

Master EM Project Definition Rating Index - Facility Disposition Definitions

The following definitions describe the criteria required to achieve a maximum rating or maturity value of 5. It should be assumed that maturity values of 1-5 represent a subjective assessment of the quality of definition and/or the degree to which the end-state or maximum criteria have been met, or the product has been completed in accordance with the definition of maturity values.

Rating Element		Criteria for Maximum Rating
COST		
A1	Cost Estimate	A cost estimate has been developed and formally approved by DOE and is the basis for the cost baselines. The cost estimate is a reasonable approximation of Total Project Costs, and covers all phases of the project. The estimate is prepared in accordance with DOE requirements. The estimate bases are fully documented and traceable and supporting backup information has been collected and organized and is available in a central file or location. Major estimate assumptions, especially those affecting major cost drivers, are fully documented and explained. Estimate exclusions or qualifications are clearly documented. Estimated costs are time-phased and escalated using current DOE escalation rates.
A2	Cost Risk/Contingency Analysis	The cost estimate includes contingency allowances developed in accordance with DOE guidance. In addition to any deterministic contingency analyses that may have been developed, a probabilistic risk analysis has been performed. The assumptions, rationale and methodology used to perform the probabilistic analysis are explained. The cost risk analysis builds on and is tied to the Project Risk Management Plan. Risk mitigation costs, if appropriate, have been included in the baseline cost estimate, or addressed by the risk analysis model. Costs related to schedule contingency are also included, as discussed under B-5. The confidence level of the baseline cost estimate is clearly stated and explained. All of the preceding requirements are documented in the project record.
A3	Funding Requirements/Profile	Funding requirements have been defined and the project timeline is in compliance with the DOE budget timeline/process. Required budget documentation, including Project Data Sheets (where required), reflects current project cost and schedule estimates/forecasts. The funding profile is based on quantified resource requirements derived from the cost estimate, time-phased through integration with the project baseline schedule. Resource constraints (personnel, budget authorizations, etc.) have been considered when developing the project schedule, and an iterative process used to correlate the cost estimate, schedule and funding profile. The funding profile is based on full consideration of available or expected budget or funding levels for the project. The impact of any projected funding shortfalls have been assessed and management strategies developed to accommodate those shortfalls have been considered and incorporated in the project plans. All of the preceding requirements are documented in the project record.
A4	Independent Cost Estimate/Schedule Review	In addition to any internal cost and schedule estimate reviews, the cost estimate and schedule have been subjected to an independent review by an organization not directly involved with the project (ICE, EIR, IPR, as required). The independent review has been documented, including the techniques used and type of review performed. The results, findings and recommendations of the independent review have been reconciled with the cost and schedule estimates and cost estimate and schedule changes incorporated.
A5	Life Cycle Cost	The project Life Cycle Costs (LCC) have been rough-order-of-magnitude estimated, including relevant assumptions, bases of estimate, qualifications, and exclusions. LCC includes the estimated cost for government commitments that result from execution of this project, including downstream projects/facilities and eventual disposition of the facilities constructed for this project. The LCC estimate should meet the requirements of Office of Management and Budget directives and DOE Orders and guidance. LCC of competing projects or alternative strategies are estimated and documented on a comparable basis.

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A6	Forecast of Cost at Completion	After the cost baseline is approved and the measurement of actual performance is begun, forecasts of costs at completion (actual costs to-date plus "to-go" costs) are developed and issued at regular intervals. Cost forecasts are developed in accordance with project procedures. Key assumptions supporting the baseline estimate are periodically re-evaluated and the impact of changing assumptions are reflected in the estimates of "to-go" costs. Forecasts are related to the Change Control system and incorporate both approved and pending changes, as appropriate. The forecast of cost at completion is a reasonable projection based on the status of the project and the experience to-date.
A7	Cost Estimate for Next Phase Work Scope	A detailed cost estimate is prepared and approved for costs for the work scope to be accomplished during the next phase of the project (i.e., the efforts needed to successfully complete the prerequisites for the next Critical Decision). Cost estimates are defensible with an appropriate level of supporting detail and documentation.
SCHEDULE		
B1	Project Schedule	A schedule has been developed and approved by DOE, is consistent with regulatory milestones, and is the basis for the Schedule Baseline. The schedule is a reasonable layout of project activities for all phases of the project and is at a level of development expected for the project stage. Project activities are included consistent with the WBS, and the schedule is prepared in accordance with DOE guidance and practices. The schedule is activity-based and includes milestones, reasonable durations and acceptable logic. Lower level schedules are developed and tiered to support the baseline schedule and/or Project Master Schedule. Project-specific conditions are included. Assumptions are defined. An appropriate method of developing the schedule is used including an acceptable software package when applicable.
B2	Major Milestones	Milestones are included at each level of the project schedule to establish a baseline and indicate significant progress against the work to be completed. Stakeholder and regulatory milestones are included as appropriate. Milestones are tiered to support project decisions, performance, approvals, etc. A milestone dictionary is provided which defines the requirements for successful completion. An appropriate number of milestones is included to control the project.
B3	Resource Loading	The schedule is resource loaded, considers critical resources, and is consistent with the funding profile. The resource loading is documented, and is reasonable considering such elements as ramp-up, lead times, constraints, etc.
B4	Critical Path Management	A Critical Path is defined. Near-Critical Path activities are identified and sensitivity analyses have been conducted. Schedule management practices are properly focused on Critical Path and Near-Critical Path activities.
B5	Schedule Risk/Contingency Analysis	A risk assessment has been conducted on the baseline schedule, and appropriate contingency added as required. Assumptions, rationale, and methodology, used in the analysis are documented.
B6	Forecast of Schedule Completion	After the schedule baseline has been approved, and the measurement of actual performance has begun, forecasts of completion dates are developed and issued at regular intervals in addition to presentations of schedule progress. Schedule forecasts reflect actual performance to date, and projections. Forecasts are related to the Change Control system and incorporate both approved and pending changes.

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B7	Schedule for Next Phase Work Scope	A detailed schedule is prepared and approved for activities to be accomplished during the next phase of the project (i.e., the efforts needed to successfully complete the prerequisites for the next critical decision). The schedule is defensible with an appropriate level of supporting detail and documentation.
SCOPE/TECHNICAL		
C1	Alternatives Analysis/End State	Major alternatives have been identified and viable alternatives have been analyzed. Alternative Analysis includes comparisons of LCC, Feasibility (including Technology Development requirements), Stakeholder Values, Safety, Regulatory Compliance, and other factors as appropriate. The preferred option(s) is identified and justified. The intended overall condition and status of the facility at project completion (end state) is established.
C2	Waste Characterization/Assess Current Situation	Waste and materials (if present) sufficiently characterized to identify appropriate disposition alternatives. Soil samples taken and evaluated to identify presence of any hazardous substances (both radiological and chemical). Necessary plans and actions have been taken to confirm conditions, prepare documents and perform the discovery action, including resolving surveillance and monitoring activities and safety considerations.
C3	Trade-Off/Optimization Studies	The Trade-Off Studies are performed as needed to reach a reasonable level of project risk consistent with project phase and overall project cost/schedule. These trade-off studies are a part of conceptual and later design phases to optimize the design of the selected alternative. The studies include alternative requirements and controls, and optimization approaches with consideration of technical safety requirements.
C4	End Point Criteria	End Point Criteria have been defined, documented and approved for spaces, systems, materials and wastes, consistent with meeting the established end state for the project.
C5	Functional & Performance Requirements	Project basis developed and reviewed and appropriate level of approval received from users, key stakeholders, site management, and the DOE program office. Basis also subject to peer review by appropriate technical experts in all major disciplines involved in project and resulting comments considered in Design Basis.
C6	Technology Needs Identified	Availability of new technology for project evaluated, including benefits and risks. Technology development requirements for each alternative documented.
C7	Technology Needs Demonstrated	New technology tested and determined to meet project objectives (technical, cost and schedule). Maturity of new technology to be used on project evaluated and factored into risk analysis.
C8	Hazard Analysis	Hazard analysis completed and reflected in final design. Analysis addresses all significant risks (chemical, nuclear/radiological, industrial, etc.) associated with the project as well as the operation of the completed project.
C9	Hazard Classification	Hazard classification defined, completed and approved. Results incorporated in technical baseline.
C10	Safety Documentation	Required nuclear and chemical safety documentation is complete and approved in accordance with DOE Orders. The Safety Analysis required input is completed, and requirements are developed along with the design, and proper considerations for safety envelope are "designed in." Comments are resolved and the results are incorporated into the necessary design documentation in support of Safety Documentation.

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C11	NEPA Documentation	NEPA activities, including NEPA strategy and requirements, completed compliant with DOE Orders, as necessary.														
C12	ES&H Management Planning (including ISMS)	Environmental, safety and health requirements as delineated in Federal, DOE, state, site and local laws and regulations are included in the facility and process design requirements. Any exceptions to ES&H requirements are documented, justified and approved. Integrated Safety Management System (ISMS) implementation fully planned in accordance with DOE Orders. Safety Plans for integrating safety management including fire, occupational, radiological, hygiene, etc., are completed, thorough and an integral part of the disposal effort. The requirements, methodology, and responsibility for various ES&H activities are clearly communicated.														
C13	Safeguards & Security	Security approach and potential requirements documented to aid in development of safeguard and security plan. Safeguard and security requirements identified and documented and incorporated into detailed design drawings and specifications.														
C14	Emergency Preparedness	Specialized issues and considerations for emergency preparedness adequately identified and documented. Emergency Preparedness planning is complete for the disposition effort, and post-disposition emergency planning has been initiated. This planning has been coordinated with site and external response organizations, as appropriate.														
C15	Plot Plan	<p>Preliminary plot plan is complete and shows location of project in relation to adjoining facilities. It should include items such as:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">S Plant grid system with coordinates</td> <td style="width: 50%;">S Green space</td> </tr> <tr> <td>S Unit limits</td> <td>S Buildings</td> </tr> <tr> <td>S Gates and fences</td> <td>S Major pipe racks</td> </tr> <tr> <td>S off-site facilities</td> <td>S Laydown areas</td> </tr> <tr> <td>S Tank farms</td> <td>S Construction/fabrication areas</td> </tr> <tr> <td>S Roads and access ways</td> <td>S Major utilities</td> </tr> <tr> <td>S Rail Facilities</td> <td></td> </tr> </table>	S Plant grid system with coordinates	S Green space	S Unit limits	S Buildings	S Gates and fences	S Major pipe racks	S off-site facilities	S Laydown areas	S Tank farms	S Construction/fabrication areas	S Roads and access ways	S Major utilities	S Rail Facilities	
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C16	Disposition Plans and Procedures	<p>Project strategy addresses critical issues for transitioning from operations to disposition and from one disposition phase to another. At a minimum, the following issues are addressed.</p> <ul style="list-style-type: none"> - Options and alternatives selection - Disposition path for generated and residual radiological and hazardous materials - Interim storage needs - Goal for appropriate reduction of hazards and modification of the safety basis consistent with the project end-state - Identification of needed operational expertise - Project utilities and structural integrity during and post disposition - Integration of disposition tasks for attaining the end-points 														

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C17	Site Characterization (Including Surveys and Soil Tests)	Assessment of site-specific requirements completed. Survey and soil test evaluations of proposed site completed. Investigation and development of site-specific characteristics sufficient to support final design and key assumptions are clearly documented. For example, limited soil borings (or samples) may have been taken. Evaluation and results of investigation characterize the following: S Hydrology S Geology (soil bearing characteristics) S Seismic S Underground obstructions S Environmental contamination
C18	Long Lead/Critical Equipment & Materials List	All engineered equipment and/or materials fully specified, bid, and tabulated as necessary to support project schedule.
C19	Work Package Completion	Completed work package documentation including field instructions and requirements. Back-up files may include engineering files, trade-offs, calculations, etc.
C20	Interface Planning and Control	System interfaces (consistent with System Design Descriptions) have been identified and defined, and, if necessary, an Interface Control Plan has been completed, approved and implemented.
C21	Loading/Unloading/Storage Requirements	List of requirements identifying raw materials to be unloaded and stored (e.g., storage requirements for generated wastes, products to be loaded along with their specifications, and Material Safety Data Sheets created; cranes, remote handling equipment, etc., for the conduct of disposition activities). This list should include items such as: S Details on supply areas and/or receipt of containers and vessels S Storage facilities to be provide and/or utilized S Specification of any required special isolations provisions S Specification for process handling equipment, including robotics, remote devices and cranes
C22	Waste Acceptance Criteria (WAC)	The on-site or off-site Waste Acceptance Criteria is documented, approved, and the requirements included into the design requirements for the project.
C23	Waste Packaging	The waste packaging requirements are identified, documented and included into the project design. All outstanding modifications to requirements are addressed.
C24	Transportation Requirements	Transportation requirements including nuclear and hazardous materials identified and documented including both off-site and in-plant transportation, as well as methods and equipment (casks, overpacks, etc.) for receiving/shipping materials (e.g., rail, truck, air, marine).

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C25	Pollution Prevention and Waste Minimization	Detailed waste minimization/pollution prevention plan for project completed for selected design/project scope. Describe, estimate costs for, and present Implementation Plan for design, disposition, and mitigatory features that will minimize wastes and prevent pollution. Detailed waste management plan describing quantity and type of wastes expected to be generated and plans for waste treatment, storage and disposal completed. The Plan must: S Support estimation of waste management costs for operations as well as facilities. (Estimated costs considered in critical decision process.) S Identify project options for waste treatment, storage, and disposal, including an assessment of availability of disposal capacity and sites. S Integrate waste management plans with waste minimization/pollution prevention plans. S Characterize regulatory benefits and concerns associated with types and quantities of wastes expected.
C26	Training Requirements	Training input and planning is developed. Disposition considerations and training requirements defined, approved, and incorporated as appropriate. Simulation, mockup facilities are defined and established as necessary.
C27	Post Disposition Monitoring Plan	The Post Disposition Monitoring Plan is prepared, approved, and ready for implementation by the performing organization.
MANAGEMENT PLANNING AND CONTROL		
D1	Mission Need Statement	An approved mission need statement exists. Project mission need statement demonstrates that project supports execution of, and project need relates to complex strategic plan goals and objectives as well as the DOE Strategic Plan. Mission needs reassessed after major changes in program, at budget submission and at Critical Decisions.
D2	Acquisition Strategy/Plan	An Acquisition Strategy/Plan has been developed and approved in accordance with DOE requirements/orders. The acquisition strategy and plans should be sufficient to accomplish the project and effectively apply the requirements of DOE Orders using a tailored approach. The project is in compliance with the site/complex strategic plan.
D3	Project Charter	A chartering mechanism has been developed and used to formally recognize the existence of the project. It empowers and holds the Project Manager responsible and accountable for ensuring successful project completion.
D4	Key Project Assumptions	A complete list is available of critical facts and circumstances that would affect project outcome if changed. These assumptions have been approved by appropriate parties. Project assumptions are reflected in technical/cost/schedule baselines and risk management plans.
D5	Project Execution Plan (PEP)	The PEP has been developed and approved in accordance with DOE requirements/orders. The PEP is the primary agreement on project planning and objectives between all parties, which establishes roles and responsibilities and defines how the project will be executed, including tailoring general requirements and processes to the specifics of the project
D6	Integrated Project Team/Project Organization	The project organization is in place and functional. The integrated Project Team is in place early in project phases. The project is staffed with sufficient numbers of project management, technical, and acquisition specialists suitably qualified to accomplish project objectives.

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D7	Baseline Change Control	Acceptable process established to review and approve proposed changes to cost, schedule, and technical baselines to determine impact of changes. Baseline Change Control Boards (CCB) established at appropriate levels of organization, thresholds for each level defined, and appropriate procedures in place.
D8	Project Control	A functioning project control system is in place for managing project baselines using earned value techniques, variance analysis contingency/reserve management and effective reporting in accordance with DOE Orders and guidelines.
D9	Project Work Breakdown Structure (WBS)	Project Work Breakdown Structure established and reflects the project through completion. WBS dictionary completed, including detailed Statements of Work (SOWs), project schedule and cost directly aligned with WBS structure, and deliverables defined.
D10	Project Risk Management Plan/Assessment	Risk management plan developed, included in Acquisition Plan and/or PEP as appropriate, and risk mitigation strategy in place. Project risk is an accurate and complete estimate of probability and severity of cost, schedule and other impacts associated with uncertainties in the project, including a time-frame in which these risks are expected to occur. Risks are tracked, reported, and controlled.
D11	Quality Assurance Program	A Quality Assurance (QA) program is established. QA factors, including standards, specifications, and limitations identified. Quality Control (QC) and QA oversight organization in place and functional.
D12	Configuration Management	A configuration management program established and functioning to ensure consistency among requirements, criteria, design, existing facilities, physical configuration, and interfaces within project documents.
D13	Value Engineering	Where appropriate, a value engineering program complying with DOE Orders is in place and qualified personnel have analyzed appropriate project functions using accepted industry techniques with the aim of improving performance, reliability, quality, safety and life cycle costs of products, systems or procedures. The value engineering analyses are documented in a formal report and have provided unbiased, outside opinion and/or senior expertise (as appropriate) as inputs to the design process and an independent review of concept, design, and schedule. Measures taken to minimize project cost and maximize the return on investment for delivering the project have been documented and cost savings have been quantified. Project criteria have been re-evaluated when value engineering analyses have determined them to have poor value or a high cost-to-worth ratio.
D14	Procurement Packages	Procurement packages are being developed in accordance with the procurement strategy. Contractor selection processes and procedures are in place. Procurement packages reflect all requirements for security, safety and environmental considerations and pass on appropriate responsibilities to contractors and subcontractors.
D15	Project Acquisition Process	The project is being accomplished in accordance with the established DOE Project Acquisition Process, including Critical Decisions and Energy System Acquisition Advisory Boards.
D16	Resources Required (People/Material) for Next Phase	Resources required for next phase identified and are available.

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D17	Funds Management	A funds management system is in place to ensure funds are allocated to support the project baseline elements for the current fiscal year. A system is in place to periodically review the annual costs to ensure that the annual funding will not be exceeded.
D18	Reviews/Assessments	Reviews (including EIRs and IPRs) and assessments are performed (for the current phase) and the findings, assessments, and recommendations are documented and presented to appropriate levels of management. A Corrective Action Plan is in place and being tracked/managed as necessary. Appropriate reviews and self-assessments are planned/conducted as an integral part of the project, based on project complexity, duration and Critical Decision points.
EXTERNAL FACTORS		
E1	Integrated Regulatory Oversight Program	Applicable Federal, state, and local government permits, licenses, and regulatory approvals, including strategies and requirements are identified and obtained in a timely manner or milestone dates established. Schedule for receipt of authorization from regulators should be realistic based on experience. Requirements and milestone dates are updated as necessary and kept current.
E2	Inter-Site Issues	Key inter-site coordination issues identified, addressed and resolved or plans in place to accomplish resolution.
E3	On-Site Issues	Key on-site coordination issues identified, addressed and resolved or plans in place to accomplish resolution.
E4	Permits, Licenses, and Regulatory Approvals	Applicable permits, licenses, and regulatory approvals obtained and milestone dates for pending and new applications reviewed and revised as appropriate. All permits, licenses, and approvals necessary to construct and operate a facility or to initiate and perform project activities identified and will be obtained when needed to continue project execution on schedule. Schedule for receipt of authorization from regulators should be realistic based on experience.
E5	Stakeholder Program	Stakeholders identified and their relationship to project evaluated. Project's impact on stakeholder interests and potential stakeholder groups within community identified. Any required interfaces with external organizations or authorities identified and addressed. Based on available stakeholder information and size and scope of project, appropriate Public Participation Plan in place. Specific stakeholder group issues addressed relative to project goals and objectives, technical issues, project risk, and environmental strategies.