigned to programs considered major acquisitions must be senior-level certified (as

defined below) unless a waiver is granted by the appropriate agency official. The target completion date for this certification is 1 year from the date of assignment to the program or project.

Table 17 shows the general requirements for Entry Level, Mid/Journeyman Level, and Senior/Expert Level Project/Program Managers.

Table 17. FAC-P/PM Certification Levels

Level	PM Core Knowledge and Skills	Experience	Training
Entry Level	Knowledge and skills to perform as a project team member. Ability to manage low-risk and relatively simple projects or to manage more complex projects under direct supervision of a more experienced manager. Overall understanding of project management practices including performance-based acquisition. Recognition of an agency's requirements development processes. Ability to define and construct various project documents under supervision. Understanding of and involvement in the definition, initiation, conceptualization, or design of project requirements.	Minimum of 1 year of project management experience within the last 5 years. Constructing work breakdown structure; preparing project analysis documents; tailoring acquisition documents to ensure that quality, effective, efficient systems or products are delivered; analyzing and/or developing requirements; monitoring performance; assisting with quality assurance; and budget development.	Interpersonal/ management competencies required of high-performing, successful program and project managers: • Effective communication • Conflict management • Problem solving • Customer service
Mid-Level/ Journeyman	Knowledge and skills to manage projects or program segments of low to moderate risks with little or no supervision. Ability to apply management processes, including requirements development processes and performance-based acquisition principles, to support the agency's mission to develop an acquisition program baseline from schedule requirements, plan technology developments and demonstrations, and apply agency policy on	Minimum of 2 years of program or project management experience within the last 5 years. Experience at the entry level. Experience performing market research and developing documents for risk and opportunity management. Developing and applying technical processes and technical management processes.	Interpersonal/ management competencies required of high-performing, successful program and project managers: • Team building • Influencing/ negotiating • Decisionmaking • Partnering • Managing a diverse workforce

Table 17. FAC-P/PM Certification Levels

Level	PM Core Knowledge and Skills	Experience	Training
	interoperability. Ability to identify and track actions to initiate an acquisition program or project using cost/benefit analysis. Ability to understand and apply the process to prepare information for a baseline review, and can assist in development of Total Ownership Cost estimates. Ability to manage projects, as well as program segments, and distinguish between program and project work.	Performing or participating in source selection. Preparing acquisition strategies. Managing performance based service agreements. Developing and managing a project budget. Writing a business case. Strategic planning.	
Senior/ Expert Level	Knowledge and skills to manage moderate to high-risk programs or projects that require significant acquisition investment and agency knowledge and experience. Ability to manage and evaluate a program and create an environment for program success. Ability to manage the requirement development process, overseeing junior-level team members in creation, development, and implementation. Expert ability to use, manage, and evaluate management processes, including performance-based management techniques. Expert ability to manage and evaluate the use of earned value management as it relates to acquisition investments.	Minimum of 4 years of program and project management experience on Federal projects and/or programs. Managing and evaluating agency acquisition investment performance. Developing and managing a program budget. Building and presenting a successful business case. Reporting program results. Strategic planning. High-level communication and internal and external stakeholders.	Interpersonal and management competencies required of high-performing, successful program and project managers: • Strategic thinking • External awareness

After certification at any of these three FAC-P/PM levels, certified professionals must earn 80 continuous learning points of skills currency training every 2 years that may include:

- Training activities such as teaching, self-directed study, and mentoring
- Courses completed to achieve certification at the next higher level
- Professional activities such as attending/speaking/presenting at professional seminars/symposia/conferences, publishing, and attending workshops
- Education activities such as formal training and formal academic programs
- Experience such as developmental or rotation assignments

DOI established its certification policy in Department of the Interior Acquisition Policy Release (DIAPR) 2009-13, dated August 13, 2009, and explained it in a memorandum from the Chief Information Officer (CIO) on May 21, 2010. In a memorandum dated October 1, 2010, from the Director, Management Services Office, Reclamation documented its guidance and implementation plan for FAC-P/PM certification. The Reclamation certification process requires:

1. Completion of training required for the appropriate FAC-P/PM level

2. Registration on the Federal Acquisition Institute Training Application System (FAITAS, previously ACMIS)

3. Completion of an application signed by the applicant, his/her supervisor, and the Bureau Senior Property Officer, CIO, or Procurement Chief

4. After Reclamation review, the application is submitted to the DOI for approval.

Project Manager Assessments and Development

Each Reclamation project manager should participate in a baseline performance assessment of their professional, technical, and personal skills and capabilities in order to evaluate their demonstrated ability to perform activities within a project environment that leads to expected outcomes based on defined and accepted standards. Three basic competency components have been identified by the PMI as criteria for evaluating a project manager: Knowledge, Performance, and Personal Behavior.

The project manager's "**Knowledge**" is evaluated to determine how well they know and apply project management processes, tools, and techniques during the planning, execution, and control of the project. Additionally, their credentials and certification achievements are taken into consideration.

The project manager's "**Performance**" is evaluated and based on the success of the project-related outcomes against the project plans. Performance encompasses execution of the project's life-cycle phases from initiating to closing, with ultimate success of the delivery of projects. Success is demonstrated through compliance evidence as captured through the project's performance criteria.

The project manager's "**Personal Behavior**" is evaluated, such as attitudes, personality traits, leadership, team building, and other soft skills as define above, while performing activities within the project environment.

In order to increase expertise in the area of project management, the project manager and his or her supervisor will develop a Project Management Competency Development Plan that addresses individual and specific goals, certifications, credentials, skills, experience, and training requirements based on the results of the project manager's performance assessment baseline. The Project Management Competency Development Plan is executed and monitored. Periodically, the project manager is reassessed against the Project Management Competency Development Plan to evaluate results and to define next steps. Goals are adjusted to help achieve ever-increasing expertise, target any weakness, and define performance criteria for continued growth.

The supervisor may include the Project Management Competency Development Plan as part of Reclamation's annual performance evaluation process, when appropriate.

Figure 2 illustrates the anticipated project management career ladder as guided by the PMI's Project Management Career Development. It should be customized to each directorate's own requirements and expectations. It emphasizes the need for all levels of management to be trained in project management, including training in operational, tactical, and strategic skills.

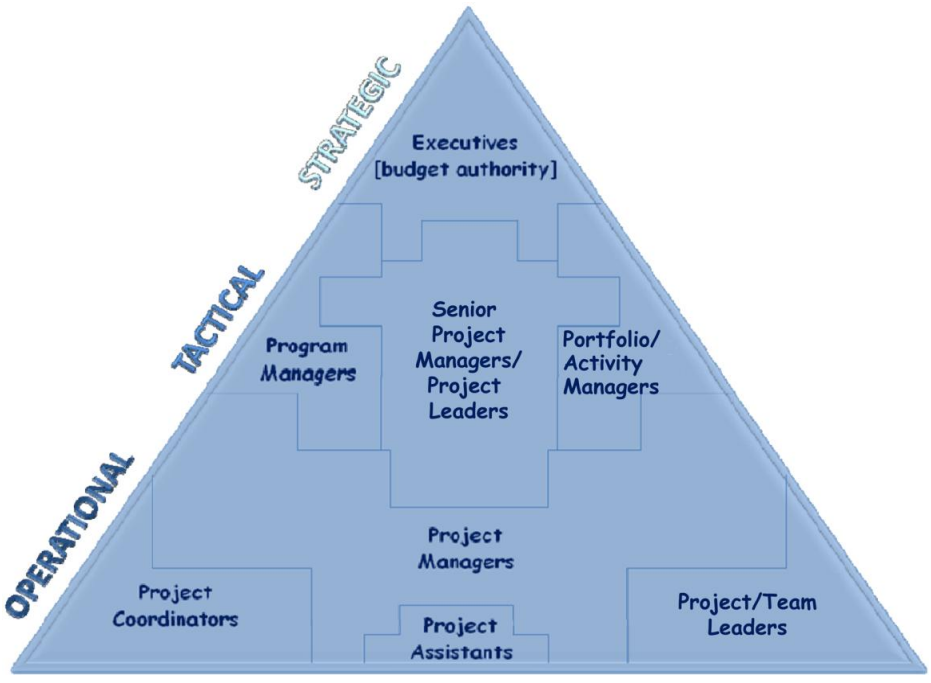


Figure 2. Project management career ladder and training needs.

Internal/External Training Sources/Resources

The training resources shown in table 18 are provided as a starting place or guide for finding basic training for Reclamation employees and management in the disciplines of project management. Sources are provided based on their foundation in the PMBOK® Guide, status as a primary source material on which other training and materials are based, and/or their longstanding acceptance and use by the project management community. The list below is only intended to provide examples and is not all inclusive. Each directorate can add to this list in accordance with its mission and strategic goals.

Table 18. Internal/External Training Sources/Resources

Source	Title	Links	Notes
DOI University	Master's Certificate Program in Project Management	http://www.doiu.nbc.gov/pmmcp.html	Overview, schedule, cost, risk, quality, leadership, communications, applications
Reclamation	Reclamationwide Project Management Web Site	(Proposed new Web site as repository for project management documents, similar to what exists from Information Technology Risk and Portfolio Management Division)	Project Management Guidebook; project management templates, guides, and training modules; project management competencies, guidelines, and templates
Office of Personnel Management's Management Development Centers	Project Management Principles	https://www.leadership.opm.gov/Search/Index.aspx?k=project%20management	
Technical Service Center (TSC)	TSC Project Management	http://intra.usbr.gov/tsc_pm/	TSC project management policies, guidelines, training, and templates
DOI Learn	Project Management Courses	http://www.doi.gov/doilearn/index.cfm	
PMI	Project Management Competencies and Structure	http://search.pmi.org/default.aspx?q=PM+competencies	Planning, initiating, monitoring and controlling, and closing phases of project management; and nine project management knowledge areas
PMI	Project Management for Executives	http://search.pmi.org/default.aspx?q=PM+executives	Seminars World Class

Appendix C

Project Management Level Selection Guide

Project Management Level Selection Guide

This decision tree is a tool to help you determine the appropriate level of project management, including the project category. The final determination of a project level requires common sense. Use of this tool does not preclude the use of intuition, judgment, or directorate input and approval.

I. Program or Project?

Does the endeavor have a beginning and an end? **Yes/No**

1. If "Yes," the endeavor is a project. Proceed to Step II.

2. If "No," the endeavor is a program.

II. Complex with OMB 300 Project

An Office of Management and Budget (OMB) Exhibit 300 is required to be submitted to OMB for major acquisitions, as defined in OMB Circular A-11, and with guidance from the Maintenance Services Office. Projects requiring an OMB Exhibit 300 require Senior Level Project Management Certification in accordance with Federal Acquisition Certification for Program and Project Managers (FAC-P/PM). The application of senior level project management is nondiscretionary.

Does the project require an OMB Exhibit 300 as defined above?

1. If "Yes," the project is categorized as "Complex with OMB 300."

2. If "No," proceed to Step III.

III. Complex Project

A "**Yes**" answer to **any** of the following questions indicates that the endeavor may be a Complex project, and project management principles should be applied by a senior level project manager. If the answer is "**No**" to **all** of the following questions, proceed to Step IV.

1. Is the total planning, design, and construction cost greater than $10 million, and would it result in a Reclamation-owned capital asset? **Yes/No**

2. Does the project directly support the President's management agenda items of "high executive visibility?" For example, is the project a priority of the Secretary of the Interior or Bureau of Reclamation Commissioner? **Yes/No**

3. Does the project involve the significant involvement of more than one Federal agency, bureau, or other entity (does not include regulatory consultations, such as Endangered Species Act or Clean Water Act)? For example, will the project be constructed, owned, or operated by another entity? **Yes/No**

4. Was it requested to be a major project by OMB? **Yes/No**

5. Is the endeavor a Safety of Dams project? **Yes/No**

6. Is the endeavor an Information Technology acquisition covered by other regulations? **Yes/No**

IV. Standard Project

A "**Yes**" answer to **any** of the following questions means the project may require special management attention. Project management principles should be applied. Appropriate level of project management training will be determined by the manager in responsible charge based on the level of the project's complexity and risk to cost, schedule, and performance.
If the answer is "**No**" to **all** of the following questions, proceed to Step V.

1. Is the total planning, design, and construction cost between $1 million and $10 million? **Yes/No**

2. Is the project critical to the mission or function of the agency? For example, would failure of the project adversely affect other programs or projects of the agency? **Yes/No**

3. Does the project have significant program or policy implications? For example, would the project establish a new program or policy precedent? Would failure jeopardize the continuation of the program? **Yes/No**

4. Does the project have unusually high development, operating, or maintenance costs? For example, are the costs significantly greater than would be expected for a similar project due to environmental concerns, extreme geotechnical issues, or other adverse conditions? **Yes/No**

5. Is the project partially or entirely funded through other than direct appropriations? For example, are the costs shared with an irrigation district, or is the project funded with power revenues? **Yes/No**

6. Are there significant milestones established by Congress, a State, a court, or a regulatory agency? **Yes/No**

7. Does the project involve one or more Native American Tribes? **Yes/No**

V. Basic Project

Even basic projects (less than $1 million) can benefit from the application of project management principles (for example, moving the office from one site to another). Appropriate level of project management certification will be determined by the manager in responsible charge based on the project's complexity and the risks to cost, schedule, and performance.