

Appendix B

NRC Management Directive 2.2

“Capital Planning and Investment Control”



U.S. NUCLEAR REGULATORY COMMISSION

DIRECTIVE TRANSMITTAL

TN: DT-99-13

To: NRC Management Directives Custodians

Subject: Transmittal of Directive 2.2, "Capital Planning and Investment Control"

Purpose: Directive and Handbook 2.2 are being issued to establish and implement a capital planning and investment control process for evaluating information technology projects in accordance with the Clinger-Cohen Act.

Office and Division of Origin: Office of the Chief Information Officer

Contact: John Sullivan, 415-5857

Date Approved: Approved: May 27, 1999

Volume: 2 Information Technology

Directive: 2.2, "Capital Planning and Investment Control"

Availability: Rules and Directives Branch
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Capital Planning and Investment Control

Directive 2.2

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U. S. Nuclear Regulatory Commission

Volume: 2 Information Technology

CIO

Capital Planning and Investment Control Directive 2.2

Policy

(2.2-01)

It is the policy of the U.S. Nuclear Regulatory Commission to ensure that information resource investments are planned, selected, managed, and evaluated to maximize the value and minimize the risks of those investments, in accordance with Federal statutes and regulations.

Objectives

(2.2-02)

- Ensure that NRC's information technology (IT) investments are aligned with its mission and strategic goals and make measurable improvements to the performance of NRC's mission and supporting administrative functions. (021)
- Ensure that NRC has an IT capital planning and investment control process that maximizes the value and assesses and manages the risk of information technology investments. (022)
- Ensure that NRC's planning and budgeting process for information resources is integrated with the NRC's overall planning, budgeting, and performance management process. (023)
- Ensure that NRC work processes are benchmarked against best practices and are redesigned, where appropriate, before making significant investments in applications or systems to automate those processes. (024)
- Promote accountability of program officials for the information resource investments that support their programs. (025)

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**Executive Council
(033) (continued)**

- Reviews and approves the business case for IT projects with a project cost equal to or greater than \$500,000. (c)
- Reviews *major* IT projects that are at risk for a significant variation from their approved cost, schedule, or performance goals. Decides whether or not to continue, modify, or terminate such projects. (d)

**Chief Financial Officer (CFO)
(034)**

- Coordinates financial systems plans, including the Five-Year Financial Management Systems Plan, with the Chief Information Officer (CIO) to ensure consistency with overall agency IT plans and architectures. (a)
- Seeks the advice of the CIO on information resource planning and budget issues to ensure that proposed expenditures are compatible with agency information resources management (IRM) plans and architectures. (b)
- Obtains CIO approval of IRM-related portions of agency OMB and congressional submittals. (c)

**Chief Information Officer (CIO)
(035)**

- As delegated by the Chairman, and in coordination with the other members of NRC's Executive Council, develops and implements agencywide IRM planning, budgeting, and investment control policies, processes, and procedures that support NRC's mission and meet the requirements of Federal statutes and regulations. (a)
- Develops and recommends goals, strategies, and performance measures for improving agency effectiveness and efficiency through the use of information technology. (b)
- Prepares integrated agencywide IRM plans and related OMB and congressional submittals, ensuring that such plans support the NRC Strategic Plan. (c)
- Approves OMB and congressional submittals related to IRM. (d)
- Reviews and approves the business case for all IT projects, referring those with a project cost equal to or greater than \$500,000 to the Executive Council for review and approval. (e)

**Office Directors and
Regional Administrators**
(036)

- Submit information on office or regional IT projects, needs, and plans to the CIO in accordance with Handbook 2.2 or as requested to support agencywide IRM planning, budgeting, and investment control. (a)
- Submit information on the progress and results of IT projects sponsored by their office or region to the CIO or Executive Council, as appropriate, in accordance with Handbook 2.2. (b)
- Benchmark NRC mission-related processes and administrative processes against best practices, and revise them, where appropriate, before proposing investments in IT that support those processes. (c)
- Coordinate proposed projects with the Office of the CIO (OCIO) to ensure that such projects conform with agency IT architectures and standards, are compatible with the IT infrastructure, are integrated with related projects, and do not duplicate existing data and applications. (d)
- Manage IT projects sponsored by their office or region to avoid significant deviations in the cost, schedule, and performance goals established for such projects. (e)
- Participate in IT investment planning and oversight through representation on senior agency review or advisory bodies. (f)

Applicability
(2.2-04)

The policy and guidance in this directive and handbook apply to all NRC employees involved in IT planning, budgeting, and project management.

Handbook
(2.2-05)

Handbook 2.2 describes the process and procedures for planning and controlling information technology investments and provides other sources of information.

Definitions

(2.2-06) (continued)

Life cycle cost. For purposes of the CPIC analysis, life cycle cost is the project cost (see definition below) plus 5 years of operations and maintenance costs. These costs do not include the pre-project or planning costs, which are considered “sunk” or spent.

Major IT investment. An NRC IT investment that requires special management attention because of its cost, risk, or critical importance to the NRC mission or because of its significant role in the administration of NRC programs, finances, property, or other resources. *Major* projects are reported to OMB.

Major modification to an application system. Changes to an existing application system, hardware or software, that go far beyond slight adjustments to the functionality. Adjustments including significant equipment and/or hardware changes or many data elements, reports, queries and process changes would be considered major. Adding, deleting or changing a few data elements or a few reports/queries would be considered a minor enhancement or maintenance.

NRC information. Information created, collected, processed, disseminated, maintained, used, or disposed of by the NRC.

Performance measures. Quantifiable goals and results that define intended and actual performance of an application system throughout its life cycle. Typical performance measures rate application system aspects such as technical quality, user satisfaction, and return on investment.

Project phase. An IT investment proposal becomes a project when its functional requirements are identified and it has been approved to proceed and is funded with a project team in place and a project workplan defined. It remains a project until all work is completed and the system is an installed operational system.

Project cost. Cost incurred during the project phase, including costs incurred by support offices and full time equivalents (FTEs) as well as costs to ensure business continuity, as appropriate. Project cost differs from Life Cycle Cost, which includes operations and maintenance.

Capital Planning and Investment Control

Handbook 2.2

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Capital Planning and Investment Control

The process and procedures for conforming with the Clinger/Cohen Act of 1996, which requires each agency head to design and implement a capital planning and investment control (CPIC) process, are described in this handbook.

Applicability

Most proposed information technology (IT) projects are subject to the new CPIC process. Projects covered include new application systems, major modifications to existing applications systems, and modifications to local and agencywide IT infrastructure. IT expenditures or projects not covered include single user, personal productivity applications, scientific codes, high performance computing equipment, and ongoing maintenance and operations.

Minor applications or enhancements that total an amount below the agency's software capitalization threshold also are exempt from the CPIC process. Enhancements that exceed the software capitalization threshold will be examined on a case-by-case basis.*

Process

SECY-98-032, Revised Process for Information Technology Capital Planning and Investment Control, describes the CPIC process that was approved by the Executive Council and provided to the Commission for information. SECY-98-032 is available at NRC Web site at <http://irm12.nrc.gov/OCIO/>. The agency's CPIC process covers the three phases in the life cycle of an IT investment:

- Selection or planning phase
- Control or project phase
- Evaluation or operations phase

*See Office of Chief Financial Officer's Accounting Policy Manual, Chapter 7. At the time of the initial approval of this manual chapter (March 1999), the threshold was \$50,000.

Process (continued)

Selection Phase (A) (continued)

Screening Form Review for Projects Less Than \$500,000 (3) (continued)

- Within 1-1/2 weeks of receipt of the sponsor's memorandum, OCIO requests additional information and/or a meeting with the sponsor's contact, if necessary.
- Within 2 weeks of receipt of the sponsor's memorandum, OCIO informs the sponsor's contact as to whether or not a revised screening form is necessary.
- Within 4 weeks of PAB's receipt of the sponsor's memorandum (or 2 weeks of receipt of a revised screening form), OCIO completes a decision memorandum from the CIO to the sponsor.
- Within 4-1/2 weeks of receipt of the sponsor's memorandum, the CIO sends a decision memorandum to the sponsor.

Screening Form Review for Projects Greater Than or Equal to \$500,000 (4)

This process includes the following actions:

- The CIO transmits the received memorandum and screening form to the Director, PRMD.
- The Director, PRMD, assigns review action to PAB.
- Within 1 week of receipt of sponsor's memorandum, PAB notifies the sponsor's contact (listed on the screening form) that the form has been received and the project is, or is not, a candidate for ITBC review and circulates the form to the appropriate OCIO divisions for comment and review.
- Within 1 week of receipt of the sponsor's memorandum, PAB schedules an ITBC meeting to be held within 3 weeks (or as soon thereafter as the members' schedules permit).
- Within 1-1/2 weeks of receipt of the sponsor's memorandum, OCIO requests additional information and/or a meeting with the sponsor's contact, if necessary.
- Within 2 weeks of receipt of the sponsor's memorandum, OCIO informs the sponsor's contact as to whether or not a revised screening form is necessary.

Process (continued)

Selection Phase (A) (continued)

Approval To Begin Business Case Preparation (6) (continued)

Offices and regions may budget seed money for building a business case and also may request funds for proposed projects, provided that the CIO or the ITBC have approved the associated screening form in accordance with the CPIC process. Funds will not be released for use until a project is approved via the CPIC process (i.e., the proposed project's business case has been approved). The use of these budget "wedges" is recommended only for large IT projects that require long-range planning and cannot be accommodated through office or agency reprogramming.

Purpose of the Business Case (7)

The business case provides the justification for developing the project. At the completion of the business case preparation, the project scope, cost, and schedule shall be defined in sufficient detail to allow the sponsor to manage the project within 5 percent of the projected cost and schedule. After a project for which the estimated cost is greater than or equal to \$500,000 enters the project phase, the sponsor cannot commit additional funds in excess of 5 percent of the estimate without approval from the Executive Council. After a project for which the estimated cost is less than \$500,000 enters the control phase, the sponsor cannot commit funds in excess of 5 percent of the estimate without approval from the CIO.

Note: Sponsors are strongly encouraged to review Section 3.1, Business Case Issues, of the IT Project Proposal Screening Form before preparing the business case.

Content/Products of the Business Case (8)

The following three elements must be addressed and documented in the business case: requirements identification and definition, cost/benefit/risk analysis of alternatives, and the project management plan (PMP). A synopsis of the three business case elements is provided as a checklist in Exhibit 2 of this handbook.

An abbreviated business case may be prepared for projects estimated to cost less than \$500,000. An abbreviated business case contains the same elements as a standard business case, although in less detail as appropriate to the size of the proposed investment. Additionally, an abbreviated business case may limit the analysis of alternatives to comparing the proposed investment with the status quo, while the standard business case requires comparison of the proposed investment to the status quo and at least one other alternative.

Process (continued)

Selection Phase (A) (continued)

Content/Products of the Business Case (8) (continued)

Requirements Identification and Definition (a) (continued)

Life-Cycle Management (SDLCM) Methodology.* For simple systems or those that are similar to an existing one, completion of SDLCM Component 1 (plus a high-level identification and definition of application or system requirements and functions) may provide enough information concerning the requirements to complete the other two elements of the business case (the cost/benefit/risk analysis and PMP). For more complex systems or those with many interfaces, interdependences, or shared data with other systems, a more detailed analysis may be required. The latter cases may require that some or all of SDLCM Component 3 be completed in order to prepare an adequate business case. As a minimum, these latter cases will require the completion of the SDLCM Project Definition and Analysis Document (see SDLCM Standard S-3051).

Requirements information generated must be sufficient to allow OCIO to assess the infrastructure impact and the need for data sharing and integration with other application systems.

Requirements should be firm and not likely to change during the project. If requirements change significantly, it is very unlikely that the project can be completed within budget and on schedule.

Cost/Benefit/Risk Analysis (b)

This document is the primary basis for judging the business case or justifying the proposed project. The length and depth of the cost/benefit/risk analysis should be commensurate with the estimated cost of the investment. Generally, the summary analysis will be a brief document, perhaps 2 to 6 pages. Documents and working papers supporting the summary document should be retained by the sponsor. Detailed guidance for performing a cost/benefit/risk analysis is available from PAB.**

*Systems Development and Life-Cycle Management (SDLCM) Methodology, Handbook Version 2.1, September 1998, OCIO.

**Guidelines for Conducting Benefit-Cost Analysis of Information Technology Projects, December 3, 1996.

Process (continued)

Selection Phase (A) (continued)

Content/Products of the Business Case (8) (continued)

Cost/Benefit/Risk Analysis (b) (continued)

Examples of completed cost/benefit/risk analysis are available from PAB.

Costs (including FTEs) of development (i.e., the project phase) should be highlighted and presented separately from recurring costs. For purposes of comparing alternatives, the sponsor must estimate the life cycle costs (project or non-recurring plus operations phase or recurring costs) on the basis of 5 years of operations. Summary costs can be presented in the cost/benefit/risk analysis. However, detailed cost tables should be submitted as appendices to the business case. Examples of detailed cost tables are available from PAB.

If possible, expected or anticipated benefits should be presented in quantitative terms.

Benefits that are qualitative or that cannot be meaningfully quantified also should be presented.

Project Management Plan (c)

This document is the basis for judging the readiness of the sponsor to successfully execute the proposed project. The length and depth of the PMP should be commensurate with the estimated cost of the proposed investment. The schedule in the PMP, together with estimated costs presented in the costs/benefit/risk analysis, is the basis of a contract between the sponsor and NRC management.

As a minimum, the following should be included in the PMP, in which all elements refer to the solution/alternative recommended in the cost/benefit/risk analysis:

- A project schedule identifying project activities, milestones, and deliverables
- A spending plan that projects monthly resource expenditures for the project
- A staffing plan identifying the NRC members (by organization) of the project team and the timeframe that will be needed
- Two to five measurable, outcome-oriented performance goals that will be used to evaluate the success of the project during the operating phase (The basis for these goals should be the expected benefits and return on investment documented in the cost/benefit/risk analysis.)

Process (continued)

Selection Phase (A) (continued)

Business Case Review (10)

The sponsor will submit the complete business case package to the CIO via transmittal memorandum. The CIO provides the package to the Director, PRMD, who distributes it to the other OCIO divisions for review, and if appropriate, to the secretary of the ITBC. The procedures for ITBC review of the business case package are similar to those for ITBC review of the screening form identified in Section (A)(3) and (4) above. However, the ITBC will have a minimum of 2 weeks to review materials before the meeting to vote on the project.

Focus of OCIO Technical Review of the Business Case Package (a)

OCIO review of a proposed IT investment business case will primarily focus on conformance with data and systems architectures, standards, costing, timing, systems integration, technology selection, redundancy, infrastructure, and project management. OCIO review also will ensure that business process optimization and overlapping requirements are addressed by the sponsor before approval of the IT project.

Focus of ITBC Review of the Business Case Package (b)

ITBC review of a proposed IT investment business case will primarily focus on the goals listed below. **Note:** The CIO performs this review for projects of less than \$500,000.

- Avoiding risk, maximizing return on investment
- Minimizing duplication
- Maximizing integration
- Promoting benchmarking and process redesign before automation
- Ensuring agencywide perspective

Project Approval for Projects Less than \$500,000 (c)

If the CIO approves the CPIC analysis and alternative recommended and concludes that the business case provides justification for the proposed project, the proposed project enters the normal budget process.

Process (continued)

Project Phase (B) (continued)

Reporting Requirements of the Project Phase (1) (continued)

Sponsors of projects with estimated costs greater than or equal to \$500,000 in the variance category must explain to the EC the issues involved in causing the expected overrun, request EC approval to continue, and request additional funds from the CFO before the cost or schedule overrun occurs.

Projects estimated to cost less than \$500,000 require—

- Report to OCIO if 5 percent variance in cost or schedule is anticipated
- Brief report to OCIO when project is completed

Sponsors of projects estimated to cost less than \$500,000 in the variance category must ask the CIO for approval to continue, pending additional funds being made available by the sponsoring office, before the cost or schedule overrun occurs. These projects will be stopped pending the consideration of the need for an indepth cost/benefit/risk analysis if the variance would put them over the \$500,000 threshold.

Other Requirements of the Project Phase (2)

All projects must include development of a security plan, and if appropriate, a business continuity plan. These plans must be prepared as part of the development effort and must be implemented at the beginning of the operations phase.*

Operations/Evaluation Phase (C)

Six months after the system becomes operational, the sponsoring office prepares a lessons-learned paper and submits it to the CIO. The sponsor may request an extension of up to an additional 6 months if the sponsor believes that it would contribute to the quality of the analysis. (For *major* projects, copies of the paper also will be sent to other EC members.) The paper should address the following questions:

- How did the project execution and results compare with the baseline cost, staffing, schedule, and performance goals?
- If performance goals were not met, what modifications to the project are now warranted to obtain the originally projected benefits?

*NRC Management Directive 12.5, "NRC Automated Information Systems Security Program."

Exhibit 1
Memorandum of June 12, 1998

MEMORANDUM TO: Those on the Attached List

FROM: A.J. Galante
Chief Information Officer

SUBJECT: NEW PROCESS FOR APPROVING PROPOSED INFORMATION
TECHNOLOGY PROJECTS

The Clinger-Cohen Act (formerly the Information Technology Management Reform Act or ITMRA) of 1996 required each Federal agency head to design and implement a Capital Planning and Investment Control (CPIC) process for evaluating information technology (IT) projects. NRC used a prototype CPIC process during the Fiscal Year (FY) 1999 budget cycle. Experience with the prototype provided a basis for improving the process.

SECY-98-032 describes the new CPIC process which has been approved by the Executive Council (EC) and provided to the Commission for information. SECY-98-032 is available on the World Wide Web (WWW) at the NRC internal home page under Program Offices, Office of the Chief Information Officer (OCIO), Capital Planning and Investment Control Process.

Most proposed IT projects will be subject to the new process (exceptions being single user, personal productivity applications, scientific codes, and high performance computing equipment). Therefore, I recommend that you distribute this memorandum to your staffs to familiarize them with the new process.

The revised process requires more disciplined and structured reviews of proposed IT investments. This additional effort at the front end will help ensure that projects have clear requirements, a sound business case justification, and adequate planning for development and implementation.

Highlights of the new process are provided below. You may also wish to refer to the summary flow chart in Attachment 1.

- Sponsors must submit a short screening form to the OCIO to initiate the screening process. A copy of the form is available on the WWW at the OCIO's home page under CPIC SECY-98-032. (Sponsors of potential projects are encouraged to contact John Sullivan at 301-415-5857 or by e-mail at JAS2 for guidance on completing the form). An important new requirement is that prior to submitting the form, the sponsor should investigate potential ways to improve the efficiency and effectiveness of agency operations and compare them with "best practices" at other agencies. Forms can be submitted at any time, not just during the budget period, and may be submitted electronically.
- Based on the preliminary cost estimate on the screening form, the OCIO determines whether the proposal is screened by the newly created Information Technology Business Council (ITBC) or the OCIO and whether a more in-depth or an abbreviated CPIC analysis is required. Projects estimated to cost less than \$500,000 are screened by the OCIO. Projects estimated to cost \$500,000 or more are screened by the ITBC.

Exhibit 1 (continued)

Attachment 1

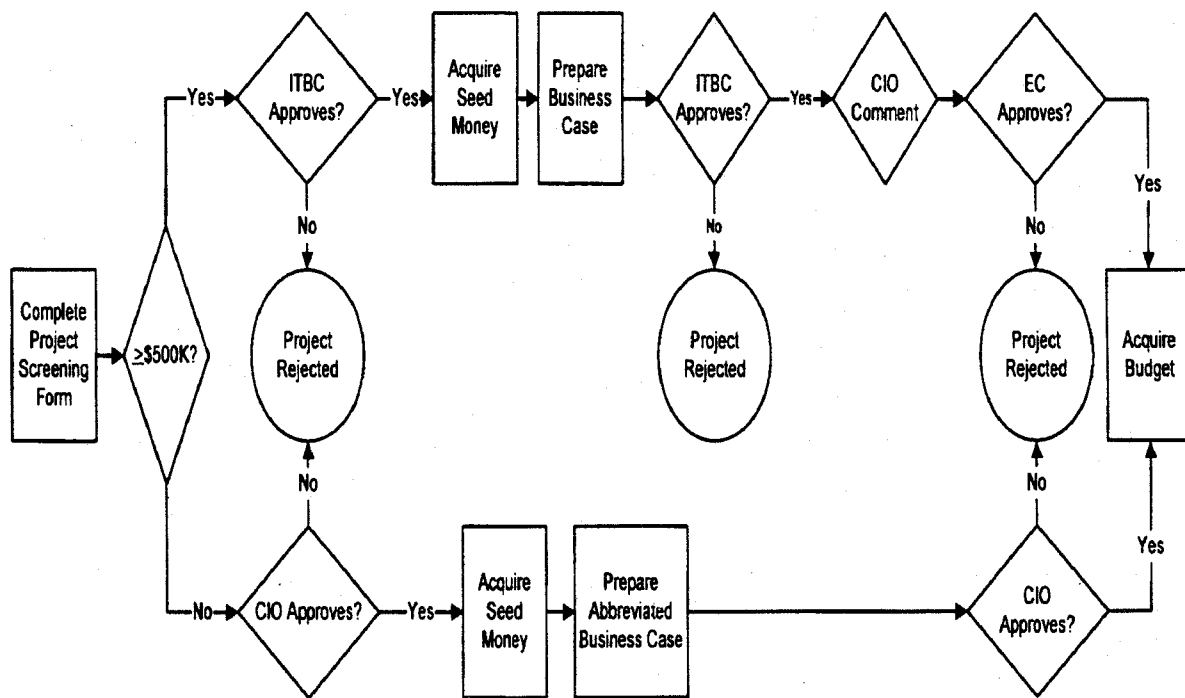


Exhibit 2 (continued)

Appendix B – Cost Estimates. A table for each alternative showing the estimated non-recurring and recurring costs (assuming 5 years of operation) for all cost categories identified below. The tables should be followed by a brief explanation, where needed, to clarify how estimates were made, why values differ between alternatives, etc.

Appendix C – Benefits. A table for each alternative showing the quantitative and non-quantitative benefits over 5 years of operations using the applicable benefit categories identified below. For quantitative benefits, show the quantitative value of the benefit for each alternative. For non-quantitative benefits, rate each alternative (1=high level of benefit, 2=medium level of benefit, or 3= low/no benefit) for the benefit category. The tables should be followed by a definition and description of each benefit type or category and a brief explanation, where needed, to clarify how benefits were estimated, why values differ between alternatives, etc.

Appendix D – Risks. A table showing the risks of each alternatives using the applicable risk categories identified below. Rate each alternative (e.g., 1=high risk, 2=medium risk, or 3=low/no risk) on each category of risk. The table should be followed by a brief explanation, where needed, to clarify how risks were estimated, why values differ between alternatives, etc.

Cost Categories for Appendix B

(Costs and FTEs should include sponsor, stakeholders, and OCIO support, and should be separated into non-recurring (one-time) and recurring categories. Zeros should be entered if there is no estimated cost associated with the element. FTEs should be identified by organization. Costs should include all deliverables required by NRC's SDLCM Methodology.

Non-Recurring cost elements

- Software
- Hardware
- Development/integration
- Customized adaptation of commercial off-the-shelf software (COTS)
- Data conversion
- Testing
- Infrastructure upgrades/impact
- Documentation
- Installation/implementation
- Training
- Travel
- Computer security and business continuity planning and implementation
- Policy/procedures development and implementation

Exhibit 2 (continued)

- A statement as to whether the proposed IT investment would or would not result in shared benefits or costs with other Federal agencies or State or local governments. (If there would be such results, an estimate or description of the benefits or costs should be included with the statement.)
- Acquisition approach

For projects over \$500,000

- A short (1-2 pages) plan explaining how risks will be managed.

For major projects*

- A draft of sponsor's input to Office of Management and Budget, Circular A-11, Exhibit 300B, Section 3

*The memorandum approving initiation of the business case will alert the sponsor if the CIO is likely to recommend to the Commission that the proposed project be designated as a *major* project reportable to OMB.
