



# U.S. Department of Energy Guide to IT Capital Planning

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MARCH 2017

OFFICE OF THE CHIEF INFORMATION OFFICER

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## DOCUMENT REVISION HISTORY

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Version Number	Date	Description
2.0	March 31, 2017	<ul style="list-style-type: none"><li>Updated document to include most recent processes, organizations, and structures at the Department.</li></ul>

## 1 PREFACE

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This document has been prepared by the U.S. Department of Energy (Department or DOE) Office of the Chief Information Officer (OCIO) to document the Department's Information Technology (IT) Capital Planning and Investment Control (CPIC) process and provide Department-wide guidance. The *DOE Guide to IT Capital Planning*, herein referred to as the Guide, incorporates changes to the IT CPIC process as a result of the implementation of the Federal Information Technology Acquisition Reform Act (FITARA), and is issued in compliance with FITARA, the Clinger-Cohen Act, Office of Management and Budget (OMB) Circular A-130, and OMB Circular A-11. In addition to Federal legislation and OMB directives, the following DOE Orders also drive IT Capital Planning:

- [DOE Order 200.1A, Information Technology Management](#) – requires the implementation of IT CPIC processes that effectively manage the selection, control, and evaluation of Departmental IT investments, ensuring prioritization and sound management.
- [DOE Order 415.1, Information Technology Project Management](#) – provides program and project management direction for the acquisition and management of IT projects, investments, and initiatives with the goal of delivering projects on the original performance baseline, including within budget, on schedule, and fully capable of meeting mission performance, safeguards and security standards.

(Please see **Appendix A** for a list of abbreviations, and **Appendix B** for a list of Federal legislation and requirements.)

## 2 PURPOSE

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The Guide provides direction for DOE's disciplined IT Capital Planning process as part of an ongoing effort to remain consistent with OMB requirements and leading best practices. Specifically, the Guide will:

- Document the Department's IT CPIC process;
- Describe the responsibilities for performing IT CPIC processes throughout the Department;
- Clarify IT management nuances within the Department's other capital asset management processes;
- Serve as the IT management guide for the execution of IT CPIC;
- Demonstrate how the integrated and iterative Departmental IT CPIC process aligns and operates with other Departmental processes.

## 3 SCOPE

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The Guide addresses requirements of the DOE IT Capital Planning process. The Guide will be updated, at minimum annually, to include any new internal and/or external process changes.

## 4 TERMINOLOGY

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For the purposes of consistency and clarity, the following terms and their meaning are applied to this Guide.<sup>1</sup>

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<sup>1</sup> OMB FY 2018 IT Budget - Capital Planning Guidance, June 24, 2016

**Agency Chief Information Officer (CIO):** The CIO at the headquarters level of a department or establishment of the government as defined in Section 20 of OMB Circular A-11.

**IT CPIC:** A decision-making process that ensures IT investments integrate strategic planning, budgeting, procurement, and management of IT in support of agency missions and business needs. The CPIC process has three distinct phases: Select, Control, and Evaluate.<sup>2</sup> See 40 U.S.C. § 11302 for statutory requirements and Clinger-Cohen Act of 1996.

**IT Investment:** The expenditure of IT resources to address mission delivery and management support. An IT investment may include a project or projects for the development, modernization, enhancement, or maintenance of a single IT asset or group of IT assets with related functionality, and the subsequent operation of those assets in a production environment. All IT investments should have a defined life cycle with start and end dates, with the end date representing the end of the currently estimated useful life of the investment. The investment's most current alternatives analysis, if applicable. When the asset(s) is eventually replaced by a new system or technology, the replacement should be reported as a new, distinct investment, with its own defined life cycle information.<sup>3</sup>

**Project:** A temporary endeavor undertaken to accomplish a unique product or service with a defined start and end point and specific objectives that, when attained, signify completion. Projects can be undertaken for the development, modernization, enhancement, disposal, or maintenance of an IT asset. Projects consist of activities. When reporting project status, to the maximum extent practicable, agencies should detail the characteristics of "increments" under modular contracting as described in the Information Technology Management Reform Act of 1996, also known as the "Clinger-Cohen Act" and the characteristics of "useful segments," as described in OMB Circular A-130.

## 5 OVERVIEW OF IT GOVERNANCE

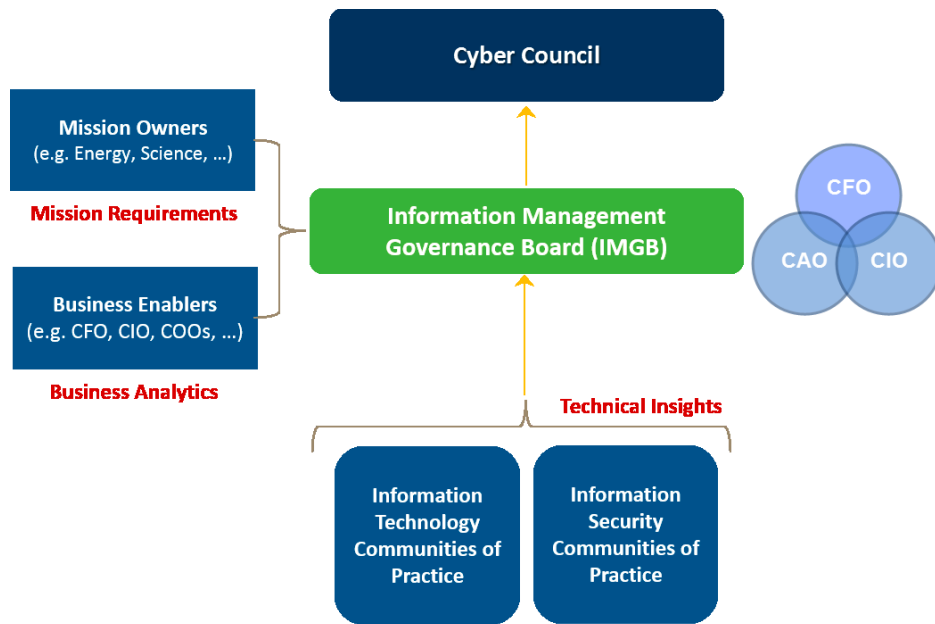
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The DOE Cyber Council and the DOE Information Management Governance Board (IMGB) are the principal governance bodies that oversee CPIC and FITARA implementation. **Figure 1** (below) illustrates DOE's IT governance structure, drawing on existing structures and processes that enable efficient and effective implementation. The Department coordinates across enterprise information resources management and cyber, financial, acquisitions, procurement, and human capital established processes and updates existing policies to ensure full CIO involvement. This increased visibility and application of authority results in enhanced transparency and oversight of information and IT investments at an enterprise level.

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<sup>2</sup> OMB FY 2018 Circular A-11, July 2016

<sup>3</sup> *Id.*



**Figure 1 – DOE Governance Structure**

### 5.1 Cyber Council

The Cyber Council is the principal forum for collaboration and coordination of activities for implementing a diverse array of cyber and information resources management measures (to include information and IT) to support information sharing (mission enablement) and information safeguarding (mission assurance) across the extended DOE enterprise. All significant information management policy issues are vetted through the Cyber Council prior to decision by the Secretary and the Deputy Secretary. The Deputy Secretary chairs the Cyber Council and the Secretary is an ex-officio member. The CIO is a key member and provides Executive Secretariat support for the Cyber Council through the OCIO. The CIO is responsible for ensuring that issues brought before the Cyber Council are properly analyzed and prepared for decision, and that Cyber Council decisions are documented and communicated as appropriate across the DOE enterprise.

### 5.2 Information Management Governance Board (IMGB)

The Cyber Council is supported by the IMGB and other sub-groups as appropriate. The IMGB provides analysis and recommendations regarding FITARA implementation to the Cyber Council as warranted. The CIO-chaired IMGB is actively involved in FITARA implementation, overseeing the operation of an Investment Review Board (IRB), convening as an IRB when requested, and escalating issues to the Cyber Council as needed. The CIO maintains ongoing involvement with the Program Managers through these and the various other governance groups to include, the Laboratory Operations Board and other working groups which provide technical insights to information and IT mission relevant initiatives.

### 5.3 Investment Review Board (IRB)

The IMGB is supported by the IRB. The IRB provides a forum for deliberations about DOE IT and information resource investments needed to achieve the Department's mission needs and business requirements. The CIO or the CIO's designee chairs the IRB. For DOE Headquarters-managed projects or at the election of the CIO based on a risk assessment, the IRB is convened to provide formal review and approval of IT projects. The review is based on an assessment of investment cost variance, schedule variance, and performance metrics. Program and Staff Offices (PSOs) without an IT project approval



process may request that the IRB review projects. With respect to National Nuclear Security Administration (NNSA) projects, the CIO may solicit an advisory review from the IRB.

#### 5.4 IT CPIC Working Group (IT CPIC WG)

One noteworthy IT working group is the IT CPIC WG which serves as the principal subject matter entity for the Department's IT CPIC matters. The primary purpose of this group is to engage PSOs in analyzing IT CPIC-related topics.

IT CPIC WG membership is open to all Departmental PSOs, including those from the [National Laboratories](#) and [Field Sites](#).

The IT CPIC WG's goals aim to:

- Ensure that the Department's investment management process is compliant with OMB guidance and with Department directives;
- Ensure that IT CPIC activities are aligned with and support other management constructs, (e.g., [Enterprise Architecture \(EA\)](#) and budget formulation processes within the Department);
- Develop recommendations for implementing Department-wide IT CPIC policies and requirements;
- Identify opportunities to improve IT investment management and oversight;
- Facilitate communication among PSOs regarding the Department's investment management process;
- Share IT CPIC best practices and lessons learned from PSOs;
- Address concerns relative to current IT investment management requirements;
- Implement a governance process that supports the strategic planning and decision-making practices of the IMGB;
- Avoid duplicating topics discussed by other governance bodies.

The IT CPIC WG is responsible for the following specific functions and outcomes:

- Develop procedures to implement new IT CPIC policies and guidance as directed by the OCIO or IMGB
- Present IT CPIC-related policy recommendations to the IMGB for review;
- Determine relevant IT CPIC development and use with respect to Departmental business objectives, strategic initiatives and desired mission outcomes;
- Recommend IT CPIC deliverables to the IMGB that satisfactorily meet Departmental mission strategies and objectives;
- Recommend IT investment management strategies to the IMGB.

At present, the IT CPIC WG meetings occur on the second Thursday of every month. The DOE CPIC Mailbox ([DOE.CPICmailbox@hq.doe.gov](mailto:DOE.CPICmailbox@hq.doe.gov)) can be contacted for any questions or meeting materials.

## 6 OVERVIEW TO IT CAPITAL PLANNING

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A mature IT CPIC process can yield numerous benefits to investment managers, key stakeholders, PSOs, and Departmental executives. Benefits include:

- Increased capability to achieve mission and business objectives

- Clear alignment of proposed initiatives with IT strategic goals and objectives, as specified in the DOE Strategic Plan and the DOE Information Resources Management (IRM) Strategic Plan
- Support and integration with EA efforts

Many legislative reforms emphasize the need for Federal agencies to significantly improve how they plan, select, fund, control, and evaluate IT initiatives. The [Clinger-Cohen Act](#) requires agencies to use a disciplined IT CPIC process to acquire, use, maintain and dispose of IT investments, and encourages the use of performance and results-based management of these initiatives. [FITARA](#) assists agencies in establishing management practices that align IT resources with agency missions, goals, programmatic priorities, and statutory requirements. The [Federal Acquisition Streamlining Act of 1994](#) requires that IT initiatives be tied to mission and strategic goals; have cost, schedule and performance goals; and achieve on average 90% of these goals.

To provide agencies with specific guidance on implementing these regulatory acts, OMB periodically revises OMB A-130<sup>4</sup> and issues memos and other guidelines concerning information systems and IT management. OMB requires agencies to follow the provisions of the Clinger-Cohen Act and OMB A-11<sup>5</sup>, which involve the acquisition, use, and disposal of IT as a capital asset.

## 6.1 DOE IT CPIC Roles and Responsibilities

Listed below are the IT investment roles and responsibilities of those who oversee the Department's IT CPIC process.

### IT Project/Program Managers

IT Project/Program Managers are responsible for the oversight and execution of IT investments. They initiate investments and oversee the activities of development and support staff (internal or external service providers).

Responsibilities:

- Ensure IT initiatives align with the Department's [EA](#);
- Initiate Pre-Select and Select documentation;
- Manage the initiative throughout its lifecycle;
- Participate in monthly IT Dashboard reporting as required;
- Oversee the initiative's progress (including cost, schedule, and performance);
- Ensure the use of a System Development Lifecycle (SDLC) project management methodology;
- Develop required SDLC documentation and submit accordingly;
- Report on the initiative's progress at each lifecycle milestone;
- Prepare progress and status reports as requested;
- Document lessons learned once projects are implemented;
- Participate in Post Implementation Review (PIR);
- Perform ongoing Operational Analysis (OA) consistent with the initiative's lifecycle.

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<sup>4</sup> [OMB Circular A-130, Managing Federal Information as a Strategic Resource](#)

<sup>5</sup> [OMB Circular A-11, Preparation, Submission, and Execution of the Budget](#)

## Office of Deputy CIO for Enterprise Policy, Portfolio Management & Governance

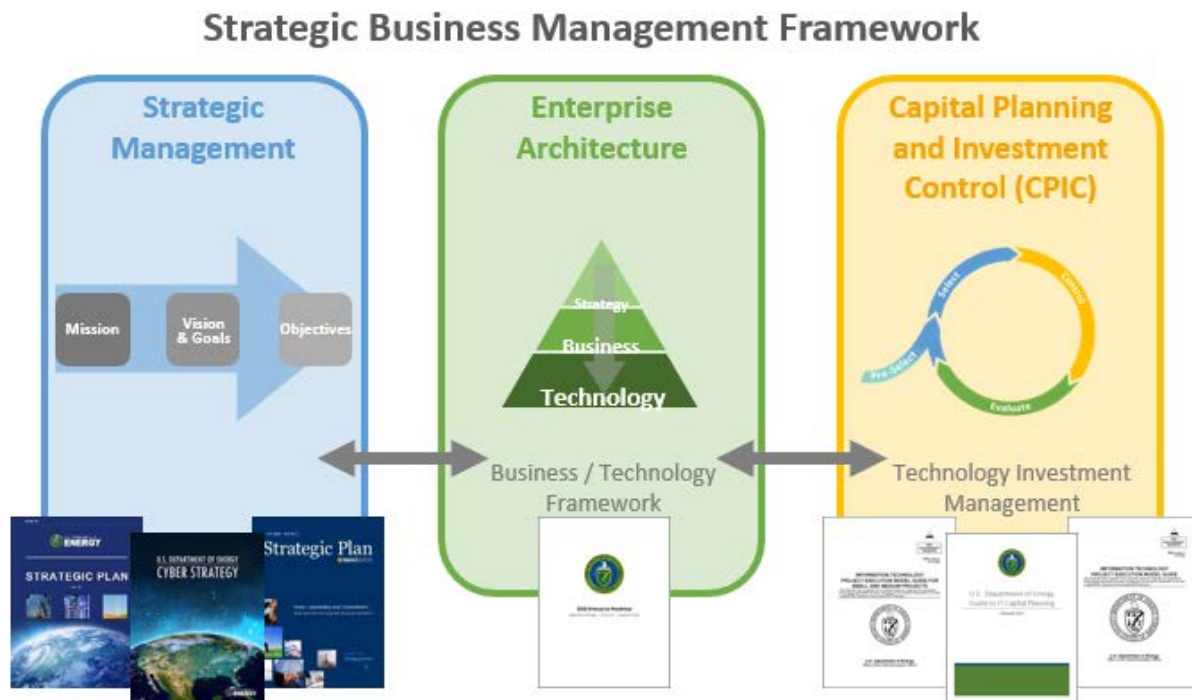
The Office of Deputy CIO for Enterprise Policy, Portfolio Management & Governance consists of an interdisciplinary team of subject matter experts, to include, among others, Financial Analysts, Technical Analysts, and Business Functional Analysts formed to support day-to-day IT planning and management operations under the purview of the CIO. The Enterprise Policy, Portfolio Management & Governance team provides IT CPIC-related guidance and support to PSOs.

### Responsibilities:

- Receive and review investment business cases against pre-determined criteria to determine whether they meet minimum viability and investment characteristic requirements. (*The Office of Deputy CIO for Enterprise Policy, Portfolio Management & Governance reviews investment business case summaries and assesses architectural compliance, redundancies, and opportunities for collaboration. It works with project managers when additional information and clarification is needed.*);
- Ensure that IT initiatives address accessibility requirements stipulated by Federal Acquisition Regulation (FAR) and Section 508 of the Rehabilitation Act of 1973, as amended in 1988;
- Analyze the Department's IT portfolio semi-annually and report results to CIO;
- Meet with project managers to review status of investments and recommend corrective action as warranted;
- Actively seek to identify "at risk" investments, act to mitigate risks or correct problem areas, and present significant issues to the IMGB for consideration;
- Monitor Major IT investments for progress against projected cost, schedule, and performance goals;
- Prepare recommendations for the continuation, modification, or cancellation of funding for investments;
- Ensure that all IT investments are managed by FAC-P/PM Certified Project Managers;
- Report investments with cost and/or schedule overruns greater than ten percent and/or performance shortfalls exceeding ten percent of goals to the IMGB;
- Create IT Dashboard, Major IT Business Case, IT Portfolio and PIR user guides;
- Review evaluations of implemented investments to identify lessons learned;
- Vet lessons learned for the IT CPIC user community to ensure that all lessons learned have been captured and addressed;
- Oversee the preparation of documents identified in the Department's Guide to IT CPIC;
- Perform annual IT CPIC review process and benchmark against IT information management;
- Provide recommendations and support materials on IT investments;
- Develop IT management policies and directives.

## 6.2 DOE IT CPIC Integration with Other IT Investment Management Processes

Along with CPIC and the IRB, the DOE strategic planning efforts, the DOE Cyber Strategy, the Department's EA, and program/project management together constitute the Department's IT CPIC integration, which aims to effectively manage the Department's IT investment portfolio relative to the Department's key strategies. **Figure 2** (below) illustrates at a high level how these components of the integration work together at the agency.



**Figure 2 – Strategic Business Management Framework**

### 6.2.1 DOE and IRM Strategic Planning

In order to accomplish its strategic mission, the Department has established priorities as stated in the [DOE Strategic Plan](#) and the [DOE IRM Strategic Plan](#). The DOE Strategic Plan outlines how Departmental activities help accomplish agency missions and program objectives. It also ensures that decisions are aligned with the Department's organizational planning, budget, and program decisions. This allows the OCIO to articulate and champion distinctive shared visions with the Department's programs combined with an over-arching corporate perspective for overall Departmental activities outlined in the DOE IRM Strategic Plan. As a result, the strategic goals and objectives drive the development of the Department's architecture, which in turn determines resource allocation decisions under the IT CPIC process.

### 6.2.2 DOE Cyber Strategy

The Department recognizes that cybersecurity poses a constant and dynamic challenge, with serious implications spanning beyond the DOE enterprise. Ensuring that the Department fosters an environment that prevents, deters, detects, and is resilient against cyber-attacks is essential to its mission.

To that end, the [DOE Cyber Strategy](#) builds on the Department's past successes and accounts for and addresses new and rapidly evolving cyber challenges to articulate a compelling vision for the future and a tangible plan for realizing it.

The Strategy identifies three crosscutting principles:

- Information is a Departmental asset;
- Effective information sharing and information safeguarding requires a distributed, standards-based risk management approach;
- Public trust is critical to mission success.

The Department applies these principles across four strategic goals:

- Share enterprise information more effectively with authorized users;
- Safeguard information against cyber threats;
- Win the competition for cyber talent;
- Mature and strengthen the Department's cyber posture.

### 6.2.3 EA Integration with IT CPIC Processes

The Department's priorities and supporting functions, processes, and related IT assets are captured in the DOE Enterprise Roadmap and documented as the baseline and target EA. By integrating the disciplines of architecture, investment management, and project implementation, the Department provides a foundation for sound IT management practices, end-to-end governance of IT investments, and the alignment of IT investments with the Department's strategic goals to achieve mission outcomes and results. The IT investments in the Department's IT CPIC portfolio together with the Department's EA are managed to create a lifecycle that is divided into three-phases: Architect, Invest, and Implement. As architecture-driven IT investments are funded in the Invest phase, they move forward into the Implement phase where systems development lifecycle processes are followed, and actual versus planned outputs, schedule and expenditure are tracked utilizing performance-based management processes.

Additionally, IT CPIC processes have been established to ensure that investments and projects are mapped to mission priorities, that funding is budgeted for these investments and projects, and that their progress is tracked. The Department EA is integrated throughout the IT CPIC processes of Select, Control, and Evaluate. Schedules, costs, and changes in requirements are monitored and managed to ensure the investment stays aligned with the Department EA and capture changes that may impact the Department EA. During the final phase of the IT CPIC process, the Evaluate phase, the investment is examined to determine whether it is continuing to meet its intended objectives, yielding expected benefits, and aligned with the Department EA as intended. This examination comes after the system is accepted by the customer and is placed into production for an initial period of time, generally as part of the PIR.

### 6.2.4 Program and Project Management for the Acquisition and Management of IT Investments

The Department aligns the IT CPIC process with DOE Order 200.1A, *Information Technology Management* (DOE Order 200.1A), to develop, implement, and maintain an IT CPIC process in compliance with [OMB A-11 Section 55, Information Technology Investments](#), [OMB A-130, Management of Federal Information Resources](#), and the Clinger-Cohen Act. DOE Order 200.1A requires the implementation of IT CPIC processes that effectively manage the selection, control, and evaluation of Departmental IT investments, ensuring prioritization and sound management.

In addition, DOE Order 415.1, *Information Technology Project Management* (DOE Order 415.1) provides program and project management direction for the acquisition and management of IT projects, investments, and initiatives with the goal of delivering projects on the original performance baseline, including within budget, on schedule, and fully capable of meeting mission performance, safeguards and security standards.

DOE Guide 415.1-1, *Information Technology Project Execution Model Guide*, assists IT Program and Project Managers in effectively managing and applying sound project management to IT, as well as DOE Guide 415.1-2, *Information Technology Project Execution Model Guide for Small and Medium Projects*,

which provides project management principles and guidelines for projects not addressed in previous guidance documents.

### **6.2.5 Federal Acquisition Certification for Program and Project Managers**

FITARA requires the development of a set of competency requirements for IT staff, including leadership positions, and the development and maintenance of a current workforce planning process to ensure the Department can: anticipate and respond to changing mission requirements; maintain workforce skills in a rapidly developing IT environment; and recruit and retain the IT talent needed to accomplish the mission.

The Federal Acquisition Certification for Program and Project Managers (FAC-P/PM) policy is applicable to individuals assigned to major IT acquisitions as defined in OMB Circular A-11, *Part 7, Section 300 – Planning, Budgeting, Acquisition, and Management of Capital Assets*.

The DOE FAC-P/PM Program aligns with FITARA guidance on how investments should be executed throughout the project lifecycle by integrating the disciplines of architecture, investment management, and project implementation that provide the foundation for sound IT management practices, end-to-end governance of IT assets, and the alignment of IT investments with the Department’s strategic goals.

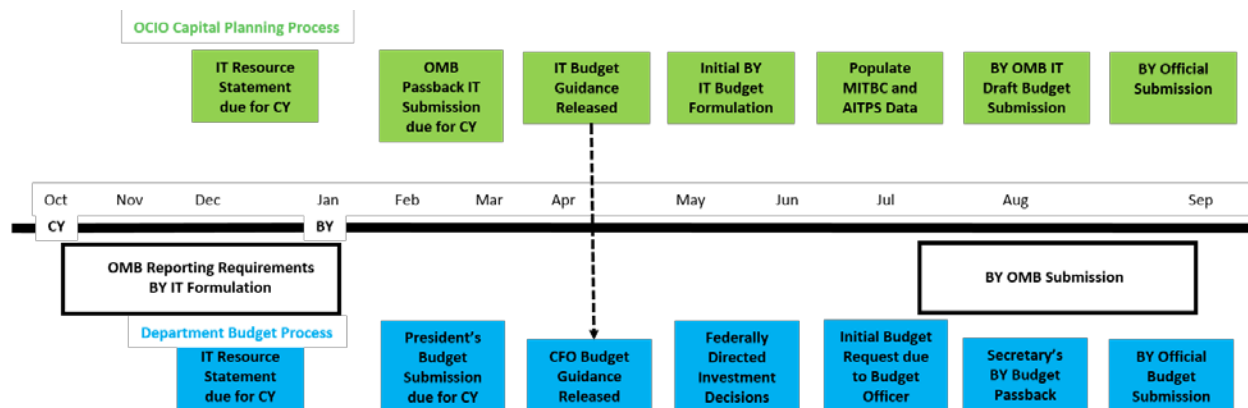
The purpose of the FAC-P/PM core-plus specialization is to establish additional training, experience and continuous learning requirements for FAC-P/PM certified personnel who manage investments requiring specialized knowledge, skills and abilities. Core-plus specialization for IT P/PMs was developed in collaboration with OMB’s Office of E-Government and Information Technology.

The FAC-P/PM certification is issued pursuant to the following:

- Public Law 113-291, FY 2015 National Defense Authorization Act, Subtitle D; Federal Information Technology Acquisition Reform Act (FITARA); Office of Federal Procurement Policy (OFPP) Act, 41 U.S.C § 1101 et. seq.; Office of Federal Procurement Policy (OFPP) Policy Letter 05-01, “Developing and Managing the Acquisition Workforce,” (April 15, 2005).
- Additional information on DOE’s FAC-P/PM program is available on Powerpedia at: [https://powerpedia.energy.gov/wiki/Federal\\_Acquisition\\_Certification\\_for\\_Program\\_and Project Managers](https://powerpedia.energy.gov/wiki/Federal_Acquisition_Certification_for_Program_and_Project_Managers).

### 6.3 DOE IT CPIC Integration with DOE Budget Process

DOE IT CPIC's iterative processes are integrated with the Department's annual budget process. **Figure 3** (below) illustrates these processes.



**Figure 3 – IT CPIC and Budget Process Integration**

The process flow demonstrates how the OCIO remains an active participant throughout the annual budget process in establishing investment priorities for agency information resources. Through the Department's IT Budget Guidance, the OCIO provides instructions for IT portfolio formulation to the PSOs. In coordination with the Chief Financial Officer (CFO), this budget guidance is incorporated in the CFO's budget guidance. Based on this instruction, the PSOs submit their business cases to the OCIO for compliance analysis review and CIO approval. The analysis and budget recommendations are subsequently provided to the Office of the Chief Financial Officer (OCFO) for consideration in their review of the Department's comprehensive budget. Customarily, the Department's official budget request is submitted to OMB for consideration at the end of the summer. Toward the end of the calendar year, OMB reviews the budget request and provides direction in the Passback. The OCIO participates in the Passback by helping PSOs revise their business cases based on OMB direction where budgets and portfolios are updated accordingly.

## 7 TOOLS

### 7.1 Electronic Capital Planning and Investment Control

The Electronic Capital Planning and Investment Control (eCPIC) application is the source of record for all IT investment data within the agency IT Portfolio. All Major and Non-Major IT investments are maintained, updated, and submitted to OMB within eCPIC.

ECPIC is a government-owned, web-based application that is used by Federal agencies to support their IT Capital Planning and Portfolio Management processes. This includes managing investment portfolios and preparing budget data for submission to the OMB. Through eCPIC, investment owners and managers have the capability to access, edit, and extract data related to their specific work streams, offices, or other agency components through the application. The various functional modules within eCPIC include Investments, Reporting, Portfolios, Systems, and Scoring which allow agencies to easily tailor and automate their portfolio management processes. The eCPIC application offers the Department a highly customizable tool that can be used to communicate to OMB, and submit data, in addition to improving records management and supporting portfolio governance initiatives.



For eCPIC access, please contact the eCPIC Help Desk at [ecpic@hq.doe.gov](mailto:ecpic@hq.doe.gov) or (202) 586-5437. The OCIO provides training and instructional materials for eCPIC. Prospective system users must attend eCPIC training prior to using the system.

## 7.2 MicroStrategy

Portfolio analytics and business intelligence are disciplines utilized by the Department of Energy to support investment decision-making in an effort to increase efficiency and optimize the IT portfolio in response to changing mission needs and budgetary constraints. Business intelligence allows the Department to "connect the dots" and integrate data from multiple sources to provide a comprehensive view of information and present data in more intuitive ways through dashboards, charts, graphs, and other formats.

With an increased emphasis on transparency and reporting, consolidation, and efforts to achieve cost savings, [MicroStrategy](#) provides the various stakeholder groups and governing bodies within the Department the analytical capabilities to make more effective business and technical decisions.

Through the use of MicroStrategy, the Department has developed a comprehensive set of dashboards, views, and reports that provide the information necessary to discover dependencies and common linkages/relationships across data to support various activities.

Some of these are identifying and eliminating duplications; improving efficiency and facilitating cost reduction; and integrating data across IT Strategic Planning, EA, and IT Capital Planning efforts.

## 8 OVERVIEW OF IT CPIC PHASES

### 8.1 IT CPIC Phases

The IT CPIC process consists of four primary phases: Pre-Select, Select, Control, and Evaluate. Championed by OMB, the Government Accountability Office (GAO), and industry experts since the early 1990's, each phase has a distinct gate through which each request passes on its journey from a simple concept to full operation and eventual retirement, as illustrated in Figure 4 (below):

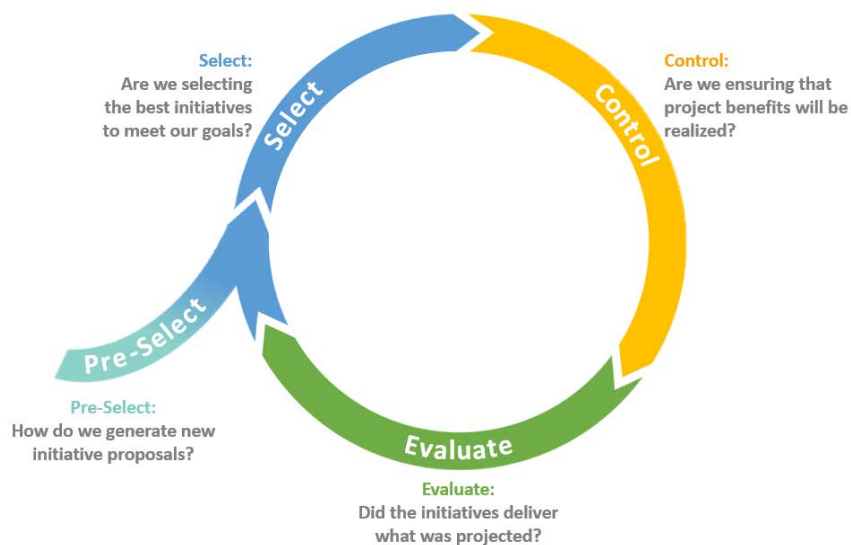


Figure 4 – IT CPIC Phases



1. **Pre-Select:** An ongoing process designed to evaluate new proposals for investment in IT. Ideas that are approved through the Pre-Select phase move forward to be considered during the Select phase.
2. **Select:** The process the Department uses to determine priorities and make decisions about which initiatives (new and ongoing) it will fund and include in the IT portfolio.
3. **Control:** An ongoing management process designed to monitor the progress of initiatives against projected cost, schedule, performance, and expected mission benefits. The Control phase helps to ensure each investment is properly managed.
4. **Evaluate:** Once initiatives are fully implemented, actual versus expected results are evaluated to: (1) assess the initiative's impact on strategic performance; (2) identify any changes or modifications to the initiative that may be needed; and (3) revise the investment management processes based on lessons learned, self-assessments and benchmarking.

## 8.2 Investment Types Used throughout the IT CPIC Phases

The Department's portfolio consists primarily of Major IT investments (01) and Non-Major IT investments (02). IT Migration investments (03), and Funding Transfer investments (04)) are not commonly used within the Department's portfolio.

### **Major IT Investments (01)**

The Department is required to submit Major IT business cases to OMB, and has defined these types of IT investments as those that meet any of the following criteria:<sup>6</sup>

- Has a cumulative steady state or mixed lifecycle funding of \$25 million or more across the Prior Year (PY), the Current Year (CY), and the Budget Year (BY);
- Is an OMB directed portfolio IT investment (Managing Partners for Government-wide E-Gov and Line of Business investments are required to submit Major IT Business Cases unless they receive a waiver from OMB);
- Is for the management of an IT Security and Compliance program;
- Requires special management attention because of its importance to the mission or function of the agency. For example, it:
  - Has significant program or policy implication;
  - Has high executive visibility;
  - Has high development, operating, or maintenance costs;
  - Is funded through other than direct appropriations.

### **Non-Major IT Investments (02)**

The Department is also required to submit Non-Major IT investments. OMB and DOE define these types of IT investments as those that do not meet the definition of "Major IT Investment" (01), "Funding Transfer Investment" (04) or "IT Migration Investment" (03).

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<sup>6</sup>U.S. Department of Energy, *BY 2018 IT Reporting Instructions Major IT Business Case Final, (Based on OMB Circular A-11, FY 2018 IT Budget – Capital Planning Guidance)*

All Non-Major IT investments must be reported in the agency IT investment Portfolio.<sup>7</sup>

### ***IT Migration Investments (03)***

Investments categorized as “IT Migration investments” are designed to capture migration costs associated with systems in a Shared Service partner agency that are not captured by the managing partner when the partner agency is migrating to the shared system.

The description of the IT investment should indicate the Unique Investment Identifier (UII) of the Major IT investment of the managing partner.<sup>8</sup>

### ***Funding Transfer Investments (04)***

Investments can also be categorized as “Funding Transfer investments.” This investment type allows agencies to capture the portion of funding they provide toward another IT investment. Funding Transfer investments could provide funding for investments internal or external to the agency. The description of the IT investment should indicate the UII of the managing partner investment.

## **8.3 Reporting Requirements by Investment Type**

Each investment type is associated with varying reporting requirements.

All investments must be submitted through the IT Budget Submission process in the fall. According to OMB’s Fiscal Year 2018 (FY18) IT Budget Guidance, the IT Budget will provide “a comprehensive list of all IT investments that will be reported” to the IT Dashboard. This includes all four investment types – Major IT investments (01), Non-Major IT investments (02), IT Migration investments (03), and Funding Transfer investments (04).

Details of Major IT investments (01) must also be submitted through the annual Major IT Business Case submission period. Additionally, Major IT investments must be submitted regularly throughout the year to the IT Dashboard. According to OMB’s FY18 IT Budget Guidance, “Major IT investment updates for performance metrics, risks, projects, and/or activities will be provided to the IT Dashboard as soon as the data becomes available. When providing updates to the IT Dashboard, OMB expects that updates are provided within 30 days from the corresponding event (e.g., TechStat sessions, baseline changes, CIO evaluations, status change in projects/activities, status change to the risk information, etc.).”

These submissions are summarized in the chart below:

	<i>IT Budget Submission</i>	<i>Major IT Business Case Submission</i>	<i>Monthly Submission</i>
<i>Major IT investments (01)</i>	✓	✓	✓
<i>Non-Major IT investments (02)</i>	✓		
<i>IT Migration investment (03)</i>	✓		
<i>Funding Transfer investment (04)</i>	✓		

Please see **Appendix C** for additional information on reporting requirements for Major and Non-Major IT investments, as well as the Major IT investments for IT Security and Compliance.

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<sup>7</sup> OMB FY 18 Budget Guidance

<sup>8</sup> Id.

## Reporting Exceptions

Programs should not include High Performance Computing (HPC) activities in the IT portfolio. By agreement with OMB, HPC investments will continue to be required in a separate quarterly report that is coordinated by the OCIO, Office of Enterprise Portfolio Management. Additionally, the Office of the Chief Financial Officer will continue to present the HPC budget within the Research and Development line of the Department's annual budget. For more information, please contact the DOE IT CPIC Mailbox at [DOE.CPICMAILBOX@hq.doe.gov](mailto:DOE.CPICMAILBOX@hq.doe.gov).

## 9 PRE-SELECT PHASE

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The Pre-Select phase provides a process to assess proposed IT solutions for unmet business requirements. The phase ensures that proposed IT investments support the agency's strategic plan and mission needs as well as provide initial information to further support investments. It is during this phase that the business/mission need is identified and relationships to the Department and/or agency strategic planning efforts are established.

The Pre-Select phase provides an opportunity to focus efforts and further the development of the initiative's concept. It allows project teams to begin the process of defining business requirements and associated system performance metrics, benefits, and costs, as well as subsequent completion of a business case and initial project planning efforts in preparation for inclusion in the Department's investment portfolio. Currently, Pre-Select occurs at the PSO level where the PSOs determine which initiatives should be considered for inclusion in the Department's portfolio before submission to the OCIO.

The Pre-Select phase begins with the screening process where projects are compared against a uniform set of screening criteria and thresholds in order to determine whether the projects meet minimum requirements for entry into the Select phase, as well as to identify at what organizational level the projects should be reviewed. In this process, the PSO, or IT project/program managers screen Major IT initiatives before submitting business cases (or updated business cases for ongoing initiatives) to the OCIO for scoring and selection into the Department's IT investment portfolio.

While the OCIO does not have direct control over the Pre-Select process, programs should establish their own IRB processes.

The business need for each IT initiative that the PSOs submit to OCIO must be documented. For each investment, the project manager must provide:

- How the initiative and portfolio reflect and support the Department's strategic goals, objectives, and priorities along with Secretarial priorities and Congressional mandates, if applicable;
- A description of the initiative, the benefits to DOE if funding is provided, and the funding requested for development, equipment and maintenance for the entire lifecycle of the investment;
- How the investment resolves GAO and Inspector General (IG) findings and material weaknesses, if applicable;
- Initial project plan with estimated costs listed for each work package within the work breakdown structure (WBS);
- Performance measures that are tied to OMB's Federal Enterprise Architecture Performance Reference Model (PRM);

- How risks will be managed;
- How the investment conforms to the EA and other related information.

### 9.1 Pre-Select Phase Key Outputs and Outcomes

The key outputs of the Pre-Select phase are new investment proposals that are complete, thorough, and meet the minimum requirements to be effectively scored during the Select phase.

The key outcome of the Pre-Select phase is improved quality of investment proposals through the implementation of standard templates and requirements.

## 10 SELECT PHASE

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### 10.1 Purpose of Select Phase

The purpose of the Select phase is to assess the costs and benefits of all proposed investments and to select the optimal portfolio of IT investments. The Select phase is focused on the development and selection of an IT portfolio that supports the Department's EA and meets the Department's mission and strategic goals. Individual investments are evaluated in terms of technical alignment with other IT systems and other cost, schedule, performance, benefit and risk criteria. Investments are also reviewed to evaluate whether there is a potential duplication of an initiative or existing Department system application. In this phase, IT initiatives are reviewed and prioritized to inform decisions about which investments will be funded in the coming year.

For PSOs that have sites reporting to them, site IT program managers review individual IT investment business cases and select investments for a proposed site portfolio to ensure that missions and goals are effectively and efficiently supported by the proposed portfolio, and that the proposal is consistent with the site IT architecture. Individual IT investment business cases are reviewed to ensure that they are compliant with the requirements of OMB A-11 and A-130, and adequately justify the investment. The proposed site portfolio is sent to the appropriate Headquarters' PSO for review and inclusion in a program-wide portfolio.

The Select process is supported and implemented through the Department's IT governance program and requires the participation and collaboration of all IT project/program managers with the PSOs, the OCIO, the OCFO, and executive-level decision-making bodies. Within the Department, the Select process is closely tied to the budget process, and therefore, the OCIO and OCFO are an integral part of the Select phase.

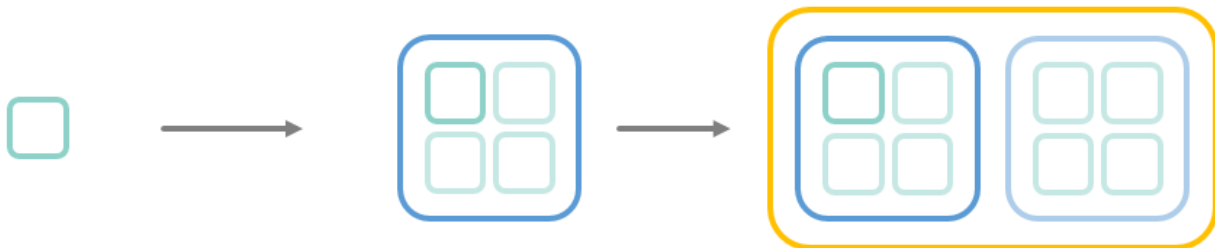
### 10.2 Overview of Select Phase and Portfolio Selection Process

The current process for the development and selection of the annual IT portfolio is illustrated in **Figure 5** below. PSOs are responsible for evaluating target performance outcomes and reviewing all proposed investments to ensure that the IT portfolio is consistent with the program budget submission. IT investments are selected for the portfolio based on defined selection criteria consistent with the requirements of OMB A-11 and A-130, and DOE Order 200.1A: *Information Technology Management*. Proposed IT portfolios are then forwarded to DOE Headquarters with budget request data and incorporated into the Department-wide IT portfolio. Pursuant to an internal review for each IT investment business case by the CIO/IRB, a portfolio analysis is performed as part of the IRB process. As a result of budget decisions from the IRB process, the IMGB reviews the final IT portfolio for final approval.

**Proposed Site Portfolio:**  
Each DOE Site and Bureau conducts a Site Review to analyze the mission and architecture alignment, evaluate the business case, and conduct an initial IT Investment Analysis.

**Proposed Program Portfolio:**  
Each DOE Program conducts a Program Review to analyze the program-wide mission and architecture alignment, and determine whether there are redundancies in the portfolio.

**DOE Portfolio:**  
The CIO reviews the DOE-wide portfolio to analyze the DOE-wide mission and architecture alignment, perform an intra-agency analysis, and conduct a unified review to close out the Select Phase.



**Figure 5 - Annual IT Portfolio Selection Process**

This framework and scoring will allow for a consistent, fair, and comprehensive review methodology of investments being considered for inclusion in the IT portfolio.

### 10.3 IT Investment Select Scoring Criteria

The recommended framework for review of investments in the Select phase, to allow those investments to be evaluated for inclusion in the IT portfolio includes:

- Does the initiative and portfolio reflect the Department's strategic goals, objectives, and priorities?
- Have potential funding constraints been identified and considered?
- What is the expected return on investment (ROI) for the initiative? Is the investment high- or low-value?
- Have the ramifications of declining to fund certain initiatives been given careful consideration?
- Have all opportunities to invest in crosscutting initiatives been appropriately evaluated?
- Are the project owners capable of successfully executing the chosen IT portfolio (i.e., are the appropriate resources available to complete the included initiatives)?
- Have work processes been simplified or redesigned to reduce costs and improve effectiveness?
- Does the initiative make maximum use of commercial-off-the-shelf (COTS) software?
- Has the investment been decomposed into well-defined useful segments or modules?
- Is the investment duplicative of other DOE commodity investments?

A sample list of selection criteria used by PSOs in making funding decisions is provided in **Appendix D: IT Investment Select Scoring Criteria**.

### 10.4 Departmental Review

The final selection of Major IT initiatives to be included in the Department's IT investment portfolio is based on the proposed portfolios submitted by PSOs to OCIO. The OCIO analyzes and compares initiatives within and across the available IT investment opportunities. Business cases that pass the OCIO review and OMB's validation edits will be included in the Department's IT portfolio pending further analysis and approval. Business cases that fail the structured review are returned with specific, detailed comments to the PSO for correction. All business cases in the portfolio are then subject to further high-level analysis and review in several areas of special interest to the Department. This review

and revision process is repeated until a final business case is accepted by the OCIO as a valid, viable business case.

The analyses take into account the relative operational, technical, financial, and institutional strengths and weaknesses of each initiative. The Department's goal is to maintain a balanced IT investment portfolio that ensures, for any given funding investment, the best return to the Department's mission and functions.

In addition to the investment review, a portfolio analysis is performed. PSOs are required to submit proposed budgets including a variety of documents (e.g., Major IT business cases and IT portfolios, budget justification documents, strategic plan/program plan) to be reviewed in order to make budget decisions.

Based on the results of the portfolio analysis, the PSOs are asked to revise their respective budgets, business cases, and IT portfolios. Once the PSOs have made all required revisions to the IT business cases and portfolios and the OCIO has reviewed the final submission, the draft consolidated Department's IT portfolio is presented by the CIO or their designee and then submitted to the DOE IMGB for final approval. The final Department IT portfolio is submitted to OMB for budget review in September of each fiscal year in accordance with OMB A-11 guidance.

### **10.5 IT Resource Statement**

The IT Resource Statement is a requirement from OMB Circular A-11, Section 51.3, and the OMB IT Budget – IT Capital Planning Guidance. The OCIO and OCFO work collaboratively to draft the Department's annual IT Resource Statement and obtain concurrences from the Department's CIO and CFO. Based on the FY18 guidance, the IT Resource Statements should include a statement from the:

- CIO affirming that the CIO has reviewed and approved Major IT investments as part of planning budgetary estimates for all years of the agency's current services baseline
- CFO and CIO affirming that the CIO had a significant role in reviewing planned IT support for major programs and significant increases and decreases in IT resources reflected in the agency's Current Services baseline budget submission
- CIO and CFO that the IT Portfolio (Section 55.6) includes appropriate estimates of all IT resources included the agency's Current Services baseline

The IT Resource Statement must be posted to the OMB MAX Portal twice, once during the official IT Portfolio Submission, and once during Passback for the Final President's Budget.

### **10.6 CIO Certification of Incremental Development**

According to FITARA, the Director of OMB shall require in OMB's annual IT Capital Planning guidance the following: that the CIO of each covered agency certify that IT investments are adequately implementing incremental development, as defined in IT Capital Planning guidance issued by the OMB. For development of software or services, adequate incremental development is defined as planned and actual delivery of new or modified technical functionality to users occurring at least every six months.

DOE's process for CIO certification includes monthly DOE IT Dashboard review and IRB review whereby the OCIO reviews and confirms that Major IT projects are using adequate incremental development methodologies for project implementation as appropriate. Incremental Development Evaluation factors appear in the DOE IT Dashboard Standard Operating Procedure and are used along with other factors to score and assess the overall health of the Major IT Investment. If Major IT projects fail to

employ adequate incremental development methodologies, the OCIO will work collaboratively with Program Managers to discuss project details, and identify necessary corrective actions.

### **10.7 Select Phase Key Outputs and Outcomes**

The key outputs of the Select phase include:

- A prioritized portfolio of IT investments that are approved for funding in the upcoming Budget Year;
- A budget for the above portfolio that has been reviewed and concurred by the Department's CIO and CFO.

The key outcomes of implementing Select phase processes include:

- Improved justification of the IT portfolio through standard, published criteria;
- Increased coordination between the Department's budget and IT CPIC processes;
- Improved management oversight and review over the IT portfolio.

## **11 CONTROL PHASE**

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### **11.1 Purpose of Control Phase**

The purpose of the Control phase is to ensure, through timely oversight, quality control, and executive review, that IT initiatives are conducted in a disciplined, well-managed, and consistent manner within the Department. This process enables the effective management of the Department's IT investments. The Control phase sets in place a structured process to provide senior managers with accurate information that will allow them to make timely decisions.

The Control phase will include a review of earned value management (EVM) data where applicable, and performance management data for investments not subject to EVM requirements. IT investments not performing according to expectations (i.e., investments with cost or schedule variances that exceed 10%, or performance shortfalls that do not meet 90% of goals) are subject to additional detailed reviews, managerial corrective actions, and/or termination. In addition, all investments must report on project management qualification requirements as required by the FAC-P/PM guidance. This review assesses the qualifications of project managers for capability of project management performance of Major IT investments, ensuring compliance with both external and internal regulations and guidance.

### **11.2 Overview of Control Phase**

The Control phase begins after investments have been selected, budgeted, and have received funding. The Control phase of the Department's IT CPIC process requires monitoring of ongoing IT initiatives during the planning, acquisition, deployment, maintenance, and operational phases of the IT investment lifecycle. The primary objective of the Control phase is to assess the performance of investments and enable the effective management of all Major IT investments.

The ability to adequately monitor IT initiatives relies heavily upon outputs from effective investment execution and management activities. The Department has made significant strides in controlling its IT investments by establishing review processes under the auspices of the Enterprise Portfolio Management Office. These are the IT Dashboard, IRB review, and TechStat review, which contain scoring criteria and processes to assess the performance and health of Major IT investments. All Major



IT investments are reviewed in the areas of project management qualification, cost and schedule variance, and performance goals. “Passing” scores have been defined for each performance area.

### **11.2.1 IT Dashboard**

OMB requires that the Department submit all IT portfolio and investment data to the IT Dashboard. The IT Dashboard is a website enabling Federal agencies, industry, and the general public to view details of Federal IT investments, providing transparency on the effectiveness of government IT programs. The IT Dashboard provides access to individual Major IT investments, including projects and activities associated with an investment (reported monthly), and the Department’s IT Portfolio (reported annually).

In order to meet OMB reporting requirements to the IT Dashboard, the Department leverages eCPIC as a portfolio management tool to collect and submit investment data to OMB.

The eCPIC application is used to facilitate the monthly IT Dashboard reporting, as well as the yearly Operational Analysis review.

All Major IT investments are subject to monthly OMB IT Dashboard reporting. Monthly IT Dashboard reporting includes a review of project cost and schedule variances, performance metrics, project and operational risks and CIO Evaluation. The Major IT Business Case (MITBC) Technical Guidance was developed to assist PSOs in the update of their Major IT investment information.

Therefore, each month, PSOs with Major IT investments are required to report monthly performance data in eCPIC for the OMB IT Dashboard. Sections that are updated include the Projects Table, Project Activities Table, Investment Risk Table, Operational Performance Table, Operational Risk Table, and the Rebaseline Table. The MITBC Technical Guidance provides reason codes for re-baselines as provided by OMB. The OCIO employs internal IT Dashboard templates to collect, monitor, and analyze the updated investment data.

### **11.2.2 Investment Review Board (IRB) Review**

In addition to the monthly IT Dashboard, Major IT investments are reviewed on an annual basis by the IRB with necessary corrective actions instituted when investments fail to meet their objectives. The IRB review sets in place a structured process to provide senior management with decision-making information and to meet the goals and objectives that were established in the business cases submitted to OMB as part of the budget submission process. Therefore, PSOs with Major IT investments are required to report monthly performance data in eCPIC for the IRB review. This data is similar to the IT Dashboard data, and may include EVM and project manager qualifications data. The OCIO employs internal IRB review templates to collect, monitor, and analyze the updated investment data.

The principal objectives of the IRB’s review includes:

- Determine whether investments under review continue to support mission and business functions;
- Assess the extent to which investments continue to meet planned cost, schedule, and technical baselines;
- Identify deficiencies and track the completion of corrective actions;
- Make (and document) a decision for each investment to “continue-as-is” or be “modified” in order to improve its overall performance;



- Review investment scores that may be based on the following criteria: project management qualification, cost variance, schedule variance, performance goal variance, risk, security, and EVM, and other criteria, as appropriate.

### 11.2.3 TechStat Review

While there are regular reviews of IT investments, there are also ad-hoc reviews that occur on IT investment data. One such ad-hoc review is the TechStat review.

Building on the foundation of the IT Dashboard, OMB launched the TechStat Review, which is an evidence-based, data-driven review of an IT investment via face-to-face accountability sessions with internal Department members only or with OMB and agency leadership. The intent of the TechStat Review is to gain a shared understanding of the objectives of the investment and understand the risks associated with continued investment. Investments are selected based on cost, schedule and performance data, and CIO evaluations reported on the IT Dashboard. The investments are analyzed with a focus on problem-solving that leads to concrete action to improve performance. TechStat Reviews enable the Department to turnaround, halt or terminate non-performing IT investments.

## 11.3 Project Management/Oversight

The Project Manager is responsible for establishing realistic project management and execution plans, procedures, and practices to support initiative monitoring activities. The Project Manager is also required to report to the OCIO and the IMGB on the status of the initiative's cost, schedule, and technical baselines each quarter. Baselines provide the framework and sufficient detail to assess the status of the initiative's major milestones, decisions, activities, work products, and deliverables. Areas of key importance include risk management, Get Well Plans, and the Earned Value Management System (EVMS).

### 11.3.1 Risk Management

Project managers also develop risk strategies to address problems or issues related to their investments. The resolutions of all issues are documented and mitigation actions tracked. A mitigation action to resolve deficiencies depends on the extent of change that would be required to the initiative's overall project plan, considering the cost (in terms of dollars and/or time) to make the change, and the calculated severity of the deficiency. Typical mitigation actions for major deficiencies include:

- **Eliminate or avoid** the specific deficiency, usually by selecting a mitigation action that eliminates the cause. As a general rule, elimination is pursued when the deficiency cannot be managed or the deficiency is costly.
- **Reduce** the expected cost associated with the deficiency. The option is employed when the elimination or avoidance of the deficiency is not likely. Instead, attention is focused on minimizing the consequences of the problem.
- **Accept** that a deficiency will occur and develop contingency plans to be executed should the deficiency occur. Contingency plans are pre-defined action steps to be taken prior to and if an identified deficiency should occur.

### 11.3.2 Get Well Plans

Corrective actions are required when an investment does not meet the "green" criteria in Project Management Qualification, Cost Variance, Schedule Variance, Performance Goal Variance, or EVM. Get Well Plans are corrective action plans that require Major IT Investment Project Managers to define their corrective action strategy for improving the performance of their investments. Get Well Plans are to be

submitted to the OCIO using DOE's Get Well Plan template (available in eCPIC or from the OCIO). Plans that do not sufficiently address the issue(s) identified, may require the Project Manager to meet with the OCIO or IRB. This meeting will serve as the forum where the Project Manager and the OCIO can collaborate on approaches for improving the effectiveness of the Get Well Plan.

### 11.3.3 Earned Value Management (EVM)

The OMB requirements for appropriate project control include the implementation of an EVM system that meets ANSI/EIA-748 Standard. EVM provides an indication of how well an investment is meeting the cost and schedule goals defined prior to the outset of the investment. The determination of earned value begins with an estimate of the costs and schedule dates associated with completing investment work packages. Earned value is an assessment of the dollar value of the work actually accomplished based on the original cost estimates to complete the work. The earned value is compared to the planned value (which comprises the original cost and schedule estimates), and actual costs and completion dates to determine schedule and cost variances, respectively. The three major objectives of employing earned value are to provide:

- An effective internal cost and schedule management tool for use by project managers;
- Review bodies, with a mechanism for evaluating initiative progress;
- A means to identify potential problems throughout the lifecycle in time to implement changes or corrective actions to ensure project objectives are met.

All IT initiatives must be planned, budgeted, and scheduled in measurable and phased "value-added" increments. Major IT investments with Total Project Costs over \$20 million and that have over \$5 million in Development/Modernization/Enhancement (D/M/E) funding in Current Year (CY) or Budget Year (BY) are required to use an ANSI/EIA-748 Standard compliant EVMS, as shown in **Figure 6** (below) and are to report EVM data in Project Assessment and Reporting System (PARS) on a monthly basis.

Major IT investments with total investment costs between \$5 and \$25 million in the development phase have the option of using EVM or another performance management system for management of the investment. Non-Major IT investments with total investment costs below \$5 million are reviewed and managed within the PSOs, but are subject to Department-level review and reporting at the discretion of the OCIO.

Major IT Investment		
Development, Modernization or Enhancement (DME) Projects		Mixed (D/M/E + SS) or 100% SS
Total Estimated Costs (Life Cycle Costs)	An investment with cumulative steady state or mixed life cycle funding of \$25 million or more across the PY, the CY, and the BY	
Business Case (OMB Exhibit 300)	✓	✓
ANSI-748 Certified Earned Value Management System	Required for the D/M/E portion where the life cycle D/M/E is greater than \$20M and D/M/E funding is greater than \$5M in either the Current Year (CY), or Budget Year (BY through BY +n)	N/A
Performance Management System	All major IT investments not covered by ANSI STD 748 EVM shall have a Performance Management System which assesses cost and schedule performance	

**Figure 6 – DOE Major IT Investment and EVM Reporting Requirements**

#### 11.4 Control Phase Key Outputs and Outcomes

The key outputs of the control phase include:

- Regular investment updates to the IT Dashboard;
- Annual performance presentation for the IRB;
- Approved Get Well Plans for underperforming projects.

The key outcomes of the control phase include improved oversight and management over the IT portfolio. Successful implementation of control phase processes will:

- Improve the identification of poorly performing projects;
- Decrease time to correct poorly performing projects;
- Improve investment risk management.

## 12 EVALUATE PHASE

### 12.1 Purpose of Evaluate Phase

The purpose of the Evaluate phase is to examine whether an IT investment has met its intended objectives and yielded expected benefits as projected in the business case. As noted in [GAO's Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-Making \(GAO Assessing Risks and Returns\)](#), "the Evaluate phase 'closes the loop' of the IT investment management process by comparing actual against estimates in order to assess the performance and identify areas where decision-making can be improved."

### 12.2 Overview of Evaluate Phase

The Evaluate phase includes a PIR on implemented or cancelled investments, Operational Analyses, as well as an annual assessment of IT CPIC processes. These activities are essential to the contributions that IT investments make toward the accomplishment of the Department's strategic goals and objectives.

### 12.3 Post-Implementation Review on Investments

A Post-Implementation Review (PIR) is performed on IT systems 6 to 18 months after they are fully deployed. This review is important not only to determine the future viability of the IT investment, but also to assist IT managers in improving IT proposal business case requirements to better inform future IT selection decision-making. The PIR, in essence, closes the loop with regard to the IT CPIC process by facilitating feedback on an investment's overall processes and its refinement. The need to evaluate an investment's ability to effectively meet the organization's mission needs, both functionally and economically, does not end at investment deployment. Rather, it is a continuous process to ensure that the investment still supports both the users' and mission needs.

The purpose of an investment PIR is to track and measure the impact and outcomes of implemented or cancelled IT investments to ensure they meet the program mission and/or obtain lessons learned.

Applicable questions include:

- Did the delivered product meet the specified requirements and goals of the project?
- Was the user/client satisfied with the end product?
- Were cost budgets met?
- Was the schedule met?
- Were risks identified and mitigated?
- What could be done to improve the processes?

A PIR is typically conducted on implemented investments to evaluate the actual results compared to estimates/expectations in terms of cost, schedule, performance, and mission outcomes/strategic performance; determine the causes of major differences between planned and end results; and to help improve project management practices.

As part of the PIR process, a template and scoring criteria are provided in the [Post-Implementation Review Guide](#) so that PSOs can implement a standard process when conducting their PIRs. Applying the same evaluation criteria ensures consistent scoring across the Department. The PSOs should complete the template along with their proposed assessment of their investment's performance. The template contains much of the same information as that for the IT Dashboard, and provides a continuity of evaluation from the Select to the Evaluate phase.

To complete a PIR, comprehensive investment information must be gathered, analyzed and documented in a PIR Summary and Recommendations Report. Although the same factors will be used to assess all investments, the specific information that the investment is required to report may vary. Detailed requirements and the criteria by which the investment will be assessed for each type of review will be determined by the PSOs. Completed PIR reports are maintained in eCPIC.

The PIR should include a lessons learned document. Lessons learned enable the knowledge gained from past experience to be applied to current and future investments to avoid the repetition of past failures and mishaps. Lessons learned documentation can represent both positive and negative experiences. The ability of the project manager to more effectively manage an investment is greatly increased through this resource. Further, a review of lessons learned from prior investments will help identify problems that may materialize during the investment. Analysis of these problems should lead to ways to avoid or mitigate them. Reviewing lessons learned helps in setting a realistic schedule, estimating

accurate costs, identifying possible risks/mitigation strategies, and feeds the continuous improvement process.

## 12.4 Operational Analysis

At a minimum, OMB requires that an annual review of all operations projects to document the continued effectiveness in supporting mission requirements and minimize the cost of asset ownership. The cost of asset ownership is defined as the total of all costs incurred by the owners and users to obtain the benefits of a given project or investment. The intent, in part, is to reduce the number of stove-piped legacy systems that are expensive to maintain.

The OA is a key practice within the GAO Information Technology Investment Management (ITIM) maturity model. As noted in *GAO Assessing Risks and Returns*, OA “‘closes the loop’ of the IT investment management process by comparing actual against estimates in order to assess the performance and identify areas where decision-making can be improved.”

Department policy requires that PSOs conduct an OA of steady state investments and investments with operational components at least annually. A project manager may choose to perform an OA more frequently. The OA is the comparison of the performance of an IT asset or system to established cost, schedule, and performance baselines. At a minimum, performance measures should include how well the asset supports its customers and stakeholders, and how well the asset is managed by the agency. Specifically:

- How close actual annual operating costs and schedules are to the original life-cycle estimates;
- Whether the level or quality of performance /capability meets performance goals; and
- Whether the system continues to meet mission and user needs.

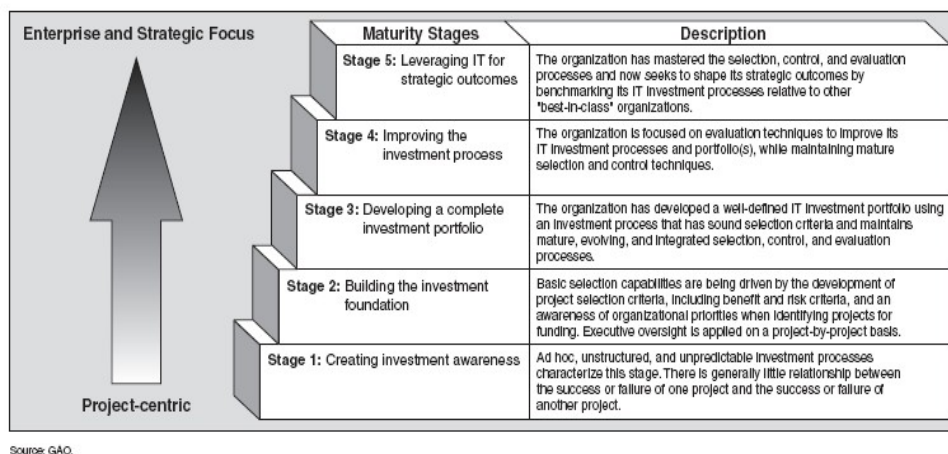
The results of this analysis include recommendations to agency managers pertaining to the asset’s continued use, modification, or termination. Using verifiable data, the IRB must regularly review the performance of IT projects and systems against stated expectations. The IRB should use operational projects’ OA to support the IT CPIC processes. The results are reported via eCPIC, validated by the OCIO and IMGB, and reported to OMB each year as part of the IT Project Manager (PM) artifacts for the Major IT investments.

For additional information about the OA process is provided in the DOE Operational Analysis Guide. The DOE OA Guide, was developed based on the OMB Capital Programming Guide, and is intended to assist PSOs in the development of their OA report.

## 12.5 Annual Assessment of IT CPIC Processes

The Evaluate phase includes an assessment of the IT CPIC process to ensure that the desired outcomes for IT Investment Management (ITIM) are achieved. The Department uses the GAO process documented in ‘A Framework for Assessing and Improving Process Maturity’ (*Framework*) to conduct a self-assessment of its current IT CPIC processes against the *Framework* to benchmark its ITIM maturity level and to identify opportunities for advancing current processes.

The purpose of the GAO framework is to identify critical processes for successful IT investment and management and organize these processes into a framework of increasingly mature levels. An overview of the framework is provided in **Figure 7** (below).



**Figure 7 – GAO ITIM Stages of Maturity**

In addition, ad hoc benchmarking against governmental and private sector organizations are performed as necessary. Using the collective results of annual IT CPIC evaluation assessments and PIRs, the Department is able to identify potential modifications to the IT CPIC Pre-Select, Select, Control, and Evaluate processes based on lessons learned. Such an assessment provides insight into the strengths and weaknesses of the processes and procedures performed in the IT CPIC phases. As a result, improvement recommendations are developed, and the IT CPIC processes are updated as needed.

## 12.6 External Oversight Expectations and Guidance

Requirements defined in the Clinger-Cohen Act, FITARA, and related OMB and GAO guidance outline Federal agencies' responsibility to properly budget scarce resources to align with agency goals, as well as the need to monitor those resources after they are allocated. OMB, GAO, and the Department's IG address the needs from different perspectives, described below.

### *Office of Management and Budget*

OMB's *Capital Programming Guide* is intended to help agencies achieve disciplined capital programming processes.

OMB's guidance for planning and budgeting begins with processes that aim to achieve tight integration between program performance objectives and planning, providing DOE with an opportunity to fulfill requirements and to develop and use EA as a framework for logical requirements and capital asset planning. Individual activities include establishing a baseline plan, assessing options and alternatives, analyzing risks, and preparing acquisition baselines and strategies that support more effective management.

### *Government Accountability Office*

GAO's guidance comes from a different perspective, but aims to achieve similar results. Through extensive examination and audits of agency resource management, GAO found evidence of inadequate practices were being applied for planning and managing the cost and schedule resources needed to deliver program results.

Through this analysis, GAO advised agencies that investment cost and schedule resource planning and management rely on effective resource estimating, risk and uncertainty assessment, and quantified methods to assess progress against expectations.

The overall lifecycle cost must be developed through credible, defensible estimating and planning processes to provide part of the basis of judgment for comprehensive cost versus benefit assessment. Data and decisions generated as a result of the estimating process can be leveraged through budgeting process integration.

Cost estimations are crucial to the IT CPIC process as they form the baseline for every project, program, and investment. Without a robust cost estimate, variance analysis during the Control phase provides little to no value and management decisions become more difficult, decreasing the likelihood that a given investment will help the Department reach its strategic goals.

#### *Department of Energy Inspector General*

The Department's IG has authority to inquire into all Department programs and IT activities. As part of its independent status, the IG provides the Secretary with an impartial set of "eyes and ears" to evaluate management practices. The organization is responsible for conducting audits, inspections and investigations and for receiving and acting on allegations received through the Office of Inspector General.

### **12.7 Evaluate Phase Key Outputs and Outcomes**

The key outputs of the evaluate phase are:

- A completed PIR for all recently completed projects
- A completed OA for all active systems
- An improvement plan for the Department's overall IT CPIC process

The key outcomes of implementing evaluate phase processes are:

- Greater accountability in meeting goals and expectations
- Improved insight into areas of the IT portfolio requiring future investment
- Increased maturity in the Department's IT CPIC process

## APPENDIX A: LIST OF ABBREVIATIONS

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BY	Budget Year
CPIC	Capital Planning and Investment Control
COTS	Commercial Off The Shelf
CY	Current Year
DOE	Department of Energy
EA	Enterprise Architecture
EVM	Earned Value Management
EVMS	Earned Value Management System
FAC-P/PM	Federal Acquisition Certification for Program and Project Managers
GAO	Government Accountability Office
IG	Inspector General
IRB	Investment Review Board
IT	Information Technology
ITIM	Information Technology Information Management
OA	Operational Analysis
OCIO	Office of the Chief Information Officer
OMB	Office of Management and Budget
PBD	Program Budget Decision
PIR	Post Implementation Review
PRM	Performance Reference Model
PSO	Program and Staff Office
PY	Prior Year
ROI	Return on Investment
SDLC	System Development Life Cycle
WBS	Work Breakdown Structure



## APPENDIX B: FEDERAL LEGISLATION, REQUIREMENTS & GUIDANCE FOR INVESTMENT MANAGEMENT

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**Clinger-Cohen Act (CCA) of 1996:** The CCA requires agencies to undertake IT Capital Planning and investment control by establishing a process for maximizing the value and assessing and managing risks of IT acquisitions of the executive agency.

**E-Government Act of 2002:** The Act builds upon the E-Government initiative by ensuring strong leadership of the IT activities of Federal agencies, a comprehensive framework for information security standards and programs, and uniform safeguards to protect the confidentiality of information provided by the public for statistical purposes. The Act also assists in expanding the use of the Internet and computer resources in order to deliver Government services, consistent with the reform principles, outlined on July 10, 2002, for a citizen-centered, results-oriented, and market-based Government.

**Federal Acquisition Streamlining Act (FASA) of 1994:** FASA requires agencies to define the cost, schedule and performance goals for major acquisition programs and to monitor and report annually on the degree to which those goals are being met. Agencies must assess whether acquisition programs are achieving 90% of their cost, schedule and performance goals.

**Federal Acquisition Reform Act (FARA) of 1996:** FARA requires the head of each executive agency, after consultation with the administrator for Federal Procurement Policy, to establish policies and procedures for the effective management (including accession, education, training, career development, and performance incentives) of the acquisition workforce of the agency.

**Federal Information Technology Acquisition Reform Act (FITARA) of 2014:** FITARA aims to assist agencies in establishing management practices that align IT resources with agency missions, goals, programmatic priorities, and statutory requirements, and establish government-wide IT management controls that will meet FITARA requirements while providing agencies with the flexibility to adapt to agency processes and unique mission requirements. Additionally, FITARA establishes a “Common Baseline” for roles, responsibilities, and authorities, and aims to enable the CIO’s role and involvement in IT-related processes.

**Government Performance and Results Act (GPRA) of 1993:** GPRA requires agencies to prepare updateable strategic plans and to prepare annual performance plans covering each program activity displayed in the budget. The performance plans are to establish performance goals in objective, quantifiable and measurable form and performance indicators to be used in measuring relevant outputs, service levels, and outcomes.

**Government Performance and Results Modernization Act of 2010:** GPRMA requires quarterly performance assessments of Government programs for assessing agency performance and improvement, and to establish agency performance improvement officers and the Performance Improvement Council.

**Paperwork Reduction Act (PRA) of 1995:** PRA intends to: minimize the paperwork burden resulting from collection of information by or for the Federal Government; coordinate, integrate and make uniform Federal information resources management policies and practices; improve the quality and use of Federal information to minimize the cost to the government of the creation, collection, maintenance, use, dissemination, and disposition of information; and ensure that IT is acquired, used, and managed to improve efficiency and effectiveness of agency missions.

**Chief Financial Officers’ Act (CFOA) of 1990:** CFOA establishes the foundation for effective financial management, including requiring agencies to develop and effectively operate and maintain financial

management systems. The Act focuses on the need to significantly improve the financial management and reporting practices of the Federal government. Having accurate financial data is critical to understanding the costs and assessing the returns on IT investments. Under the Act, CFOs are responsible for developing and maintaining integrated accounting and financial management systems that include systematic measurement information on agency performance.

**Section 508 of the Americans with Disability Act (Section 508)**: In 1998, Congress amended the Rehabilitation Act to require Federal agencies to make their IT and electronic technology accessible to people with disabilities. Section 508 will eliminate barriers in IT, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals. The law applies to all Federal agencies when they develop, procure, maintain, or use IT and electronic technology. Under Section 508 (29 U.S.C. § 794d), agencies must give disabled employees and members of the public access to information that is comparable to the access available to others.

**Capital Programming Guide (updated annually, and is contained in OMB Circular A-11)**: The purpose of the Guide is to provide guidance to professionals in the Federal Government for a disciplined capital programming process, as well as techniques for planning and budgeting, acquisition, and management and disposition of capital assets. At the same time, agencies are provided flexibility in how they implement the key principles and concepts discussed. The guidance integrates the various Administration and statutory asset management initiatives (including Government Performance and Results Act (Pub. L. No. 103–62), the CCA (Divisions D and E of Pub. L. No. 104–106, the FARA and FITARA, as amended; popularly known as the CCA), Federal Acquisition Streamlining Act of 1994 (Pub. L. No. 103–355), and others) into a single, integrated capital programming process to ensure that capital assets successfully contribute to the achievement of agency strategic goals and objectives.

**OMB Circular A-11, Part 2: Preparation and Submission of Budget Estimates**: Part 2 covers development of the President’s Budget and tells how to prepare and submit materials required for OMB and Presidential review of agency requests and for formulation of the fiscal year budgets, including development and submission of performance budgets for each fiscal year. A significant portion of this part focuses on the preparation of the budget appendix and the related database. Detailed instructions for a number of requirements not directly related to the preparation and production of the budget are accessible through electronic links that are provided in section 25 of A-11.

**OMB Circular A-11, Part 3: Selected Actions Following Transmittal of the Budget**: Part 3 discusses supplementals and amendments, deferrals, and Presidential proposals to rescind or cancel funds, and investments.

**OMB Circular A-130: Management of Federal Information Resources**: OMB A-130 provides information resource management policies on Federal Information Management/Information Technology (IM/IT) resources required by the PRA of 1980, as amended.

**OMB Memorandum M-97-02: Funding Information System Investments**: M-97-02 contains eight decision criteria commonly referred to as Raines Rules, which OMB will use to evaluate Major information system investments.

**Executive Order 13011, Federal Information Technology**: Executive Order 13011 highlights the need for agencies to significantly improve the management of their information systems, including the acquisition of IT, by implementing the relevant provisions of PRA, the CCA, and GPRA. Agencies are to refocus their IT management to directly support their strategic missions, implement an investment review process that drives budget formulation and execution for information systems, and rethink and restructure the way they perform their functions before investing in IT to support that work. Agency

heads are to strengthen the quality and decisions of employing information resources to meet mission needs through integrated analysis, planning, budgeting, and evaluation processes.

## APPENDIX C: REPORTING REQUIREMENTS BY INVESTMENT TYPE

Transparency Requirement	Frequency in Reporting	Major	Non-Major	IT Security and Compliance
<b>General Information</b>				
Investment Type	Semi-Annual	Yes	Yes	Yes
Major Mission Area	Semi-Annual	Yes	Yes	Yes
Investment Detail	Semi-Annual	Yes	No	Yes
<b>Budget Data (PY/CY/BY):</b>				
Development Modernization and Enhancement (DME)	Semi-Annual	Yes	Yes	
Operations and Maintenance (O&M)	Semi-Annual	Yes	Yes	
<b>Business Reference Model (BRM) Service Area</b>				
Primary	Semi-Annual	Yes	Yes	
<b>Cloud Data Information</b>				
Evaluation	Semi-Annual	Yes	Yes	
Spending	Semi-Annual	Yes	Yes	
<b>Contracts Data</b>				
	Monthly - as appropriate	Yes	No	
<b>Projects/Project Activities:</b>				
Cost	Monthly	Yes	No	
Schedule	Monthly	Yes	No	
Variance Analysis	Monthly	Yes	No	
<b>Operational Performance Metrics:</b>				
Customer Satisfaction Results	Monthly	Yes	No	
Strategic and Business Results	Monthly	Yes	No	
Financial Performance	Monthly	Yes	No	
<b>Project Risks</b>				
	Monthly - as appropriate	Yes	No	
<b>IT Security Costs &amp; Capabilities</b>				
	Annual	No	No	Yes
<b>investment Artifacts:</b>				
Charter	Annual	Yes	No	
Alternative Analysis	Annual	Yes	No	
Post Implementation Review Results	Annual	Yes	No	
Operational Analysis	Annual	Yes	No	
Risk Management Plan	Annual	Yes	No	
Rebaseline Approvals	Annual	Yes	No	

## APPENDIX D: IT INVESTMENT SELECT SCORING CRITERIA TEMPLATE

### Example Scoring Criteria

VALUE CRITERIA	SCORING			SCORE
	1	3	5	
Mandatory Requirement	Initiative is not mandatory	Initiative strongly suggested in law or regulation	Initiative specifically required by law or regulation	
Alignment to Mission, Goals, and Objectives	<p>The initiative does not map to any mission, goal, or objective</p> <p>-OR-</p> <p>The initiative supports the Department's (or sub-organization) mission, goals, and objectives but no documentation exists that clearly demonstrates the strategic alignment</p>	Explicit documentation clearly maps the initiative to missions, goals, and objectives identified in the DOE Strategic Plan, the DOE IRM Strategic Plan, and sub-organization documents (if applicable)	<p>Explicit documentation clearly maps the initiative to missions, goals, and objectives identified in the DOE Strategic Plan, the DOE IRM Strategic Plan, and sub-organization documents (if applicable)</p> <p>-AND-</p> <p>Accomplishment of Departmental (or sub-organization) mission, goals, and objectives is highly dependent on the initiative</p>	
Process Improvement	The initiative does/will <u>not</u> assist or generate process improvements	The initiative does/will assist or generate a process improvement within a Program or Field Office only	The initiative does/will assist or generate a process improvement within the entire Department	
Consequences of Not Doing the Initiative	<p>Business can continue and goals met without doing anything</p> <p>-OR-</p> <p>For on-going initiatives: If the initiative were discontinued, no adverse impacts would occur</p>	<p>Business processes can continue but may not be able to meet performance goals</p> <p>-AND-</p> <p>No viable alternatives exist that can achieve the same results for less risk or cost</p>	<p>Current business operations cannot continue unless this initiative is undertaken</p> <p>-AND-</p> <p>No viable alternatives exist that can achieve the same results for less risk or cost</p> <p>-AND-</p> <p>Delaying the initiative will result in significantly higher costs in the future</p>	

VALUE CRITERIA	SCORING			SCORE
	1	3	5	
Impact on Internal and/or External Customers	The initiative has/will not significantly improve services to internal and/or external customers	The initiative has/will significantly improve services to internal and/or external customers and is clearly documented	The initiative has/will significantly improve services to internal and/or external customers and is clearly documented  -AND-  Failure to fulfill the customer's requirements will result in multiple adverse impacts for the customer	
Scope of Beneficiaries	The initiative does/will support a single Departmental function and/or organization	The initiative does/will support multiple Department functions and/or organizations	The initiative does/will support multiple government agencies or Departments	
Payback Period	Investment will not be recovered within the economic life span of the project	Investment will be recovered within the first half of the economic life span of the project	Investment will be recovered within the first quarter of the economic life span of the project	
Duplication	The investment duplicates many known investments	The investment duplicates some known investments	The investment is not known to duplicate any investments	
<b>TOTAL SCORE</b>				

RISK CRITERIA	SCORING			SCORE
	1	3	5	
History of Success	Developer has failed to deliver a Major initiative in past 3 years  -OR-  Development responsibilities are unclear	Developer has not failed to deliver a Major initiative in the past 3 years  -AND-  Development responsibilities are clear	Developer has no history of failures, delays, or quality problems in past 3 years  -AND-  Development responsibilities are clear and documented	
Alignment with EA and Standards	The initiative is not compatible with architecture principles, practices, and procedures  -OR-  The initiative's compatibility has not been addressed	The initiative is consistent with EA principles, practices, and procedures  -AND-  The initiative is consistent with information, applications, data, and technology baselines  -AND-  The initiative uses standard software and hardware	The initiative is consistent with EA principles, practices, and procedures  -AND-  The initiative is consistent with information, applications, data, and technology baselines  -AND-  The initiative uses standard software and hardware  -AND-  Configuration management and change control procedures have been addressed and are documented  -AND-  The initiative incorporates the following attributes to the greatest degree possible: scalability, portability, adaptability, accessibility, and vertical utility	

RISK CRITERIA	SCORING			SCORE
	1	3	5	
Initiative Ownership and Endorsement	<p>Roles and responsibilities for initiative design, development, and deployment have not been documented</p> <p>-OR-</p> <p>Initiative ownership is unclear</p> <p>-OR-</p> <p>User Community input has not been collected or documented</p>	<p>Roles and responsibilities for initiative design, development, and deployment have been documented</p> <p>-AND-</p> <p>The overall initiative “owner” is the Functional Lead</p> <p>-AND-</p> <p>User Community endorsement is expected but not yet documented</p>	<p>Roles and responsibilities for initiative design, development, and deployment have been documented</p> <p>-AND-</p> <p>The overall initiative “owner” is the Functional Lead</p> <p>-AND-</p> <p>The User Community has been surveyed and endorses the initiative</p>	
Security	<p>Access controls are not adequate or there are no redundant edits or audit trails to protect against corruption or transactions. If important decisions are being made from the data, procedures for validating the data may not be fully adequate. The initiative is sensitive and accessible via the Internet and to vendors or customers outside the Department.</p>	<p>Adequate security measures have been/will be designed into the initiative to restrict access to sensitive data. Important decisions are made from this initiative but there are adequate procedures to validate results. The initiative is sensitive but is accessible only to internal Department customers.</p> <p>-OR-</p> <p>The initiative is not sensitive, important decisions will not be made based on its information, it is not accessible via the Internet to customers outside DOE, and adequate security measures are in place.</p>	<p>Adequate security measures are in place or being developed to restrict access to sensitive information or functions; there are redundant edits and/or audit trail mechanisms to protect against corruption of transactions prior to receipt; results are validated before the decisions are made.</p> <p>-OR-</p> <p>The initiative is not sensitive, important decisions will not be made based on its information, it is not accessible via the Internet to customers outside DOE, and adequate security measures are in place.</p>	



RISK CRITERIA	SCORING			SCORE
	1	3	5	
Schedule Risk	<p>Factors on the initiative's critical path may impact this year's schedule by 30% or more</p> <p>-OR-</p> <p>The initiative's impact depends significantly on another initiative still needing completion</p>	<p>Factors on the initiative's critical path may impact this year's schedule by no more than 10%</p> <p>-OR-</p> <p>The initiative's impact depends on another initiative still needing completion</p> <p>-AND-</p> <p>Risk mitigation actions have been identified</p>	<p>For the next year, there are no predicted or foreseen adverse impacts on the initiative's schedule</p> <p>-AND-</p> <p>There are no major interfaces with other initiatives or systems</p>	
Cost Sensitivity	<p>The cost estimate is highly dependent upon uncontrolled variables (e.g., availability of external funding sources, changes in component pricing or maintenance contracts) and is therefore subject to significant change (&gt;10%)</p>	<p>Situations may arise that may cause this year's costs to vary by no more than 10% of estimates</p>	<p>Measures to identify in a timely manner and reduce variances between the actual cost of work performed and the budgeted cost of work performed are clearly documented</p> <p>-AND-</p> <p>Cost estimates are not significantly dependent upon identifiable uncontrolled variables</p>	

RISK CRITERIA	SCORING			SCORE
	1	3	5	
Performance Measures	Specific performance measures for supported functions are unknown or not formally documented  -OR- Performance targets for the initiative are not documented	Specific performance measures for <u>some</u> supported functions are formally documented  -AND- Specific performance targets for the initiative are defined in terms of supported functions measures	Specific performance measures for <u>all</u> supported functions are formally documented  -AND- Specific performance targets for the initiative are defined in terms of supported functions measures	
TOTAL SCORE				

### Example Scoring Methodology

A typical scoring methodology would calculate an average score based on the above criteria. One score is calculated for each Value and each Risk. The average for the above criteria would be as follows:

Sum of scores for each criterion in the section/Total number of scored criteria (if all scored, then 7)

Based on the 1, 3, 5 scoring values, the below would indicate the quality of a given score.

Green: Score greater than 3.5;

Yellow: Score between 2.5 and 3.5, inclusive;

Red: Score less than 2.5

For example, if the total sum of the criterion scores is 21, and the total number of criteria used is 7, then the score would be a 3 or yellow (21/7=3).