

## Master EM Project Definition Rating Index - Environmental Restoration 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
<b>COST</b>		
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.
<b>SCHEDULE</b>		
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.
<b>SCOPE/TECHNICAL</b>		
C1	Preliminary Assessment/Site Investigation	The Preliminary Assessment/Site Investigation is complete and approved.
C2	Remedial Investigation/RCRA Facility Investigation (includes Baseline Risk Assessment)	The Remedial Investigation (or RCRA Facility Investigation), including the Baseline Risk Assessment, is complete and approved.
C3	Feasibility Study (FS)/Corrective Measures Study (CMS)	The FS (or Corrective Measures Study) is complete and has been approved by all applicable parties.
C4	Engineering Evaluation/Cost Analysis of Removal Actions/Early Actions	For CERCLA removal (early) actions, the Engineering Evaluation/Cost Analysis (EE/CA) is complete, the public comment period is complete, and DOE has approved the document.
C5	Performance Assessment (PA)	The Site PA is completed, reviewed by an independent team, and approved.
C6	Technology Needs Identified and Available	Technology to be used has been identified and is currently available. If new technology is required, a technology development schedule supports the project schedule.
C7	Hazard Classification	Project hazards are defined, classified and documented in Health and Safety Plans (HASPs) or Nuclear Safety Analysis Reports (SARs) or other appropriate documentation as required by applicable DOE Orders and guidance. Results incorporated in technical baseline and applicable plans and procedures. Results of hazard analysis and initial facility-wide hazard classification confirmed as supporting early decisions.
C8	Performance Requirements	Functional and performance requirements for the project are documented (approved by users and key stakeholders), and under configuration control.
C9	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 design effort. The requirements, methodology, and responsibility for various ES&H activities are clearly communicated.
C10	Safety Documentation	Required safety documentation is approved. For projects below Hazard Class 3 thresholds or not involving work within permanent structures, the HASP can satisfy 29 CFR 1910.120 requirements. If an Auditable Safety Analysis (ASA) is required, it must be documented and approved. It may be included in the PEP or HASP. For projects requiring SARs, they are complete and approved and Safety Evaluation Reports (SERs) have been completed, as appropriate.

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C11	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.
C12	Emergency Preparedness	Specialized issues and considerations for emergency preparedness are adequately identified and documented. Emergency preparedness planning is complete for the remediation phase of the project and emergency planning for post-remediation has been initiated. This planning has been coordinated with site and external emergency response organizations, as appropriate.
C13	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.
C14	Proposed Plan (PP)	For CERCLA remedial actions, the PP is complete and the public comment period is complete.
C15	CERCLA Record of Decision (ROD)/Action Memorandum (AM)	The ROD is complete and has been signed by DOE, the state, and EPA. For CERCLA removal actions, the AM is complete. The public comment period is complete, and DOE has approved the document.
C16	Remedial Design	The Remedial Design (or RCRA Corrective Measures Design) is complete and approved.
C17	Equipment Needs	Equipment needs have been identified and procurement schedules established.
C18	Design Reviews for the Current Phase	Design reviews or reviews of applicable planning documents are conducted and performed by a multi-functional team and, if appropriate, external experts utilized.
C19	Transportation and Waste Packaging 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).
C20	Pollution Prevention and Waste Minimization	Waste minimization/pollution prevention plan for project and operations phases completed for selected design/project scope, as necessary. Describe, estimate costs for, and present implementation plan for design, operational, and mitigatory features that will minimize wastes and prevent pollution. Waste management plan describing quantity and type of wastes expected to be generated and plans for waste treatment, storage and disposal completed. The plan should: S Support estimation of waste management costs for process 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 future 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.
C21	Training Requirements	Training requirements defined, planned and scheduled. Design considerations have been incorporated as appropriate. Simulation and/or mockup facilities are defined and established as necessary.
C22	Environmental Monitoring Plan	The plan for monitoring the actual performance of the release site or disposal facility during construction is completed, approved, and implemented. The respective PA is changed as needed.

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C23	Closure Plan/Permit Modification	The Closure Plan for the release site or facility is documented and approved.
C24	Long Term Surveillance and Monitoring Plan	The draft Long Term Surveillance and Monitoring Plan is complete. This plan will be finalized and approved at the conclusion of construction.
<b>MANAGEMENT PLANNING AND CONTROL</b>		
D1	Mission Need Statement	An approved mission need statement exists (may consist of the Preliminary Assessment/Site Investigation report, EE/CA, Proposed Plan or RCRA Facility Investigation Report). Project mission need statement demonstrates that project supports execution of, and project need relates to Program 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 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.
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.

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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	Resources Required (People/Material) for Next Phase	Resources required for next phase identified and are available.
D11	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.
D12	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.
D13	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.
D14	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.
D15	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.
D16	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.
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.

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Rating Element		Criteria for Maximum Rating
<b>EXTERNAL FACTORS</b>		
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 are 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.