



The U.S. Way

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DOE's Definition of Project

Project. In general, a unique effort that supports a program mission, having defined start and end points, undertaken to create a product, facility, or system, and containing interdependent activities planned to meet a common objective or mission. Project types include planning and execution of construction, renovation, modification, line items for maintenance and repair, ER, decontamination and decommissioning efforts, information technology, and large capital equipment or technology development activities. Tasks that do not include the above elements, such as basic research, grants, ordinary repairs, maintenance of facilities, and operations are not considered projects.



Funding Overview

- The US Government funds projects through Departments (DOE) to contractors (Fermilab, ILC).
- A **LINE** in a spending bill authorizes the project funds. The spending bill is passed by congress and signed by the president. The term **LINE ITEM** refers to the project type and spending authority.
- Each year the Line in the spending bill states the projects current baseline and authorizes funds for that Fiscal Year.



The DOE Line Item Process

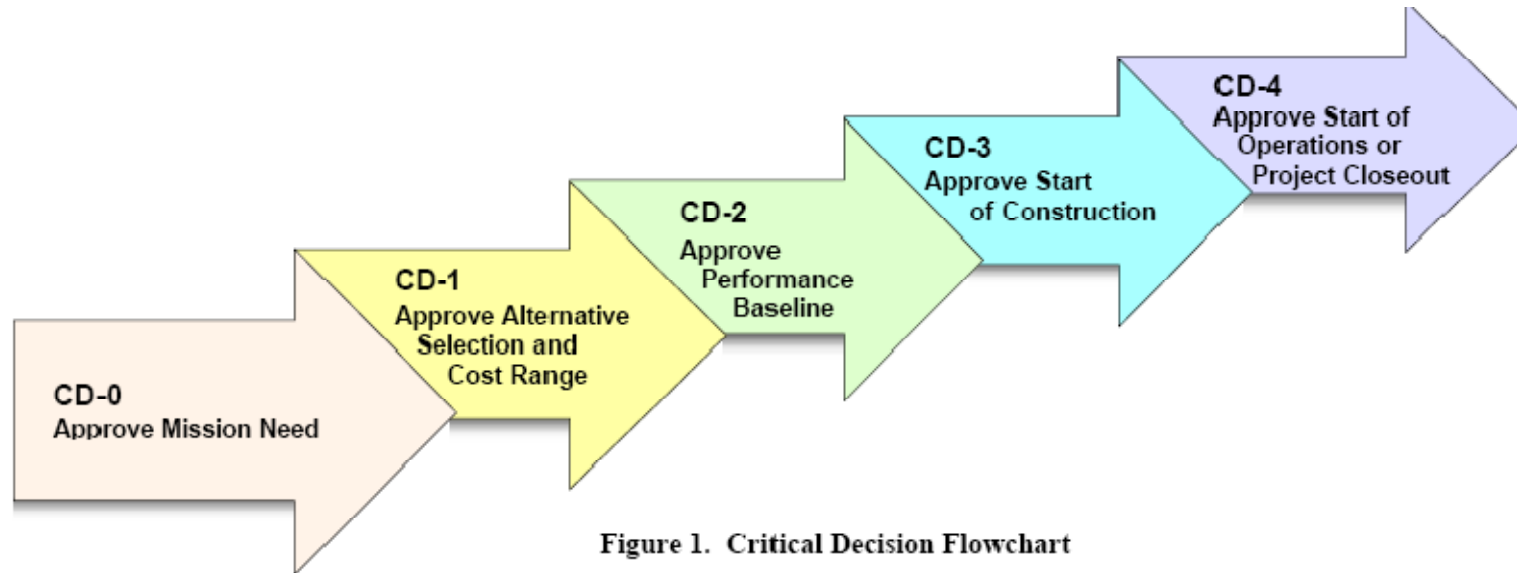


Figure 1. Critical Decision Flowchart

All projects with a Total Project Cost greater than \$5 million shall use the defined Critical Decisions.

- Critical Decision-0, Approve Mission Need
- Critical Decision-1, Approve Alternative Selection and Cost Range
- Critical Decision-2, Approve Performance Baseline
- Critical Decision-3, Approve Start of Construction
- Critical Decision-4, Approve Start of Operations or Project Closeout



Key Terms and Actions

- DOE 413.x Series provides guidance for each requirement
- DOE 413 Follows PMI Guidelines and uses much of PMI's Terminology and Tools.
- While labor intensive and a slow process, the DOE system requires good Project Management Practice.

Key terms used in this chapter include the following.

- Acquisition Strategy
- Conceptual Design Report
- Earned Value Management System
- External Independent Review
- Independent Project Review
- Mission Need Statement
- Performance Baseline
- Project Assessment And Reporting System
- Project Execution Plan
- Risk Management Plan
- Total Estimated Cost
- Total Project Cost



CD-0 (Approve Mission Need)

4.2 Critical Decision-0 Key Milestones/Activities

- Mission Need Statement (MNS)
- Program Requirements Document (PRD)
- Establish Project Team (IPT)
- Preliminary Environmental Strategy
- Technical Organizational Interfaces
- Integration with other projects and activities
- Mission need independent project review if required
- Preliminary Acquisition Strategy
- Preliminary Project data sheet for design with special procurement disclosure
- Minimum technical and functional requirements
- Preacquisition development plan
- TPC and schedule ranges
- Technology development issues.



CD-1 (CDR)

5.1 Critical Decision-1 Key Milestones/Activities

- Define project objectives
- Establish existing facilities baselines
- Establish initial budgets
- Review design alternatives
- Identify project codes, standards, and procedure
- Evaluate alternative site locations
- Establish technical and functional requirements
- Establish project baseline ranges
- Perform safety and operability reviews
- Verify performance criteria
- Perform life cycle cost analysis
- Prepare project Risk Management Plan
- Identify and control interfaces
- Prepare CDR
- Prepare AS
- Source Selection Plan or Business Clearances
- Project Data Sheet for Design (Undersecretary/Administrator validated)
- Preliminary Hazard Analysis Report
- Preliminary PEP
- Design/funding estimate
- Preliminary baseline ranges (cost, schedule)
- Undersecretary/Administrator develops PED funding pool
- Project expectations summary
- Statements of Work for anticipated contractors
- Systems Engineering Management Plan
- Plan of action for those activities to be performed before Critical Decision-1.



CD-2 (Title 1; 30% Design, Start Title 2)

6.2 Critical Decision-2 Key Milestones/Activities

- Review and verify IPT organization and skills and finalize the Team Executive
- Assess the Earned Value Management System
- Initiate performance reporting
- Prepare project data sheet for construction
- Perform a Preliminary Design Review
- Implement trending program
- Develop project specifications, drawings, procurement packages, and construction packages
- Finalize permit requirements
- Approve safety documents (e.g., PSAR)
- Budget and Congressional authorization and appropriations enacted
- Update PEP
- Commit critical equipment, requisitions
- Perform process hazards review
- Project site selection
- Update scope, cost, and schedule (performance) baselines
- Execution Readiness Independent Review
- Mission need verification
- Detailed schedules and cost estimates
- Authority/Responsibility matrix
- Performance metrics
- Staffing plans
- Technical risk analysis report
- Technology development output
- Assess Value Management/Engineering status
- Complete design model
- Conduct ICR/ICE and IPR
- Prepare Critical Decision-2 package
- Conduct technical innovations evaluation.



CD-3 (Title 2 Complete; Start Construction)

7.3 Critical Decision-3 Key Milestones/Activities

- Finalize field support plan
- Review Safety Action Plan
- Perform final design review
- Prepare definitive cost estimate
- Prepare detailed resource-loaded schedule with measurable milestones
- Prepare equipment and material requisitions
- Obtain approval to initiate construction activities
- Complete procurements of materials and equipment
- Perform procurements and construction
- Start systems completion
- Work off punch list items
- Develop Turnover and Startup Plan
- Prepare Operating and Maintenance Manuals
- Execution Readiness External Independent Review.



CD-4 (Construction Complete)

8.3 Critical Decision-4 Key Milestones/Activities

- Startup testing
- Prepare intent to occupy and occupancy checklist
- Initiate document and project closeout process
- Completion of procurement and construction
- Perform systems completion testing
- Verify performance criteria
- Prepare lessons learned report
- Perform readiness self-assessment
- Approve for acceptance
- Prepare and complete as-built drawings, if required
- Verify readiness to initiate operations
- Support DOE's ORR activities, if applicable
- Prepare project completion report
- Complete financial closeout
- Hold satisfaction meeting.



Misc. Topics

- Land Acquisition – Fermilab land was procured by the State of Illinois. What will happen with the ILC is not known by me.
- BCD, RDR precursor to CD-0
- Combination of EDR and Expression of Regional Interest Site Selection close in on CD-1
- The recent past project have tried to be one Critical Decision ahead of the CD being sought. (Completed CD-2 requirements at the CD-1 review)



Misc. Topics

- DOE projects have two project management lines, one in the contractors organization and one in the department.
 - **Semi Annual reviews by contractor**
- Projects are not always structured the same:
 - **Many projects, like the Main Injector include both the Civil Construction and Technical (Accelerator) in a single line item.**
 - **Some projects like the detector halls constructed the civil construction in one line item and the detector in a separate line item or “major equipment funds”.**



Misc. Topics

- There are several science committees that review the project, HPAC, P5. These mainly deal with the science.
- Approval and Funding Delays
 - **DOE and other Government agencies (OMB) approvals are in series. This takes time.**
 - **Continuing Resolution slows Fiscal Year funds**
 - **Chicken & the Egg, Host country want MOU's in place prior to funding approval, in-kind partners want to see host's funding commitment**