available at
http://energy.gov/management/downloads/external-independent-review-eir-standard-operating-procedure-sop

EXTERNAL INDEPENDENT REVIEW (EIR)

STANDARD OPERATING PROCEDURE (SOP)

DEPARTMENT OF ENERGY (DOE)

OFFICE OF ENGINEERING AND CONSTRUCTION MANAGEMENT (OECM)

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1.0 INTRODUCTION AND PURPOSE

The Office of Engineering and Construction Management (OECM) performs External Independent Reviews (EIRs) to provide Acquisition Executives (AEs), senior leaders within the Department of Energy (DOE), and Congress with an unbiased assessment of whether a capital asset project can be executed within proposed scope, schedule and cost commitments, while also meeting its key performance parameters and ultimately fulfilling its associated mission need. The objectives of this EIR Standard Operating Procedure (SOP) are to clarify EIR expectations and to facilitate EIR planning and execution by OECM, its support contractors, and DOE Programs and project teams.

A companion SOP for Independent Cost Estimates (ICEs) and Independent Cost Reviews (ICRs) conducted by OECM is available, and should be used in conjunction with this SOP for combined EIR/ICE or EIR/ICR activities.

DOE O 413.3B, *Project Management for the Acquisition of Capital Assets*, requires OECM to perform a Performance Baseline EIR prior to Critical Decision-2 (CD-2) for all capital asset projects with a Total Project Cost (TPC) greater than or equal to $100 million (M). An EIR is also required for projects with a TPC over $50M for Program Offices that have not established a Project Management Support Office (PMSO) capable of performing an Independent Project Review (IPR). For Program Offices with an established PMSO, the Acquisition Executive (AE) may request that OECM perform an EIR in lieu of an IPR for projects less than $100M. In addition, if a Program Office fails to maintain project performance within established success targets, the Deputy Secretary may change the threshold for compliance with all DOE 413.3B requirements, including Performance Baseline EIRs, from $50M to $20M. OECM must also perform an EIR for projects that have new performance baselines established as a result of a performance baseline deviation.

In conducting a performance baseline (CD-2) EIR, OECM has two underlying objectives:

- To validate a project's proposed performance baseline.
- To verify that numerous project planning and management requirements identified in the 2008 DOE Contract and Project Management Root Cause Analysis and Corrective Action Plan (RCA/CAP) have been satisfied.

Upon completion of a performance baseline EIR, OECM should be able to provide reasonable assurance that:

- A project is poised for success within the approved/defined performance baseline;
- Project planning has progressed to a point where a performance baseline and associated funding profile can be "locked-in" with an assurance that it will remain intact and stable through project completion;
- A project can be successfully managed and executed.

The RCA/CAP defines project success as achieving project completion (CD-4) within the original scope baseline and within 10% of the original approved cost baseline. Appendix

A is a “cross-walk” demonstrating how the EIR protocol addresses the various RCA/CAP requirements.

DOE O 413.3B also requires OECM to perform a Construction/Execution Readiness EIR prior to CD-3 (Approve Start of Construction/Execution)for all major system projects (i.e., projects with a TPC equal to or greater than $750M or otherwise designated by the Deputy Secretary). For major system projects, the purpose of an EIR conducted prior to approval of CD-3 is to assess the readiness for the start of construction and to reconfirm the completeness and accuracy of the performance baseline. Besides using many of the review elements for the CD-2 Performance Baseline review, the CD-3 EIR focuses on the final drawings, specifications, and construction/execution planning. Ideally, OECM will conduct the CD-3 EIR prior to the release of the Request for Proposals or Invitation for Bid packages.

In addition to the required CD-2 and CD-3 EIRs, OECM may, at the request of an AE or Program office, use a “tailored” EIR process to support any of the following:

- Assist project teams in the front-end planning process and the development of the performance baseline, including evaluating project technical, cost and schedule bases and assumptions, assessing the risks and benefits of optional acquisition strategies, examining all project requirements, and assessing project risks;
- Review Mission Need Statement documentation for projects >$100M TPC prior to CD-0;
- Assess performance during the execution stage, including design, procurement, construction, testing, startup, commissioning and turnover;
- Assess the adequacy and function, of the IPT and their management of the project;
- Address any other issues defined during the EIR scoping or development process;
- Assess the readiness of a project for an EIR team visit;
- Prepare an Independent Cost Estimate (ICE) or conduct an Independent Cost Reviews (ICR) – see OECM Cost Review SOP.
- Assist the project team in recovering from unsatisfactory performance trends subsequent to CD-2 or CD-3

2.0 EIR BUDGETING AND PLANNING CYCLE

EIR funding must be sufficient to ensure a useful and effective EIR program. The OECM Project Assessment and Reporting System (PARS II) is considered to be the authoritative source of information on projects that require consideration in EIR program planning. Semi-annually by March 30th and September 30th, OECM will distribute an EIR schedule, based upon the forecasted CD dates indicated in PARS II for the current fiscal year plus a two-year projection. OECM project analysts will coordinate with the appropriate Programs to verify their CD forecasts. The updated schedule will inform OECM’s budget request, and will enable OECM to better plan its EIR resources, including EIR support contractor workload.

OECM provides funding for EIRs that it is required to perform pursuant to DOE O 413.3B. EIRs for projects less than $100M will be funded by the Program requesting the review, unless the Program does not have an established and capable PMSO, in which case OECM will provide the funding. Programs will also fund any emergent, unplanned EIRs. Figure 1 summarized the EIR program planning process.

Figure 1, EIR Program Planning

Please Note: Forecasted CD-2 dates will be extracted from PARS II for all pre-CD2 projects with a $100M or greater TPC ($50M for Programs without a PMSO). Forecasted CD3 dates will be extracted from PASR II for all pre-CD3 major system projects. It is the responsibility of OECM analysts in coordination with the Programs to maintain accurate project information in PARSII for viable planning purposes.

March	September
(activities conducted yearly)	*(activities conducted yearly)*
- Confirm/Update EIRs to be executed during remainder of year based on PARSII extraction information *(FY)*	- Confirm/Update EIRs to be executed during next fiscal year based on PARSII extraction information *(FY+1)*
- Confirm/Update EIRs to be executed during next fiscal year based on PARSII extraction information *(FY+1)*	- Confirm/Update EIR Plan for budget to be submitted to Office of Management and Budget based on PARSII extraction information *(FY+2)*
- Update EIR Plan for budget under development based on PARSII extraction information *(FY+2)*	- Define rough plan for EIRs to be included in following budget year based on PARSII extraction information *(FY+3)*

OECM will plan, implement, and monitor contractor support for all approved EIR services. It is incumbent upon OECM and the Programs to ensure that the EIR projection listing is accurate so that resources can be planned for and secured in an efficient and timely manner. Periodic EIR planning meetings with each Program may be essential to this process.

3.0 EIR PROCESS OVERVIEW

Program should request EIR at least 8 weeks in advance of the start of an EIR on-site visit.

OECM is responsible for coordinating all EIR activities and for directing the work of the with the EIR team. However, the EIR process is a collaborative effort and the EIR team may include both contractor and DOE personnel.

DOE Programs should submit via a formal EIR request from the respective Project Management Support Office (PMSO) or Program Manager (if no PMSO exists) to OECM at least 8 weeks prior to the desired start of the EIR on-site visit. This advance notice is required to ensure that an appropriate EIR scope is developed (tailored) specifically for the project to be reviewed and that resources, including funding and

personnel with appropriate subject matter expertise are available and secured to cover the review.

EIR documentation is an OECM product.

The name of the EIR support contractor should be identified in EIR documentation. However, all EIR team deliverables – including but not limited to the review plan, entrance and exit briefs, and the EIR report - are to be written as, viewed as, and communicated as OECM products.

3.1 EIR Scoping Meeting

Program and OECM representatives conduct a "Feds-only" EIR scoping meeting to collaboratively define the scope, bounds, and objectives of the EIR. An OECM representative chairs the EIR scoping meeting, and attendance should include appropriate Program and project personnel, including the designated FPD and peer review members. If any core review elements are not to be addressed, the reasons should be identified in the scoping meeting notes. A sample format for documenting the agreed upon EIR scope is provided on the Office of Management Reviews and Validations Website http://energy.gov/management/office-management/operational-management/project-management/reviews-and-validations

3.2 EIR Team Selection and Staffing

Based on the agreed-upon review scope, the scoping meeting attendees will outline the subject matter expertise and skills required of the EIR team members. Ideally, teams will include individuals with appropriate project management and cost engineering certifications (PE, CCE, CCC, PMP, etc.) as well as subject matter experts (SMEs) with knowledge of specific areas required to understand and analyze a particular project (e.g., any unique technical areas such as nuclear safety expertise Hazard Category 1, 2, and 3 nuclear facilities or project execution strategies.). The appropriate team size depends on the complexity and scope of the review or estimate, the project's risk and performance profiles, the schedule for completion, and the OECM EIR budget. The OECM Lead should ensure that all review areas (Lines of Inquiry, LOIs) or estimate areas are covered with qualified team members. In addition to any "core" EIR contractor members, the team should include Program representatives including Federal or contracted employees (to include lab and/or M&O contract employees).

Peer review members are an essential part of the EIR team.

A team approach allows individuals with specific, relevant expertise to not only assist in validating the baseline or other review purposes, but also to add value to the project by propagating best practices and identifying improvement opportunities. The inclusion of Program representatives (peers) will also help provide a pool of talent for future peer reviews. Having a core of qualified people who can "carry over" from one review to the next is essential to maintaining continuity over the course of a project. In this regard, the Program representatives should be people who will serve on future peer reviews. To fill special skill sets, the Program may also suggest individuals to augment the review team, as appropriate.

Upon completion of the scoping process, OECM will coordinate with the selected support contractor (if applicable) to ensure the contractor is aware of all special requirements or circumstances, and to clarify the scope and schedule of the upcoming proposed review. To document that the team meets the desired qualifications, biographical sketches (Bios) for all team members actively participating on the team as reviewers —one page or less, per person—are included as an appendix to the review/estimate plan and to the subsequent report. Bios are not required for observers. Team members should include appropriate disciplines to conduct the review or perform the estimate, including schedule, management, safety, and technical SMEs, as well as cost and risk management analysts. All EIR team members are expected to provide independent input to the out-brief and to the report, while adhering to the schedule approved by OECM in the EIR Plan.

Government support will generally be provided directly by other DOE organizations, in addition to OECM staff. However, to ensure independence, it is inappropriate for the project proponents (i.e., the DOE Site Office line management, the DOE program manager, or the DOE Site project contractor) to participate as a member of an EIR team. If the DOE Program Office staff desires to participate as a team member, the assigned staff member should not be the Project Advocate. The Program Office Project Advocate may participate as an observer.

A support contractor normally helps OECM conduct reviews and estimates. The Office of Management Reviews and Validations website contains a sample Statement of Work (SOW) for an EIR support contractor:

The support contractor will assist the OECM Lead in developing the EIR Plan, assigning areas of responsibility to team members (including peer review members), executing the review, developing the out-brief, and drafting the report. For an EIR combined with an ICR or ICE, the SOWs should be combined to include the appropriate scopes of work and other desired elements to make a single SOW (assuming that a single lead contractor will provide the services). The Office of Management Reviews and Validations website also contains a sample SOW for an ICE/ICR support contractor: http://energy.gov/management/office-management/operational-management/project-management/reviews-and-validations

OECM will approve the final team membership via its approval of the EIR Plan.

3.3 Roles and Responsibilities

During the EIR process, roles and responsibilities should be clearly understood by all participants. In general, the following roles and responsibilities will apply:

Role	Responsibility
OECM Lead	Federal lead; facilitate the process; resolve issues; kick-off onsite entrance and exit briefs
Program/Project/FPD	Support EIR process with resources, time, data, and personnel
EIR Team Lead	Leads EIR Contractor Team and serves as EIR Contractor POC
EIR Contractor	EIR team; write report; support Corrective Action Plan comment resolution, recommend validation
EIR Peer Member	Member of EIR team; provide input to Review Plan, out briefing, and draft report. Provide continuity and future follow-up.

While not always possible, every effort should be made to clarify and resolve differing opinions. The OECM lead will facilitate resolution. The EIR contractor is responsible for developing and documenting all Findings, Observations, and Recommendations, as well as making an overall recommendation for (or against) validation of the proposed performance baseline (CD-2 EIR) or for approval to start construction (CD-3 EIR), or other proposed action in support of the EIR objective (e.g., approval of a interim measurement baseline). If opinions differ among the EIR team members, the divergent perspectives will be documented in the draft and final EIR report, under an appropriate section inserted to capture these divergent views. This is important to DOE, so that a complete picture of the evaluation is available. The independence of the review must be maintained.

3.4 Project Documentation

Once the EIR start date is confirmed and the EIR contractor has been authorized to perform the review, the FPD must submit all relevant project documentation as required by the EIR team, and other documentation that the project team feels is relevant, to OECM and the EIR team at least 4 weeks prior to the start date of the on-site review. As an option, the project or EIR contractor may elect to establish an eRoom for posting applicable project documentation. The EIR process places a great deal of importance on having documents well in advance of the on-site review. This allows the ICR/ICE team to:

- Determine the adequacy and completeness of the documentation, thus minimizing expenditure of EIR (as well as site and project) resources for on-site visits for which the Program, FPD, IPT and contractor are unprepared;
- Develop specific EIR lines of inquiry that will be the focus of the on-site portion of the EIR;
- Inform the project team in advance of the on-site review of the logistics and specific data and information needed to address EIR concerns related to the various review elements identified in the Review Plan; and
- Perform comprehensive assessments without tying up site resources with lengthy on-site visits.

The EIR is a snapshot evaluation by the EIR team of the project status at a specific point in time; it is not a moving picture of project activities and status. The project team is encouraged to provide a checklist of the submitted documentation and the preparation and/or approval date of each document along with the required documentation. If the project team intends to transmit any additional documents or update any documents already submitted, they should notify OECM and the EIR team when project documentation is first submitted, noting this information on the documentation checklist.

If documentation is submitted less than 4 weeks prior to the requested start date of the on-site review, the EIR may be postponed.

If project documentation is submitted to OECM and the EIR contractor less than 4 weeks prior to the requested start date of the on-site review, the quality of the EIR may be compromised, and OECM and the EIR team may recommend postponement of the scheduled EIR site visit start date. Updates of project

documentation received within 2 weeks of the on-site visit may cause the EIR review time to be extended with resultant recommendations to be delayed accordingly, so that the EIR review team has adequate time to review documentation. Exceptions will be handled on a case-by-case basis.

3.5 EIR Process

The typical process for conducting an EIR takes approximately 12-16 weeks from the time OECM and the EIR team receives the required project documents until the Corrective Action Plan is resolved. (EIRs with limited scope should typically require less time to complete.) While the on-site EIR visit is usually limited to one week, the specific duration of the EIR depends on the size and complexity of the project or projects being reviewed. Preliminary identification of major findings and findings presented on-site may change during preparation of the draft report. During the EIR, on-going project activities may continue. This process is generically described below, beginning after the completion of preliminary activities (i.e. scoping meeting, selection of EIR contractor).

- The EIR team develops a draft EIR Review Plan based on the results of the initial scoping meeting (DOE G 413.3-9A, *Project Review Guide for Capital Asset Projects,* provides a suggested format and template for an EIR Review Plan). OECM supplies the draft review plan to the project, which contains a listing of required documentation. Following receipt of all the required project documents, the EIR team revises the draft EIR Review Plan based on the results of the initial scoping meeting and a cursory review of the project documentation. The project team, PMSO, and/or Program comments are resolved and/or incorporated into the draft Review Plan. The EIR team finalizes the EIR Review Plan and distributes to the PMSO, Program, and project team.

- Representatives of the EIR team conduct the on-site review, and conclude with an out-brief to the PMSO/Program and project team. In the out-brief, the EIR team should identify those issues that are major findings and findings that will require satisfactory resolution prior to the EIR team being able to recommend validation of the proposed performance baseline (CD-2) or to proceed with construction/execution (CD-3). The project team may take the opportunity of being aware of the preliminary major findings to begin resolution, as appropriate. However, these preliminary findings presented during the out-brief may change as the EIR team further analyzes the review results, discusses issues amongst themselves, and prepares the draft report. *Note: The PMSO/Program is encouraged to arrange for a teleconference/video connection to the site out-brief when physical attendance is not possible.*

- After the on-site review and clarification by the EIR team, typically no later than the two weeks after the on-site review, the EIR contractor provides an electronic copy of the draft EIR report to OECM, who then issues the draft report electronically to the PMSO/Program and project team for a factual accuracy review. In parallel, the project team starts preparation of the corrective action plan for resolving the Team's findings, submits its proposed corrective action plan to OECM and the EIR Team for review, and begins to address the findings.

- The OECM Lead is responsible for briefing the OECM Director of Project Management Systems and Assessment prior to the out-brief at the site. In addition, the OECM Lead is responsible for briefing the Director of OECM upon return to the office.

- Typically, no later than three weeks after the on-site review, the PMSO/Program and project team provide a consolidated list of factual accuracy comments to OECM, who then works with the EIR team to resolve in finalizing the EIR report. The PMSO/Program and project team shall strictly limit comments to the factual content of the draft EIR report. If necessary, a teleconference may be conducted between the EIR team and project team to resolve factual accuracy comments. The PMSO or Program may request OECM to set up a resolution conference, as appropriate, to discuss findings, observations, recommendations, or other unresolved issues they have with the draft report. The PMSO or Program must contact OECM no later than one week after receipt of the draft report to coordinate this effort. Any disagreements with specific findings, observations, or recommendations should be transmitted to OECM along with supporting back-up documentation and a request to schedule a resolution conference. The Program/PMSO and project team are encouraged to discuss these issues of contention regarding the draft EIR report at this forum and not as part of the factual accuracy submittal. The project continues to resolve the findings through appropriate on-site action and evidence documentation for OECM and EIR Team review, while the EIR Team provides any comments on the proposed corrective action plan back to the project.

  The PMSO or Program must contact OECM no later than 1-week after receipt of the draft report to coordinate a resolution conference.

- If necessary, the EIR contractor addresses the factual accuracy comments and submits an electronic pre-final EIR report to OECM. OECM coordinates a Pre-Final Management Brief date/time for resolution of EIR report comments and issues with the EIR team and appropriate PMSO/Program and project team leadership and provides them a copy of the pre-final EIR report.

- If necessary, OECM hosts a Pre-Final Management Brief (given by the EIR team leader) and comment/issue resolution conference. The Pre-Final Management Brief is intended for senior Program and project team management, as well as program/project personnel. The Director of OECM, or designee, will attend the Pre-Final Management Brief for all major system projects, and may attend similar sessions for other projects as the schedule permits.

- If the EIR team has concluded that all major findings are adequately addressed by the project, and the EIR team resolves comments/issues as agreed to during the Pre-Final Management Brief and resolution conference, the EIR Team issues the final EIR Report with a validation recommendation and/or recommended corrective actions to OECM. OECM then forwards the final EIR Report to the PMSO/Program and project team.

4.0 PERFORMANCE BASELINE (CD-2) EIR

The Lines of Inquiry (LOIs) for the EIR should be developed by the review team, tailored specifically for the review.

At a minimum, LOIs should encompass the RCA/CAP items identified in Appendix A, the information required in the mandatory budget tables (Section 7.2), and milestone schedule information. It is also expected that the EIR team will complete a Project Definition Rating Index (PDRI) assessment for projects with a TPC of $100M or greater, and a Technology Readiness Assessment (TRA) for Major System Projects. PDRI and Technology Readiness Level (TRL) summary scoring tables should be included in the final EIR report. Both the PDRI and TRA should be conducted to an appropriate level to ensure that the EIR Team has an adequate understanding of the project's maturity, and that it can explain differences between its scores and those derived by the IPT (which should have completed the PDRI and TRA assessments independently of the EIR team).

Emphasis should be placed on the maturity of front-end planning. Tools such as PDRI and TRLs should be incorporated in the EIR. The PDRI methodology will be used for projects with a Total Project Cost of $100M or greater, and a technology readiness assessment methodology will be used for major system projects to supplement the typical CD-2 EIR process. These methodologies will provide greater assurance that a consistent and sufficient level of front-end planning has occurred prior to establishing a project baseline.

Appendix C provides more detailed information concerning documentation requirements and LOIs for an EIR in Support of CD-2 (critical LOIs and those that should be included as a minimum are indicated in bold-faced type). Sections 4.2 and 4.3 identify additional LOI resources, including guidance from DOE Program Offices (NA, SC and EM). DOE Guides are a resource for best practices, but are not requirements. Alternative methods or sources may be employed to develop LOIs, but the methodology and assumptions should be explained and have a supporting basis.

If a combined EIR/ICE is to be performed, refer to the ICE/ICR SOP for the modified process, documentation, and LOIs.

4.1 Core Competencies

The LOIs should be constructed to address the following questions to illustrate the project's core competencies, and its ability to be successful.

1. Are the scope, cost, and schedule firmly supported, integrated, and validated with appropriate tools, with sound underlying technical, economic, and programmatic bases, assumptions, and front-end planning (i.e., in comparison with the EIR Team's Project Definition Rating Index)?
2. Has the design matured to the appropriate degree and been validated through appropriate and credible processes?

3. Is new technology, or technology being used in a new application, mature enough and validated through appropriate tools (i.e., in comparison with the EIR Team's Technology Readiness Assessment)?
4. Has the project minimized risk by desegregating a single base project into multiple smaller projects, where appropriate?
5. Does the Integrated Project Team (IPT) have an appropriate complement of committed personnel, having the requisite skill set, who are aware of their roles, and are prepared to successfully execute the project? Has the composition been developed and validated through an appropriate staffing algorithm (i.e., utilizing best practices such as DOE's Staffing Guide)?
6. Is the Federal Project Director (FPD) certified at the appropriate level and prepared and capable to manage the project or program?
7. Have relevant and comprehensive risk and contingency analyses and Risk Management Plans been conducted /developed by the Federal IPT (for contingency) and the Contractor (Management Reserve)?
8. Has the project established a valid project funding profile, per DOE O 413.3B?
9. Have credible and sufficiently accurate cost and schedule baselines been developed and supported by applicable tools and benchmarks? (Refer to GAO's Twelve Steps of a High-Quality Cost Estimating Process. A summary of the GA) O 12-Step Estimating Process is provided on the Office of Management Reviews and Validations website: http://energy.gov/management/office-management/operational-management/project-management/reviews-and-validations
10. Are the Acquisition Strategy and Plan appropriate, support project delivery and provide the best value to the Government?
11. Is the contract aligned with the project and are contractual incentives aligned with project team success metrics?
12. Are appropriate management systems in place and functional (i.e. PARS II, EVMS, etc.) to allow for FPD and IPT to have clear communication throughout the organization to ensure authority, accountability and responsibility?
13. Are there processes in place to ensure personnel (Feds and Contractors) are held accountable?
14. Is the project team cognizant of and complying with DOE policy and guidance?
15. Has the project met all the applicable critical decision requirements?
16. Have Lessons Learned from other similar projects and previous reviews been consulted and applied?

4.2 Program Office LOIs

- NNSA, Independent Project Review Guidance http://hq.na.gov/pmnet/default.aspx?L=PAGE&ITEM=18340&CA=17&PI=902 (available on internal DOE network only)
- SC, Independent Review Handbook http://science.energy.gov/~/media/opa/pdf/processes-and-procedures/sc/Review_Handbook_07_Revision.pdf
- EM, Standard Review Plan Module

http://www.em.doe.gov/Pages/StandardReviewPlanModules.aspx

4.3 Other example LOI resources

- GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs
- DOE G 413.3-X Series Guides

5.0 CONSTRUCTION OR EXECUTION READINESS (CD-3) EIR

The purpose of the Construction or Execution Readiness (CD-3) EIR is to assess the project's readiness for construction or execution and to confirm the completeness and accuracy of the performance baseline. The EIR scope in support of CD-3 is focused on construction readiness, but retains many of the elements contained in the CD-2 Performance Baseline review.

Both the scope and required documentation may vary for specific projects depending on the type of project and any tailoring that may be applied to the EIR. On a project-by-project basis, one or more of the elements may be deleted from the review while other areas may be added or enhanced. The focus areas may also vary if partial CD-3 phases (e.g., CD-3A, CD-3B) for long-lead procurements or early site work are being reviewed and approved in advance of the complete CD-3 EIR. In addition, if the project is requesting a CD-3A at the time of CD-2, applicable elements and LOIs should be included in the scope and Review Plan for a combined CD-2/CD-3A EIR.

Appendix C provides more detailed information concerning documentation requirements and LOIs for an EIR in Support of CD-3 (critical LOIs and those that should be included as a minimum are indicated in bold-faced type). The Lines of Inquiry (LOIs) for the EIR should be constructed by the review team, tailored specifically for the particular review.

Sections 4.2 and 4.3 identify additional LOI resources, including guidance from DOE Program Offices (NA, SC and EM). DOE Guides are a resource for best practices, but are not requirements. Alternative methods or sources may be employed to develop LOIs, but the methodology and assumptions should be explained and have a supporting basis.

If a combined EIR/ICE is to be performed, refer to the ICE/ICR SOP for the modified process, documentation, and LOIs.

5.1 Core Competencies

The LOIs should be constructed to answer the following questions to illustrate the project's core competencies, and its ability to be successful:

1. Are the scope, cost, and schedule firmly supported and integrated with sound underlying technical, economic, and programmatic bases, assumptions, and front-end planning (i.e., Project Definition Rating Index)?
2. Has the design matured to the appropriate degree and been validated through appropriate and credible processes?

3. Is new technology, or technology applied in new application, mature enough to support definition and development of credible current Technology Readiness Level definition, WBS elements development and contingency/Management Reserve planning, and to support to the resolution of constructability issues?
4. Have design review comments, integration issues (with Operations and other projects) and constructability constraints been addressed sufficiently?
5. Does the IPT have an appropriate complement of personnel possessing the requisite skill set, commitment, and effectiveness in place and prepared to successfully execute the project (i.e. utilizing best practices such as DOE's Staffing Guide or other appropriate staffing model)?
6. Is the FPD certified at the appropriate level and is prepared and capable to manage the project or program?
7. Have relevant and comprehensive risk and contingency analyses and Risk Management Plans been conducted by DOE and its contractor?
8. Did the funding profile remain intact and viable?
9. Are the Acquisition Strategy and Plan appropriate, support project delivery and provide the best value to the Government?
10. Is the contract aligned with the project and are contractual incentives aligned with project team success metrics?
11. Are appropriate management systems in place and functional (i.e. PARS II, EVMS, etc.) to allow for FPD and IPT to have clear communication throughout organization to ensure authority, accountability and responsibility?
12. Are there processes in place to ensure personnel (Feds and Contractors) are held accountable?
13. Is the project team cognizant of and complying with DOE policy and guidance?
14. Does the IPT have an appropriate definition and understanding of their role in effectively providing project oversight?

6.0 EIR FOR OTHER ACTIVITIES

Appendix D identifies scope elements and typical documentation requirements for a Front-End Planning Review or a Project Status Assessment Review. Although Appendix C does not apply specifically to such reviews, it can nevertheless be useful in developing LOIs. The references cited in Sections 4.2 and 4.3 may also prove helpful. Both the scope of the review and the required documentation may vary for specific projects depending on the type of project.

If a combined EIR/ICE is to be performed, refer to the ICE/ICR SOP for the modified process, documentation, and LOIs.

7.0 EIR REPORTS

7.1 Report Format and Content

The EIR Report shall be organized into the following sections:

Table of Contents
Acronyms
Key Definitions
Executive Summary
1.0 Cost
2.0 Schedule
3.0 Scope
4.0 Risk
5.0 Management (Contract and Project)
6.0 ES&H, QA, Safety

Report Appendices:
A. EIR Team Members, Assignments, and Biographical Sketches
B. Detailed Comments on Project Execution Plan *(if applicable)*
C. Detailed Comments on Other Documents *(if applicable)*
D. Corrective Action Plan (CAP) Recommendations

Modifications may be appropriate based upon the scope of the final EIR Review Plan. The EIR Report shall indicate that all lines of inquiry suggested in the references herein have been considered, although not all such lines of inquiry necessarily warrant the same level of incorporation and investigation.

Additional report guidance is contained in the EIR Report Template, which is provided on the Office of Management Reviews and Validations website: http://energy.gov/management/office-management/operational-management/project-management/reviews-and-validations

7.2 Mandatory Tables

The EIR Report shall contain completed versions of the following tables for all performance baseline and construction or execution readiness EIRs. The information required to complete these tables should be carefully considered when developing LOIs.

Table 1 – Budget Cost Breakdown – Funding Source Specific (future and sunk)

Description	FY06	FY07	FY08	FY09	FY10	FY11	FY12	Total
PED								
Construction								
TEC (contingency)								
OPC (contingency)								
TPC								

Table 2– Project Data Sheet Cost Breakdown – Funding Source Specific

Description	Costs to Date (as of _____)	Costs to Go	Total
PED			
Construction			

TEC			
OPC			
TPC			

Table 3 – Earned Value Management System Breakdown – Funding Source Neutral

Description	FY06	FY07	FY08	FY09	FY10	FY11	FY12	Total
*Contract Budget Base								
Fee/Profit								
Other DOE Direct Costs								
Contingency								
Performance baseline (TPC)								

** Contract Budget Base is inclusive of the Performance Measurement Baseline, any Undistributed Budget, and, Management Reserve.*

Table 4– Earned Value Management System Breakdown – Funding Source Neutral

Description	Costs to Date (as of _____)	Costs to Go	Total
*Contract Budget Base			
Fee/Profit			
Other DOE Direct Costs			
Contingency			
Performance baseline (TPC)			

** Contract Budget Base is inclusive of the Performance Measurement Baseline, any Undistributed Budget, and, Management Reserve.*

Table 5 - Comparison of EIR Team and Project Team TRLs (for new or newly applied technologies)

New or newly applied technologies	EIR Team assessed TRLs	Project Team assessed TRLs
New Technology A	TRL X	TRL Y
New Technology B		

Table 6
Comparison of EIR Team and Project Team PDRI Scores

	EIR Team Scores	Project Team Scores
Cost		
Schedule		
Scope/Technical		
Management Planning and Control		
Safety		

Table 7 - Comparison of EIR Team and Project recommended staffing level

	EIR Team recommended staffing level (DOE G 413.3-19, *Staffing Guide for Project Management*)	**Project recommended staffing level**	**Current Project Team staffing level (at the time of the EIR)**
Integrated Project Team*			

** Table should decompose Integrated Project Team (IPT) in terms of the number of personnel and skill set, as appropriate, and differentiate between full and part-time IPT members.*

7.3 EIR Team Assessment Criteria

The EIR report will provide an overall assessment, and then provide detailed Major Findings, Findings, and Observations. Definitions of Major Findings, Findings, and Observations are provided below:

A Major Finding is any deficiency, condition, shortcoming, error, or omission that affects the project mission, the proposed performance baseline scope (Key Performance Parameters), TPC, and/or CD-4 schedule, or in the professional judgment of the EIR team, is of such significance that safety, quality, risk management, planning, funding, other documented basis, or the ability of the project team to successfully execute the baseline is jeopardized. Major Findings can also include Critical Decision or baseline change prerequisites. The EIR team must review and accept the corrective actions (e.g., updated project documents and evidence files) by the project team to resolve Major Findings prior to recommending that OECM validate the proposed performance baseline or to proceed with project execution. (This could be a two-step process where the critical deficiency, condition, shortcoming, error, or omission is corrected and where appropriate, an acceptable definitive plan and schedule have been identified for any minor outstanding corrective actions remaining open after the EIR team recommendation.)

A Finding is any lesser deficiency, condition, shortcoming, error, or omission, which does not impact the project mission, scope, KPPs, TPC, or CD-4 schedule, but in the professional judgment of the EIR team, could diminish safety, quality, risk management, planning, funding, other documented basis, or the ability of the project team to successfully execute the proposed performance baseline, unless corrected. At a minimum, a definitive corrective action plan and schedule to make necessary changes that will satisfactorily resolve the Finding(s) must be reviewed and accepted by the EIR team prior to recommending that OECM validate the proposed performance baseline or to proceed with project execution.

Observations are not findings, but are comments on other project aspects that were evaluated by the EIR team. Observations may be positive, neutral, or negative. Negative Observations typically identify actual or potential project management issues (not considered Findings). The EIR team will provide a recommendation for negative Observations that the project team should consider for improving project planning, management, or performance. Positive Observations give credit for project management measures taken by the project team that merit recognition and may serve as a “lessons

learned" for other project teams. Neutral Observations, while neither negative nor positive, are included in the EIR report to show that an area was, in fact, reviewed by the EIR team. Negative Observations for which suggested improvements are recommended do not require resolution acceptance by the EIR team. However, in any subsequent review, the EIR team or peer review team should note the project team response to Observation recommendations and assess whether there has been any negative impact to project performance where the Observation and suggested improvement were not totally addressed and incorporated. Negative Observations of a prevalent or systemic nature will result in a Finding with an associated recommendation.

To the extent possible, the EIR team should make its determination of Major Findings, Findings, Observations, and related recommendations based on clearly identified and observed nonconformance with requirements such as those in DOE orders, policies, and directives, and note the nonconforming basis in the EIR report. However, consistent with recognized project management practices by the Project Management Institute (PMI), independent expert judgment of EIR team members is also an acceptable basis to make these determinations on a case-by-case basis where there may be a perceived weakness in project planning and execution that could potentially result in the project not being executed in a safe manner or result in breaching the scope, cost, and/or schedule baseline. Again, the EIR team must note its basis for these determinations in the EIR report. Since this EIR SOP is a general guide for planning and performing the EIR, it is not prudent or possible to list or identify specific acceptance criteria for the LOIs in each area—especially where expert judgment is concerned.

7.4 Corrective Action Plan

The EIR team provides recommendations that correspond to Major Findings, Findings, and negative Observations in the final EIR report to OECM. OECM in turn forwards the final EIR report, which includes a CAP template as an appendix. The template will include fields to be completed by the Program Office and project team. The CAP template will include, at a minimum, the following fields:

- EIR team Major Finding, or Finding (reference report page and paragraph)
- EIR team Recommendation
- Program/Project Team response (including whether the EIR team Recommendation is accepted or rejected), and proposed corrective actions/plans, including names of personnel assigned actions, and dates by when actions will be started and completed)
- Program/Project Team action plan status (identifying whether corrective actions are completed or pending including actual/planned dates for beginning and completing actions)
- EIR team Perspective/Response (identifying whether the EIR team agrees or disagrees with the action/plan, issues with the action/plan, whether the action/plan is accepted, if the Major Finding/Finding is closed, etc.).

EIR team Observations/Recommendations should similarly be listed in a separate template, but these do not require follow-up action by the EIR team.

Note: Programs and/or project teams may not always agree with EIR Findings. If the Program or project team disagrees with a Finding, the issue should be discussed during

an EIR resolution conference conducted either before or after the EIR out-brief (see Section 3.5). Otherwise, the CAP response should contain the project team's concurrence or rebuttal and the supporting technical rationale. In the event of unresolved findings, the OECM representative will continue to monitor progress towards acceptable resolution. In certain cases, a follow-up EIR team visit may be required prior to validation, especially when the timeline for resolution is protracted for a number of months. Every effort should be made to resolve all Findings as quickly as possible after the CAP has been developed.

7.5 Corrective Action Plan Review

Following transmittal of the final EIR report from the Director of OECM to the applicable PSO/Deputy Administrator (DA), the project team will address the Findings and Recommendations identified in the CAP shell included in the EIR report. The PMSO/project team should initially identify their proposed corrective actions in the CAP shell and provide it to OECM for review. OECM will likely engage the EIR team, and in particular, the Program peer review member(s) to participate in the review of the CAP in order to provide constructive feedback and to help focus the project team on acceptable actions to address the Recommendations and resolve the Findings.

Peer review members are an integral part of the closure process. They will have the opportunity to observe closure of identified findings throughout the project life.

Major Findings have to be closed before the proposed performance baseline is validated.

When all applicable corrective actions have been taken and the appropriate project and cost/schedule baseline documentation has been updated, the project team should provide the completed CAP and updated documentation (an Evidence File for each Recommendation that corresponds to a Major Finding or Finding) to OECM through the appropriate headquarters program office. The EIR team will review the CAP and updated documentation submitted in the Evidence Files (typically without having to revisit the site), conduct teleconferences as necessary to resolve questions and open issues, and provide OECM an updated recommendation in a CAP review report (i.e. Addendum to the EIR Report) to validate (or not) the proposed performance baseline. All major findings have to be resolved before the proposed performance baseline is validated. If the recommendation is to not validate the proposed performance baseline, appropriate justification will be provided by the EIR team in the CAP Review report, including which Findings are not yet resolved or if any new Findings have been identified. As with the EIR report, the Program and project team will have the opportunity to review for factual accuracy the draft CAP Review report.

This cycle of CAP reviews will continue until either the EIR team is able to recommend *validation, or OECM intervenes and determines that the open issues have been* satisfactorily addressed by the Program and project team and validates the proposed baseline and/or endorses approval of the applicable Critical Decision. If an acceptable CAP is not presented and appropriate corrective actions have not been completed within 6 months of the original EIR team on-site visit, OECM may require that a new EIR be conducted. Similarly, if within 6 months of an OECM memo validating the performance

baseline and/or endorsing approval of the applicable Critical Decision, the baseline or Critical Decision has not been approved by the AE, a new EIR or limited EIR may be required to verify or update the original OECM validation or endorsement. Again, all major findings have to be closed in order for the performance baseline to be validated. Peer review members are an integral part of the corrective action closure process following validation, for any findings where a closure plan and schedule were agreed upon. They will, as the project progresses, have the opportunity to observe closure of identified findings throughout the span of the project.

Findings and Recommendations for which the EIR team has accepted the project team's corrective action plan and schedule to make appropriate corrective actions (following the EIR team recommendation to validate the performance baseline or proceed with execution) must be tracked until properly closed out. The peer review team members and the responsible OECM project team member should periodically assess the status of these actions until closed by holding the project team and Program/PMSO responsible for ensuring closeout of these actions per the agreed-to plan and schedule. If necessary, a follow-up review by the EIR team may be warranted. If the agreed-to corrective actions are not accomplished per the corrective action plan and schedule, it may be appropriate to change the project's monthly/quarterly assessment status for closer management attention. At CD-3, or for BCPs following CD-2 or CD-3, there should be a minimal number of such actions, and the length of time allowed to complete these planned corrective actions should be limited to about 3 months.

7.6 EIR Report Transmittal

OECM will use the final EIR Report, in combination with any corrective actions identified in the approved CAP, to assess whether the proposed performance baseline can be validated or project construction/execution should be started. OECM may also use information from IPRs, IG reports, or other such information in assessing whether a performance baseline can be validated or project construction/execution should be started. OECM will transmit the final EIR Report and document its decision and/or recommendation with respect to validation of the performance baseline or the start of construction/execution in a memorandum from the OECM Director to the appropriate DA or PSO.

8.0 EIR EVALUATION AND FEEDBACK

EIR evaluation and feedback is highly encouraged and valued in an effort to continuously improve and add value to project reviews. Program offices, project teams, and PMSOs are encouraged to provide OECM with feedback on the conduct of the EIR, including any comments related to:

- Scoping meeting
- Review Plan development
- Knowledge and professionalism of the EIR team members
- Preparation and support of the EIR team
- Resolution conference
- Timeliness and responsiveness of OECM and the EIR team
- Quality of the review and findings
- CAP review process

Feedback forms are provided on the Office of Management Reviews and Validations website: http://energy.gov/management/office-management/operational-management/project-management/reviews-and-validations

The OECM POC will distribute forms, and the forms will be requested to be transmitted to the OECM COR. The OECM COR will maintain the confidentiality of the submitter(s) of the forms, and ensure that feedback is only communicated through compilations.

Upon OECM request, the EIR team should document lessons learned.

APPENDIX A
Reviewers' checklist for topical areas related to 2008 DOE Root Cause Analysis and Corrective Action Plan corrective measures

DOE Contract and Project Management Issues	Corrective Measures	Core Competencies *(EIR in support of CD-2)*	EIR Team Validation Checklist *(Minimum LOIs to address RCA/CAP items)*
1. DOE often does not complete front-end planning to an appropriate level before establishing project performance baselines.	Corrective Measure 1: Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.	(1) Are the scope, cost, and schedule firmly supported, and validated with appropriate tools, with sound underlying technical, economic, and programmatic bases, assumptions, and front-end planning (i.e., comparison with EIR Team PDRI)? (2) Has the design matured to the appropriate degree and been validated through appropriate and credible processes? (3) Is new technology or technology applied in new applicable mature enough and validated through appropriate tools (i.e., comparison with EIR Team's Technology Readiness Assessment). (4) Has the project minimized risk by desegregating a single base project into multiple smaller projects, where appropriate?	☐ Is the design mature enough to validate a performance baseline? ☐ Should the project be decomposed into smaller, discrete (completed and useable) projects to reduce risk, specific project time horizons and enhance the probability of project success? ☐ Has the EIR Team conducted an independent TRA, reviewed the TRA maturation plan and resolved differences with the IPT? ☐ Has the EIR Team conducted an independent PDRI and resolved differences with the IPT?

DOE Contract and Project Management Issues	Corrective Measures	Core Competencies *(EIR in support of CD-2)*	EIR Team Validation Checklist *(Minimum LOIs to address RCA/CAP items)*
2. DOE does not have an adequate number of federal contracting and project management personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management and technical) to plan, direct and oversee project execution.	Corrective Measure 2: Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop and retain the optimum contract and project management federal workforce.	(5) Does the IPT have an appropriate complement of committed personnel having the requisite skill set who are aware of their role and prepared to successfully execute the project? Has the composition been developed and validated through an appropriate staffing algorithm (i.e., utilizing best practices such as DOE's Staffing Guide)? (6) Is the Federal Project Director (FPD) certified at the appropriate level and is prepared to manage the project or program?	☐ Has the EIR Team validated the staffing methodology and resolved differences with the IPT? ☐ Is the project team staff size adequate? ☐ Is the project team skill set mix acceptable? ☐ Is the Management Team effective?
3. Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.	Corrective Measure 3: Establish object, uniform methods for assessing, communicating and managing project risks uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.	(7) Have relevant and comprehensive risk and contingency analyses and Risk Management Plans been conducted/developed by Federal IPT (for contingency) and the Contractor (Management Reserve)?	☐ Did the IPT follow best practices in handling risks? ☐ Was the IPT aware of risk management tools such as the Centralized Risk Register Tool? ☐ Are distinctions made and well understood between MR and contingency?

DOE Contract and Project Management Issues	Corrective Measures	Core Competencies *(EIR in support of CD-2)*	EIR Team Validation Checklist *(Minimum LOIs to address RCA/CAP items)*
4. Failure to request and obtain full funding of planned incremental funding results in increased risk of project failure.	Corrective Measure 4: Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.	(8) Has the project established a valid project funding profile?	☐ Has the EIR Team validated that for projects with a TPC<$50M, full funding been provided? ☐ Has the EIR Team assessed that the funding profile remains viable and intact throughout project lifetime? ☐ Is the funding profile "affordable" with the Program/Site budget?
5. Contracts for projects are too often awarded prior to the development of an adequate independent government cost estimate.	Corrective Measure 5: Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases.	(9) Have credible and sufficiently accurate cost and schedule baselines been developed and supported by applicable tools and benchmarks (i.e., best practices such as those identified in the GAO Cost Estimating and Assessment Guide)? *(Refer to Appendix D for GAO's Twelve Steps of a High-Quality Cost Estimating Process.)*	☐ Has the EIR Team conducted an ICE or ICR? ☐ Have GAO's best practices been incorporated into the cost estimate?

DOE Contract and Project Management Issues	Corrective Measures	Core Competencies *(EIR in support of CD-2)*	EIR Team Validation Checklist *(Minimum LOIs to address RCA/CAP items)*
6. DOE's acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.	Corrective Measure 6: Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans, and project plans; clearly defines roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.	(10) Are the Acquisition Strategy and Plan appropriate, support project delivery and provide the best value to the Government? (11) Is the contract aligned with the project and are contractual incentives aligned with project team success metrics?	☐ Are contract and project scope, cost and schedule in alignment with change control? ☐ Is the project Contracting Officer engaged (a key member of the project team)?
7. DOE's organizational structure is not optimized for managing projects.	Corrective Measure 7: Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organization structures.	(12) Are appropriate management systems and processes in place and functional (i.e. PARSII, EVMS, etc) to allow for FPD and IPT to allow for clear communication throughout organization to ensure authority, accountability and responsibility? (13) Is there a system in place to hold personnel (Feds and Contractors) accountable?	☐ Are IPT and Program roles, responsibilities and authorities clearly defined? ☐ Do HQ and field organizations work well together? ☐ Is PARS II in place? ☐ Is EVMS System certified or is there a timeline in place to do so?

DOE Contract and Project Management Issues	Corrective Measures	Core Competencies *(EIR in support of CD-2)*	EIR Team Validation Checklist *(Minimum LOIs to address RCA/CAP items)*
8. DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.	Corrective Measure 8: Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable.	(14) Is the project team cognizant of and complying with DOE policy and guidance? (15) Has the project met all applicable critical decision requirements? (16) Have Lessons Learned from other similar projects and previous reviews been consulted and applied?	☐ Have DOE O 413.3B requirements been met at each Critical Decision?

APPENDIX B

EIR Process Checklist

- ☐ Conduct Feds-only EIR Scoping Meeting.
- ☐ Develop Statement of Work . *(see Appendix G, Example SOW)*
- ☐ Ensure that SOW enables EIR Contractor to utilize subject matter expertise (not overly prescriptive), yet encompassing appropriate scope.
- ☐ Ensure SOW encompasses document requirements (all project documents reviewed are submitted to OECM, and EIR findings are submitted in excel spreadsheet).
- ☐ Issue SOW to EIR Contractor requesting cost proposal. Accept (or request modification of) cost proposal and have COR authorize start of work.

- ☐ Assemble EIR Review Team members, including Peer Review Team members from Program.
- ☐ Develop draft EIR Review Plan.
- ☐ Request and receive documents from project.
- ☐ On-site readiness assessment, if warranted

- ☐ Ensure that LOIs identified in the EIR SOP have been consulted and incorporated for a project-specific, tailored, and comprehensive LOIs. *(see Appendix A and B)*
- ☐ Ensure LOIs from RCA/CAP activities have been incorporated.

- ☐ Receive and review submitted project documentation.
- ☐ Revise, finalize and distribute EIR Review Plan.

- ☐ Conduct On-site Review.
- ☐ Brief OECM Director of Project Management Systems and Assessments before out-brief.
- ☐ Conduct out-brief to include preliminary major findings, findings and recommendations.
- ☐ Disseminate and collect, if appropriate, EIR Feedback forms.
- ☐ Brief OECM Director upon return to office.

- ☐ Receive factual accuracy comments from Program. If necessary, coordinate pre-final brief and pre-final management brief.
- ☐ Site receives Corrective Action Plans (CAP).
- ☐ Program provides approach, status and evidence files for CAP items.
- ☐ EIR team concurs (or does not concur) with completed CAP items
- ☐ EIR team completes Addendum to the EIR Report (or CAP Review Report) to document its determinations regarding the CAP and its recommendation on validation.
- ☐ Transmit final EIR Report to PMSO/Program.

- ☐ Ensure EIR Report is archived appropriately in PARS II.
- ☐ Ensure EIR project documents reviewed are submitted to OECM and are archived.
- ☐ Ensure EIR findings are submitted in an excel spreadsheet format for categorization.

APPENDIX C
Example Lines of Inquiry and Required Documentation

EIR IN SUPPORT OF CD-2 and CD-3

Below is a discussion of required documentation, as well as the Lines of Inquiry (LOIs), that will generally form the scope of the CD-2 Performance Baseline EIR, as well as CD-3, Construction Readiness Reviews. Additional elements or LOIs beyond those presented in this document may be based on unique aspects of the project being reviewed and decisions reached during the scoping meeting. Both the EIR scope and required documentation may vary depending on the type of project and any tailoring that may be applied to the EIR. On a project-by-project basis, one or more of the core elements may be deleted from the review while others areas may be added to the EIR. The focus areas will vary with each project.

The minimum LOIs to be included are in bold-face print. Those are inclusive also of the Minimum LOIs to address RCA/CAP items included in Appendix A, and are noted accordingly. Also included in the Example LOIs are the core competency questions that are in relation to the specific areas, those areas including Cost, Schedule, Scope, Management (Contract and Project), Risk, and ES&H, Quality Assurance (QA), and Safeguards & Security.

Required Documentation for the EIR

In general, the following documents (or equivalents) are normally required for the CD-2 Performance Baseline EIR and CD-3, Construction/Execution Readiness EIR. Other associated material may be requested by OECM and the EIR team to ensure a complete and accurate review is performed. Note, if this EIR is being performed in conjunction with a ICR or ICE, the LOIs for the cost portion of the review are contained in the Cost Review and Estimate SOP.

- CD-0 Documents (e.g., Mission Need Statement, Approval of Mission Need)
- CD-1 Documents (e.g., Approval of Alternative Selection and Cost Range)
- Work Breakdown Structure (WBS) and WBS Dictionary
- Detailed Resource Loaded Schedule
- Summary project or milestone schedule
- Detailed Cost and Schedule Estimates, including Basis of Cost Estimate, Basis of Schedule Estimate, and all project-basis and assumptions
- Program Requirements Document (or equivalent)
- Cost estimate backup, including vendor quotations, parametric formulas, engineering calculation, historical costs, and the like.
- Critical Path and Near-Critical Path Schedules
- System Functions and Requirements Document (also referred to as the "Design-to" requirements or Design Criteria)
- Results of and Responses to Project Design Reviews and Technical Independent Project Reviews
- Design documents including drawings, specifications and design lists
- Design Review Report and comments resolution
- Conceptual Design Report
- Project Execution/Management Plans
- Evidence and results of constructability reviews of the design
- Preliminary Construction Execution Plan

- Integrated Project Team Charter (assignment letters as appropriate)
- Integrated Project Team recent minutes
- Documented Integrated Project Team Processes
- FPD Certification status and Integrated Project Team qualifications (resumes as appropriate)
- Federal and contractor organization chart and staffing plans
- Start-up Testing and Turnover Planning documents and other operations readiness plans (as appropriate)
- Hazards Analysis Report
- DNFSB and NRC Reports and correspondence
- Responses to DNFSB and NRC reports
- Preliminary Documented Safety Analysis reports
- Documentation of DOE and DFNSB endorsement of design and operational safety basis.
- Preliminary Safety Design Report (Hazard Category 1, 2, or 3 nuclear facilities)
- Preliminary Safety Validation Report (Hazard Category 1, 2, or 3 nuclear facilities)
- Preliminary Security Vulnerability Assessment Report
- National Environmental Policy Act documentation
- Risk Management Plan/Process
- Risk Register
- Risk Analysis, including probabilistic (e.g. Monte Carlo) results for both contractor and federal risks
- Acquisition Strategy/Acquisition Plan
- Value Management/Engineering Report
- Quality Control/Assurance Plan
- Interface Documentation (procedures, MOU/MOA with site M&O)
- Reports and CAPs from previous internal and external project reviews (if applicable)
- Project Control System description
- Change Control Process
- Configuration Management processes, plans and procedures
- Monthly and Quarterly Progress reports for past year; Quarterly Project Review briefings for past year
- Contracts applicable to the project
- Contract Management Plan
- Pending contract modifications/Requests for Equitable Adjustment
- Project Data Sheets
- Project Funding Profile (Program budget/planning office should identify if this profile is within the Program target budget profile)
- Regulatory agreement documentation (project commitments, milestones, deliverables, dates)

Additional documents required to support EIR for CD-3:

- CD-2 Documents (e.g., Approval of Performance Baseline)
- Program Requirements Document (or equivalent)
- All Baseline Change Proposal and disposition documentation

- Final Design Documents (including drawings, specifications, design lists)
- Detailed bottoms-up Cost and Schedule Estimates based on the completed design (includes bases of estimate and assumptions)
- Construction Execution/Management Plans (not Preliminary)
- Constructability Reviews
- Updated Risk Management Plan and Risk Analysis
- Safety Documentation including:
    - Preliminary Documented Safety Analysis Report
    - Safety Evaluation Report
    - Construction Project Safety and Health Plan

Example Lines of Inquiry

Cost

Are the scope, cost, and schedule firmly supported with sound underlying technical, economic, and programmatic bases, assumptions, and front-end planning (i.e., PDRI)?

Have credible and sufficiently accurate cost and schedule baselines been developed and supported by applicable tools and benchmarks (i.e., best practices such as those identified in the GAO Cost Estimating and Assessment Guide).

Is the design mature enough to support definition and development of credible current TRL definition, WBS elements development and contingency/MR planning, and to support to the resolution of constructability issues?

Have design review comments, integration issues (with Operations and other projects) and constructability constraints been addressed sufficiently?

Did the funding profile remain intact and viable?

Basis of Cost (As defined in the Resource Loaded Schedule)

- For selected WBS elements (typically, those constituting significant cost and/or risk), summarize the detailed basis for the cost estimate.
- **Assess the method of estimation and the strengths/weaknesses of the estimates for each WBS element reviewed. Ensure GAO's best practices in cost estimating are encompassed** *(See Appendix D).* **(RCA/CAP)**
- **Identify and assess the basis for and reasonableness of key programmatic, economic and project cost assumption**s as related to the quality of estimates for each WBS element, and risk management planning and contingency requirements.
- **Perform Independent Cost Estimate (ICE) for Major System Projects or an Independent Cost Review, as appropriate,, and ensure GAO's best practices in cost estimating are encompassed in the cost estimate. (RCA/CAP)**
- Assess the amount of and basis for escalation.
- Assess reasonableness of resource loading, including what resources are loaded.
- Identify whether the estimated costs for the project are reasonable based on professional expertise, parametric estimates, historical data, etc.
- Verify that the cost value of schedule contingency is included in the TPC
- **Verify findings from previous reviews been adjudicated, and the corrective actions are still in place.**
- **Provide a completed project cost profile table. Completed project cost profile tables are expected in all EIR reports. Additionally, the EIR team should include a milestone schedule graphic to accompany the cost profile table. Based on the project cost profile table, develop summary baseline cost tables of the proposed costs (i.e., PED, TEC, OPC, TPC, Contract Budget Base, Fee, DOE Direct Costs, and Contingency) for the EIR report (examples below). The EIR report narrative should discuss the relative value and percent Management**

Reserve (MR) expected to be held by the Contractor for the project and relate these values to what would be expected for a similar project.

Table – Budget Cost Breakdown – Funding Source Specific (future and sunk)

Description	FY06	FY07	FY08	FY09	FY10	FY11	FY12	Total
PED								
Construction								
TEC (contingency)								
OPC (contingency)								
TPC								

Table – Project Data Sheet Cost Breakdown – Funding Source Specific

Description	Costs to Date (as of _____)	Costs to Go	Total
PED			
Construction			
TEC			
OPC			
TPC			

Table – Earned Value Management System Breakdown – Funding Source Neutral

Description	FY06	FY07	FY08	FY09	FY10	FY11	FY12	Total
Contract Budget Base								
Fee/Profit								
Other DOE Direct Costs								
Contingency								
Performance baseline (TPC)								

** Contract Budget Base is inclusive of the Performance Measurement Baseline, any Undistributed Budget, and, Management Reserve.*

Table – Earned Value Management System Breakdown – Funding Source Neutral

Description	Costs to Date (as of _____)	Costs to Go	Total
Contract Budget Base*			
Fee/Profit			
Other DOE Direct Costs			
Contingency			
Performance baseline (TPC)			

** Contract Budget Base is inclusive of the Performance Measurement Baseline, any Undistributed Budget, and Management Reserve.*

(for EIR in support of CD-3)

- Identify the source and reason for any proposed substantive changes to the RLS since CD-2 relative to its consistency with the approved performance baseline (TPC, CD-4 completion schedule). Assess the basis and justification for these changes.
- For selected WBS elements (typically, those constituting significant cost, schedule and/or risk), summarize the detailed basis for the cost or schedule estimate. Identify strengths/weaknesses of the estimates reviewed.
- Identify and assess any changes since CD-2 to the basis for and reasonableness of key programmatic, economic, and project cost assumptions as related to the quality of estimates, and risk management planning and contingency requirements.
- Identify the amount of, and basis for, escalation. Assess the basis and justification for any changes since CD-2.
- Assess basis of resource loading, including what resources are loaded. Determine if resource requirements factor in project performance since CD-2 or performance of other similar projects in execution.

- **Provide an updated project cost profile table.**
- Based on the project cost profile table, develop summary baseline cost tables (i.e., PED, TEC, OPC, TPC, Contract Budget Base, Fee, DOE Direct Costs, and Contingency) and schedule tables of the proposed milestones (i.e., Critical Decision dates and other significant or critical project dates) for the EIR report. Identify and assess the basis and justification for any changes to the TPC and CD-4 schedule since CD-2.

Funding Profile and Budget

- (for EIR in support of CD-2 and CD-3) Review and provide the basis for the Funding Profile (e.g., latest Project Data Sheet).
- (for EIR in support of CD-2 and CD-3) Compare the annual budget with the cost requirements, and provide an assessment of whether the costs and budget are reasonably linked and can withstand normal budget turbulence during fiscal year transition periods (e.g., continuing resolutions, new start restrictions, etc.)
- **(for EIR in support of CD-2 and CD-3) Identify any significant disconnects between the performance baseline requirements and budget/out-year funding. Determine the reasonableness of the Budget Authority versus Budget Obligation profiles and assess the affordability of the project within the Program's budget profile.(RCA/CAP)**
- **Validate the funding profile remains viable and intact throughout the project lifetime. (RCA/CAP)**
- **Validate those projects with a TPC<$50M that full funding has been provided. (1)**
- **(for EIR in support of CD-2 and CD-3) Include budget/funding information in the project cost profile tables (Table 1, 2, 3 and 4).**

Schedule

Basis of Schedule (As Defined in the RLS)

- For the selected WBS elements, summarize the detailed basis of schedule estimate.
- Assess the method of estimation and the strengths/weaknesses of estimates.
- Identify and assess the basis for and reasonableness of key programmatic, economic and project schedule assumptions as related to the quality of estimates for each WBS element, and risk management planning and contingency requirements.
- Assess reasonableness of resource loading, including what resources are loaded.
- Determine if schedule contingency is derived quantitatively and if the calculated duration is placed between the end of the last project critical path activity and the "Submit Request for CD-4" milestone.
- Identify whether the estimated schedule for the project is reasonable based on professional expertise, parametric estimates, historical data, etc.
- Include CD milestone data on the project cost profile table referenced above and include summary baseline schedule tables of the proposed milestones (i.e., CD dates and other significant or critical project dates) in the EIR report.

Critical Path

- Assess whether the Critical Path is reasonably defined. Assess whether the Critical Path reflects an integrated schedule and schedule durations are reasonable. (For EIR in support of CD-3) Identify any changes since CD-2.
- (for EIR in support of CD-2 and CD-3) Provide the duration between the Critical Path completion date and the Project Completion date (CD-4). Assess whether the schedule contingency (float) is reasonable for this type of project.
- (for EIR in support of CD-2 and CD-3) Determine if there is a clearly defined critical path leading to submission of the CD-4 request.
- (for EIR in support of CD-2 and CD-3) Assess the critical path schedule for level of effort activities.
- (for EIR in support of CD-2 and CD-3) Verify that "near critical paths" are clearly identified.

Scope

Are the scope, cost, and schedule firmly supported with sound underlying technical, economic, and programmatic bases, assumptions, and front-end planning (i.e., PDRI)?

Has the design matured to the appropriate degree and been validated through appropriate and credible processes?

Is the new technology or technology applied in a new application mature enough and validated through appropriate tools (i.e. comparison with EIR Team's Technology Readiness Assessment)??

Have design review comments, integration issues (with Operations and other projects) and constructability constraints been addressed sufficiently?

Basis of Scope (As defined in the Work Breakdown Structure, System Functions and Requirements for CD-2, as Defined in Work Breakdown Structure, Final Drawings and Specifications, Final Design Functions and Requirements, and Site Final Design Review for EIR in support of CD-3)

- Assess whether the WBS and WBS dictionary incorporate all project work scope, and that the defined work scope and system requirements are derived from and consistent with the approved Mission Need and include a clear definition of responsibility for execution of each or the defined portions of work.
- Assess whether the Resource Loaded Schedule (RLS) is consistent with the WBS for the project work scope.
- Assess if the WBS represents a reasonable breakdown of the project work scope and if it is effective for internal management control and reporting.
- Identify and assess the basis for and reasonableness of key programmatic, economic, and project scope assumptions as related to the quality and completeness of the WBS, technical and design requirements, and risk management planning and contingency requirements. Identify all underlying technical assumptions and assess whether they

are sound and/or appropriately addressed within the Risk Management Plan and adequately supported with funded contingency, particularly for new technologies that have never been developed and/or prototyped within the proposed environment.

- **Assess whether it is reasonable to divide the work scope presented into smaller, discrete (completed and useable) projects to reduce risk. If applicable, identify the basis for managing such discrete projects in an integrated program.** **(RCA/CAP)**
- Confirm that a Program Requirements Document (PRD) exists and that project planning reflects the PRD.
- Assess whether "design-to" functions are complete and have a sound technical basis (The EIR team should include safety and external requirements, such as permits, licenses, and regulatory approvals, in their assessment.)
- **Assess whether the requirements have been defined well enough to validate a performance baseline.** **(RCA/CAP)**
- Assess whether the CD-4 (project completion) activities and requirements and project key performance parameters (KPP) are clearly defined in the PRD. Assess whether these activities and requirements are sufficiently defined, under change control and not expected to change, quantified, measurable, and can reasonably be determined as complete. Identify the CD-4 requirements/activities/KPPs in a separate table in the EIR report, including summary analysis results.
- Assess adequacy and completeness of standards and requirements to include DOE Directives (e.g., Policies, Orders, Standards, and Guides to include DOE O 413.3A, DOE-STD-1189, etc.) identified as being applicable and appropriate to the project either due to the nature of the project or contract requirements. Identify any areas of non compliance with the identified standards and requirements.
- **Ensure that an independent Project Definition Rating Index (PDRI) is conducted by the EIR Team and a PDRI Score Summary Table is included. Differences with the IPT PDRI should be assessed.** **(RCA/CAP)**

Table - Comparison of EIR Team and Project Team PDRI Scores

	EIR Team Scores	**Project Team Scores**
Cost		
Schedule		
Scope/Technical		
Management Planning and Control		
Safety		

(for EIR in support of CD-3)

- Identify the source and reason for any proposed changes to the project mission need, scope, or WBS since CD-2. Assess the basis and justification for these changes.
- Identify and assess any changes to the basis for and reasonableness of key programmatic, economic and project scope assumptions as related to the quality and completeness of the WBS, technical and design requirements, and risk management planning and contingency requirements since CD-2.
- Identify any changes to the CD-4 (project completion) activities and requirements and project KPPs since CD-2. Assess the basis and justification for any changes.

- Assess completeness and quality of drawings and design specifications. Review selected construction elements or systems, including the key project elements posing the more difficult construction challenges.
- Assess whether bid packages are sufficiently clear and well-defined as to be ready for bid.
- Assess whether all final design functions and requirements are reflected in the approved performance baseline, including safety SSCs and external requirements, such as permits, licenses, and regulatory approvals.
- Assess whether all required changes from the Site Final Design Review are incorporated into the approved performance baseline, and assess whether the technical scope elements of the approved performance baseline remain consistent with that approved at CD-2. Assess the basis and justification for any scope changes since CD-2.

Basis of Design (for EIR in support of CD-2)

- Review the basis of design and assess the reasonableness of the design requirements and output for each function/operation. Summarize the assessment by providing a description of the unit operation, the design parameters, the basis of the design parameters and an assessment of whether the design basis is reasonable.
- Ensure safety requirements resulting from review of safety documents (e.g., PSDR and PSVR) are incorporated into the design and baseline.
- Review surrogate tests, as applicable, and provide an assessment of whether surrogate composition reasonably represents the full range of feed streams and whether the design basis incorporates results of the tests.
- Review process and material balance flow sheets to assess the reasonableness of the input and output parameters for each unit operation, and adequacy to support environmental permitting, licensing and other regulatory decisions.
- Ensure that the design addresses results of reliability, availability, maintainability, and inspectability (RAMI) analyses.

Preliminary Design Review and Comment Disposition (for EIR in support of CD-2)

- Assess whether the design has progressed far enough (design maturity) to support the proposed performance baseline.
- Confirm that a design review has been performed by a qualified team, to ensure the adequacy of the preliminary design including adequacy of the drawings and specifications, and assess whether they are consistent with system functions, requirements, and KPPs.
    - Review the disciplines and experience of the project design review team. Provide an assessment of whether the design review team had appropriate experience and technical disciplines on the team.
- Review the design review comments and responses. Based on a reasonable sample, assess whether these comments have been incorporated into the design, and whether the costs and schedule associated with design changes have been incorporated into the performance baseline.

Start-Up Planning and Operations Readiness

- Ensure the start-up test plan identifies how tests will be determined to be successful, and that associated equipment and instrumentation has been included in the preliminary design.

- Review the startup and operational readiness test requirements and plans and assess whether they represent:
  - The acceptance and operational system tests required to demonstrate that the system meets design performance specifications, safety requirements, and KPPs, and
  - Sufficient scope definition to enable reasonable estimates of cost, schedule, and resources.
  - Ensure traceability of functional, operational, and safety requirements into the start-up test plan.
- Determine any exceptions taken by potential construction contractor or project consultants in meeting startup test specifications.
- Assess whether cost, time and resource estimates are defensible to accomplish the required startup activities and have been included in the performance baseline.
- Assess whether there is sufficient cost and schedule contingency for test and equipment failure during start-up testing.
- Assess whether the start-up plan has been fully integrated with existing functional organizations including security.
- Assess whether results of tests (e.g., equipment tests, process tests, surrogate tests, etc.) have been factored into startup and operational readiness planning.

Sustainable Design

- Assess whether the project team has identified sustainable design features, in accordance with the Energy Policy Act of 2005, Executive Order 13423, and DOE O 450.1 chg 3, and that these features have been properly accounted for within the proposed performance baseline.
- Assess whether the project is eligible for LEED certification.
- (For EIR in support of CD-3) Identify and assess any changes to sustainable design requirements and plans since CD-2 relative to following LOIs.

New Technology and Technology Readiness

- Review all technology decisions that have been made to date and determine whether the project is incorporating new technologies or existing technologies in new applications. Identify critical technologies.
- Assess the plans for and results of tests of new technologies or new applications of existing technology. Determine if the scale of the test is adequate to mitigate risks and/or safety concerns.
- **Assess whether identified technologies are at a sufficient level of maturity to be incorporated into the design and baseline. A Technology Readiness Assessment (TRA) should be conducted by the EIR Team on new technologies and differences with the IPT Technology Readiness Levels (TRLs) assessed. Ensure a TRL Score Summary table is included in the EIR report. .** **(RCA/CAP)**

Table - Comparison of EIR Team and Project Team TRLs of new or newly applied technologies

New or newly applied technologies	EIR Team assessed TRLs	Project Team assessed TRLs
New Technology A	TRL X	TRL Y
New Technology B		

- Assess the TRA and respective scoring plan for completeness and consistency with industry/Federal standards and benchmarks.
- Assess whether the proposed performance baseline adequately provides for sufficient cost and schedule to accomplish required research, development, testing, and implementation of these new technologies or new applications of existing technologies.
- (for EIR in support of CD-2 and CD-3) Determine if the Risk Management Plan accounts for risks associated with new technologies or new applications of existing technologies, and that adequate contingency has been included.
  (for EIR in support of CD-3)
- Identify and assess any changes to technology readiness since CD-2 at CD-3.
- Assess whether the identified technologies are at an increased and sufficient level of maturity to be included in construction. To the extent possible, provide an analysis of the TRL for the applicable technologies identified [Government Accountability Office Report 07-336 Major Construction Projects Need a Consistent Approach for Assessing Technology Readiness to Help Avoid Cost Increases and Delays, March 2007]
- Assess whether the approved performance baseline adequately provides for sufficient cost and schedule to implement these new technologies or new applications of existing technologies.
- Determine if the Risk Management Plan accounts for risks associated with new technologies or new applications of existing technologies, and that adequate contingency has been included.

Risk

Have relevant and comprehensive risk and contingency analyses and Risk Management Plans been conducted by DOE and its contractor?

Risk and Contingency Management

- **Describe the approach used to identify project risks and assess the adequacy of this approach, as well ensure best practices are incorporated.** **(RCA/CAP)**
- Assess adequacy and completeness of both DOE and contractor risk management planning including the method(s) used to identify risks, and whether a reasonably complete list of potential risks was developed for analysis.
- List key risks (e.g., programmatic, economic, those resulting from assumptions, technical, including those associated with use of critical technologies, etc.) and risk rankings in a table, and provide the EIR team's assessment of the risk.
- Assess whether all appropriate risk handling and mitigation actions, including accepted risks and residual risks, have been incorporated into the performance baseline.
- Identify and assess cost and schedule contingency (both contractor and DOE).
- Provide an assessment of whether the analysis for and basis of contingency is reasonable for this type of project and its associated risks.
- Ensure contingency analysis and allowances are tied to risk assessments.
- Ensure contingency accounts for estimate uncertainty, which is directly tied to design maturity and the estimating methodologies used.

- Assess adequacy of the qualitative analysis and rating (high, medium, or low) of current risks (including site specific factors such as availability of contractors) for probability of occurrence and for consequence of occurrence.
- Evaluate the extent and adequacy of quantitative risk analysis.
- Evaluate whether the risk watch list and risk assessment sheets appear to be complete.
- Evaluate the adequacy of the management control process for risk status/updating.
- **Ensure the project team is aware of risk management tools (such as the Centralized Risk Register Tool).** **(RCA/CAP)**
- **Ensure the project team fully understand the distinction between Management Reserve (MR) and Contingency.** **(RCA/CAP)**

(for EIR in support of CD-3)

- Identify and assess any substantive changes to the Federal and contractor risk and contingency management plans or processes since CD-2.
- Assess whether the risk assessment and management plan have been updated, as appropriate, to address any new risks identified in final design and evaluate the adequacy of the management control process for risk status/updating.
- Evaluate whether the risk watch list appears to be complete.
- Assess whether all appropriate risk handling and mitigation actions, including accepted risks and residual risks, have been incorporated into the approved performance baseline, including cost and schedule contingency.
- Identify and assess cost and schedule contingency. Provide an assessment of whether the basis of contingency is reasonable for this type of project and its associated risks, and whether cost and schedule contingency, including value/cost associated with schedule contingency, remains sufficient for project risks.
- Assess MR/contingency drawdown and utilization history for reasonableness, and determine if sufficient contingency remains.

Documentation and Incorporation of Lessons Learned

(Note: This element is based not only on good management practice, but the future CD-4 requirement to produce a lessons learned document.)

- (for EIR in support of CD-2 and CD-3) Assess whether the project team is documenting and sharing lessons learned from their project internally and externally.

(for EIR in support of CD-2 and CD-3) Assess whether the project team is reviewing and incorporating lessons learned from this and other projects.

Management (Contract and Project Management)

Does the IPT have an appropriate complement of personnel possessing the requisite skill set, commitment, and effectiveness is in place and prepared to successfully execute the project (i.e. compared to DOE's Staffing Guide or other appropriate staffing model)?

Is the FPD certified at the appropriate level and is prepared and capable to manage the project or program?

Is Are the Acquisition Strategy and Plan appropriate, support project delivery and provide the best value to the Government?

Is the contract aligned with the project and are contractual incentives aligned with project team success metrics?

Are there appropriate management systems and processes in place and functional to allow FPDs and IPTs to have clear communication throughout the organization to ensure authority, accountability and responsibility?

Is there a system in place to hold personnel (Feds and Contractors) accountable?

Is the project team aware of and well-informed of DOE policy and guidance?

Does the IPT have an appropriate definition and understanding of their role in effectively providing project oversight?

Project Execution

- **Ensure project is consistent with DOE O 413.3B requirements.** **(RCA/CAP)**
- **Ensure DOE O 413.3B requirements are met appropriately at each Critical Decision.** **(RCA/CAP)**
- Review the Project Execution Plan (PEP) and determine if it establishes a plan for successful execution of the project, if the project is being managed and executed in accordance with the PEP, and if it is consistent with other project documents. Determine if the PEP has been reviewed by appropriate site and Headquarters' organizations, and if all comments have been resolved.
- Determine if there is a program for integrated regulatory oversight and assess if applicable Federal, state, and local government permits, licenses, and regulatory approvals, including strategies and requirements 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 or milestone dates established. Identify if schedule for receipt of authorization from regulators is realistic and based on experience, and that requirements and milestone dates are updated as necessary and kept current.
- Assess key inter-site and intra-site coordination issues and determine if they are identified, addressed and resolved or appropriate plans in place to accomplish resolution.
- Determine if all regulators and stakeholders are identified, and assess if their relationship to the project is evaluated, project impacts on them and their interests identified, and required interfaces with external organizations or authorities addressed.
- Determine if an appropriate Public Participation Plan is in place based on available stakeholder information and size and scope of project, and if specific stakeholder group issues are addressed relative to project goals and objectives, technical issues, project risk, and environmental strategies.
- Identify applicable GAO, IG, and other oversight body reports and determine if issues or concerns have been resolved or otherwise adequately addressed. Similarly, identify and assess relevant Congressional language in authorization and appropriation bills.

(for EIR in support of CD-3)

Construction/Execution Planning

- Assess adequacy of construction/execution planning.
- Review the adequacy of constructability reviews to assess whether construction documents have been reviewed for accuracy, completeness, and systems coordination issues.
- Assess status of logistics including interface with operating facilities and maintenance organizations, infrastructure interfaces, adequacy of lay-down areas, temporary construction facilities, security and badging readiness, and other logistical elements.
- Identify potential coordination issues, missed details, time delays, potential liability, or inter-contractor coordination items.
- Assess adequacy of the Federal IPT, Site M&O/Prime Contractor, and/or Construction Management Organization (as applicable), and construction contractor staffing for construction execution to ensure adequate oversight of the work, including safety, performance, and quality.
- Determine oversight and management of the construction contractor by IPT and site prime contractor.

Contract Management

(for EIR in support of CD-2)

- Assess the current existing contract including cost, schedule, and work scope against the proposed performance baseline and identify any potential contract and project integration issues. **Ensure contract and project scope, cost and schedule are in alignment with change control.** **(RCA/CAP)**
  - Determine whether the terms of the current contract support the project as currently planned and identify any gaps between the current contract and proposed performance baseline.
  - Assess effectiveness of integrated change control and use of change control boards by both Federal and contractor organizations.
- Likewise, assess any planned contract modifications and requests for equitable adjustments relative to the proposed performance baseline.
- Evaluate the status of contract management, and if applicable, plans and schedule to bring the contract up to date.
- Assess project plans to self-perform construction and operations readiness versus subcontracting that work.
- Assess draft documents to be provided to the services (e.g., construction) and product (e.g., purchased materials and equipment) subcontractors including submittal of documents by the subcontractors required before notice to proceed (e.g., design requirements, EVMS, and systems testing and turnover requirements).
- **Ensure the project Contracting Officer is engaged and a member of the project team.** **(RCA/CAP)**

Project Controls/Earned Value Management System

(Note: The EIR Team review of a contractor's Earned Value Management System (EVMS) does not constitute an EVMS Certification Review or Surveillance Review, unless specifically included as part of the review scope.) **(for EIR in support of CD-2 and CD-3) Assess the status of the contractor's project control system to include the EVMS relative to the requirements of the contract and DOE O 413.3B. If the EVMS system is not certified, verify that a timeline is in place to do so.** **(RCA/CAP)**

- (for EIR in support of CD-2 and CD-3) Assess whether project control systems and reports are being used to report project performance, whether the data is being analyzed by the Federal IPT and contractor management, and that management action is taking place as an outcome of the analysis function.
- (for EIR in support of CD-2 and CD-3) Evaluate the control process whereby projects incorporate formal changes, conduct internal re-planning, and adjust present and future information to accommodate changes. Determine if changes, including acceptable retroactive changes (correcting errors, routine accounting adjustments, or improving accuracy of the performance measurement data), are documented, justified, and explained.
- (for EIR in support of CD-2 and CD-3) If the project contractor has a certified EVMS, assess whether a surveillance system is in place to maintain the system for continued compliance with the American National Standards Institute (ANSI) Standard (ANSI/EIA-748A or applicable version).
  - Review the contractor's EVMS system/project control description.
  - Assess the contractor's surveillance program.
- (for EIR in support of CD-2 and CD-3) If the project contractor does not have a certified EVMS, assess the likelihood of the EVMS being certified no later than CD-3.
  - Determine if there is an EVMS certification review scheduled to occur within sufficient time to permit EVMS certification, and assess the status of efforts and management focus on ensuring the EVMS is ready for certification review.
  - If a certification review is in process, assess the status of efforts and management focus on resolving open issues to obtain certification within sufficient time preceding the baseline Critical Decision dates.
  - (for EIR in support of CD-3) If the project contractor does not have a certified EVMS, but a certification review is in process of being completed, assess the status of efforts and management focus on resolving open issues to obtain certification consistent with the baseline CD-3 date.
  - **Ensure reporting capability through PARS II. (RCA/CAP) Ensure contract requires Contractor to perform electronic upload. Ensure Contractor has extraction tools (is is developing) to enable capability to electronically upload when CD-2 is approved.**

Value Management/Engineering

- Assess the applicability of Value Management/Engineering and if a Value Management/Engineering analysis has been performed with results being incorporated into the proposed performance baseline.
- Provide an assessment of the Value Management/Engineering process for this project. Include whether the VM team had a reasonable skill mix and experience background.
- Assess whether life cycle cost analysis was reasonably performed as part of the trade-off studies and various alternatives reviewed.
- (for EIR in support of CD-3) Assess the application of Value Management/Engineering during final design, and if results have been incorporated into the approved performance baseline.

Acquisition Strategy/Plan

- Review the Acquisition Strategy/Plan to determine if a strategy/plan for successful execution of the project is established, if the project is being executed in accordance with the strategy/plan, and it is consistent with other project documentation.
- (for EIR in support of CD-3) Review the Acquisition Strategy/Plan to determine if there have been any significant changes and if the acquisition approach continues to represent the best value to the government.
- Assess whether there are adequate contractor incentives (and disincentives) to enhance project execution.
- Evaluate any changes from previously approved Acquisition Strategies/Plans and assess whether the current Strategy/Plan still represents best value to the Government.

(for EIR in support of CD-3)

- Review the PEP and determine if the project is being managed and executed in accordance with it. It should be updated to reflect any changes as a result of final design and be consistent with the other project documents.
- Identify and assess any changes to the integrated regulatory oversight program since CD-2. Determine if applicable Federal, state, and local government permits, licenses, and regulatory approvals, including strategies and requirements necessary to construct and operate a facility or to initiate and perform project activities are being obtained when needed to continue project execution on schedule or milestone dates established. Identify if schedule for receipt of authorization from regulators is updated and kept current.
- Identify and assess any changes since CD-2 to key inter-site or intra-site coordination issues, or stakeholder relationships. Determine if they are identified, addressed and resolved or appropriate plans in place to accomplish resolution.
- Identify and assess if any new GAO, IG, or other oversight body reports are available since CD-2 and determine if issues or concerns are adequately addressed. Similarly, identify and assess relevant Congressional language in authorization and appropriation bills.

Integrated Project Team

- **Review Federal and contractor IPT Charters and determine if all appropriate disciplines are included, including the Contracting Officer. (RCA/CAP)**
- **Confirm that IPT and Program roles, responsibilities and authority and clearly defined. (RCA/CAP)**
- **Assess whether HQ and Field Organizations exhibit a working relationship that will ensure effective interaction. (RCA/CAP)**
- Confirm that the FPD is certified at the appropriate level to manage this project.
- **Validate the developed staffing model and methodology. Assess both Federal and contractor project management staffing in terms of number of personnel, skill set, effectiveness, quality, organizational structure, division of roles/responsibilities, and processes for assigning work and measuring performance. Ensure a Project staffing comparison table is included in the EIR report. (Differentiate between full and part-time IPT members.) (RCA/CAP)**

Table - Comparison of EIR Team and Project recommended staffing level

	EIR Team recommended staffing level (DOE G 413.3-19, *Staffing Guide for Project Management*)	Project recommended staffing level	Current Project staffing level (at the time of the EIR)
Integrated Project Team*			

** Table should decompose Integrated Project Team (IPT) in terms of the number of personnel and skill set, as appropriate, and differentiate between full and part-time IPT members.*

- Assess whether the Federal and contractor project teams can successfully execute the project.
- Ensure IPT membership includes appropriate safety experts. Identify if the Federal IPT nuclear safety expert is validated as qualified by the Chief of Nuclear Safety/Chief of Defense Nuclear Safety in accord with DOE O 413.3B.
- Assess the span of control (in terms of not only supervisory responsibility but also management of dollars and project issues) of key project management personnel, including the FPD, to determine whether they can successfully perform their duties.
- Identify any deficiencies in the Federal or contractor IPTs that could hinder successful execution of the project.

ES&H, QA, Safety & Security

Are the scope, cost, and schedule firmly supported with sound underlying technical, economic, and programmatic bases, assumptions, and front-end planning (i.e., PDRI)?

Is the design mature enough to support definition and development of credible current TRL definition, WBS elements development and contingency/MR planning, and to support to the resolution of constructability issues?

Have design review comments, integration issues (with Operations and other projects) and constructability constraints been addressed sufficiently?

Hazards Analysis/Safety

(Note: Includes LOIs specific to Hazard Category 1, 2, and 3 nuclear facilities, as applicable.)

- (for EIR in support of CD-2 and CD-3) Assess whether the hazards identified and the accident scenarios represent a reasonably comprehensive list. Determine if controls are capable of mitigating defined accidents and if confinement/containment of radioactive material is addressed.
- (for EIR in support of CD-2 and CD-3) Assess expectations for facility level systems, structures, and components (SSC). Determine whether SSCs for worker and public safety, and safety class/safety significant (SC/SS) equipment and components, have been incorporated into the design and proposed performance baseline.

- (for EIR in support of CD-2 and CD-3) Review the Integrated Safety Management System and assess whether safety has been appropriately addressed throughout the lifecycle of the project.
- (for EIR in support of CD-2 and CD-3) Assess the relevant change control process relative to required documentation and necessary SSCs.
- (for EIR in support of CD-2 and CD-3) Assess the Hazards Analysis (HA) process, including the use of internal and external safety reviews.
- (for EIR in support of CD-2 and CD-3) As applicable, review any Defense Nuclear Facilities Safety Board (DNFSB) and/or Nuclear Regulatory Commission (NRC) interface and discuss with the local representatives the status of their involvement. Assess whether DNFSB/NRC issues have been reasonably considered and addressed. If not, identify the outstanding issues, assess when they will be resolved and determine what risks they pose.
- (for EIR in support of CD-2 and CD-3) Assess status of and resolution of corrective actions by the contractor, including incorporation of any additional identified safety requirements.
- (for EIR in support of CD-2) Identify if the HA incorporates expectations from the Safety Design Strategy (SDS).
- (for EIR in support of CD-2 and CD-3) Review the Preliminary Safety Design Report (PSDR), SDS, and Fire Hazards Analysis (FHA). Assess whether these documents are complementary, reflect continuously refined analyses based on evolving design and safety integration activities during preliminary design, address all required elements in accord with DOE-STD-1189, and have been evaluated by appropriate individuals and organizations.
- (for EIR in support of CD-2 and CD-3) Assess whether the SDS addresses the following three main attributes of safety integration as the project progresses through project planning and execution:
  - The guiding philosophies or assumptions to be used to develop the design;
  - The safety-in-design and safety goal considerations for the project;
  - The approach to developing the overall safety basis for the project.
- (for EIR in support of CD-2) Ensure a Preliminary Safety Validation Report (PSVR) has been completed. Assess whether it adequately addresses the required review of the PSDR or Preliminary Documented Safety Analysis (PDSA).

(for EIR in support of CD-3)

- Identify changes to the hazards analysis and safety basis since CD-2. Assess whether these changes are reflected in the approved performance baseline scope, cost, and schedule.
- Ensure a Safety Evaluation Report (SER) has been completed and assess whether it adequately addresses the required review of the PDSA.
- Determine if a Construction Project Safety and Health Plan has been developed and prepared to assure worker construction hazards will be evaluated and controls will be adequately established.
- Determine that the contractor (and subcontractor) field staff has or will have the proper Integrated Safety Management System training to assure continuous readiness to work safely throughout the life of the project in the field.

Quality Control/Assurance

- Assess the applicability, completeness, adequacy, and flow-down of the Project Quality Assurance Program, including software quality assurance (SQA), based on DOE Order 414.1C and 10 CFR 830 Subpart A.
- Review the record of QA audits performed on the project and the disposition of the audit findings.
- Determine if the QA/QC Plan and implementing procedures address personnel training and qualifications, quality improvement programs, document and record management, work processes, receipt inspection, commercial grade dedication, management and independent assessments, acceptance test planning and implementation, and the process for dispositioning field changes. Assure that the contractor QA/QC Plan addressing the scope and content for the CD-2 phase of the project has been reviewed and approved by the appropriate DOE organization.
- Determine if there are QA/QC requirements for construction planning and work processes.
- Assess whether QA requirements (NQA-1 if applicable) have been appropriately incorporated into the "Design-to" functions, and costs, time and resources adequately estimated and included in the baseline.
- (for EIR in support of CD-3) Identify and assess any changes to the Quality Control and Quality Assurance plan since CD-2 relative to following LOIs.

Safeguards and Security

- Assess whether a Preliminary Security Vulnerability Assessment Report as defined in DOE M 470.4-1 has been updated as required by DOE O 413.3B.
- Assess the completeness and accuracy of the applicable safeguards and security requirements, the methods selected to satisfy those requirements, and any potential risk acceptance issues applied to the project and their incorporation into the project.
- Assess adequacy of incorporation of Design Basis Threat requirements into the baseline.
- Review the proposed performance baseline to ensure that cost, schedule, and integration aspects of safeguards and security are appropriately addressed.
- Assess whether all feasible risk mitigation has been identified and that the safeguards and security concerns for which explicit line management risk acceptance will be required are appropriately supported.

APPENDIX D
EIR for Other Activities, Example Lines of Inquiry and Required Documentation

Scope of Front-End Planning Review

The following list identifies specific LOIs that the EIR team may address.

- Determine the extent to which a complete WBS and a network schedule have been developed.
- Evaluate the completeness and appropriateness of key project requirements, including alignment with approved mission need.
- Review all major programmatic, regulatory, budget funding, economic, and project assumptions.
- Assess the quality of the preliminary PEP.
- Determine continued relevance/appropriateness of Acquisition Strategy.
- Examine whether the preliminary design has an integrated approach to engineering and operations.
- Examine completeness of VE activities.
- Assess whether the IPT Charter is complete with representation from key functions and areas.
- Assess whether safety has been appropriately incorporated into design, management, and work process.
- Review any DNFSB and/or NRC interfaces and discuss with the local representatives the status of their involvement. Assess whether DNFSB/NRC issues are being reasonably considered and addressed. If not, identify the outstanding issues, assess when they will be resolved and determine what risks they pose.
- Assess completeness of process for Independent Project Reviews (IPRs) including Technical IPRs.
- Review any requirements for Long-Lead Procurement (LLP) or early site work and associated plans.
- Determine whether regulatory requirements are being met and/or addressed by design and management (i.e. NEPA, RCRA, TSCA, CERCLA, CWA, CAA, etc).
- Determine the quality of Hazards Analysis.
- Assess incorporations of Sustainable Development.
- Determine completeness of QAP.
- Assess plans for compliance with safeguards and security requirements.

Required Documentation for the Front-End Planning Review

In general, the following documents are useful for a Front-End Planning Review. Other associated material may be requested by OECM and the EIR team to ensure a complete and accurate review.

- CD-0 Document (e.g., Mission Need Statement, Approval of Mission Need)
- CD-1 Documents (e.g., Approval of Alternative Selection and Cost Range)
- WBS and WBS Dictionary
- Network Schedule
- Conceptual Design Report
- Acquisition Strategy
- Project Execution Plan
- Risk Management Plan
- IPT Charter

- Design Review documents
- Technical Independent Project Review Documents
- Long-Lead Procurement documentation
- Environmental Documents
- Sustainable Development documentation
- Preliminary Security Vulnerability Assessment Reports
- Conceptual Safety Design Report
- Preliminary Hazards Analysis Report
- Quality Assurance Program documentation

Scope of Project Status Assessment Review

The following list identifies specific LOIs that the EIR team may address.

- Assess the current contract including cost, schedule, and scope of work relative to the current baseline and identify any potential contract and project integration issues or gaps between the terms of the current contract and the project as currently planned and executed.
- Likewise, assess any planned contract modifications and requests for equitable adjustments relative to the proposed performance baseline.
- Evaluate the status of contract management, and if applicable, plans and schedule to bring the contract up to date.
- Assess and identify any deficiencies in the Federal or contractor IPTs that could hinder successful execution of the project.
- Review the PEP and assess if the project is being successfully managed and executed in accordance with the PEP.
- Review Project Acquisition Strategy/Plan and assess if the project is being successfully managed and executed in accordance with the Strategy/Plan.
- Review the Project Quality Assurance/Quality Control Plan and assess if the project is being successfully managed and executed in accordance with it.
- Assess the status of the contractor's project control system to include the EVMS relative to the requirements of the contract and DOE O 413.3B.
- Assess whether the project control system and reports are being used to report project performance, whether the data are being analyzed by the Federal IPT and contractor management, and that management action is taking place as an outcome of the analysis function.
- Evaluate the control process whereby projects incorporate formal changes, conduct internal re-planning, and adjust present and future information to accommodate changes. Determine if changes, including acceptable retroactive changes (correcting errors, routine accounting adjustments, or improving accuracy of the performance measurement data), are documented, justified, and explained.
- Assess the status and results of the EVMS surveillance system for maintaining compliance with the ANSI/EIA-748.
- Assess status of start-up planning and operations readiness.
- Assess the status of updated hazards/safety analysis documentation and identify potential impacts to the approved performance baseline.
- Assess whether the risk assessment and management plan have been updated, as appropriate, to address any new risks identified, and evaluate the adequacy of the management control process for risk status/updating.

- Evaluate whether the risk watch list appears to be complete.
- Identify status of cost and schedule contingency, and provide an assessment of whether it remains reasonable for the project and its associated risks at the current state of execution.
- Assess MR/contingency drawdown and utilization history for reasonableness, and determine if sufficient contingency remains.
- Assess the status of the Critical Path is reasonably defined. Assess whether the Critical Path continues to reflect an integrated schedule and that schedule durations are reasonable.
- Provide the duration between the Critical Path completion date and the Project Completion date (CD-4). Assess whether the schedule contingency (float) remains reasonable at this phase of the project.

Required Documentation for the Project Status Assessment Review

In general, the following documents are useful for a Project Status Assessment Review. Other associated material may be requested by OECM and the EIR team to ensure a complete and accurate review.

- Project Execution Plan
- Baseline Change Proposal(s) and supporting backup
- Documentation of prior independent reviews
- Construction Execution Plan
- IPT Charter and Recent Meeting Minutes
- Technical Independent Project Review Documents
- Hazards/Safety Analysis documentation
- Quality Assurance Program documentation
- Applicable contract documentation
- Project Controls/EVMS reports
- Risk management documentation (Risk Management Plan, including the Federal and Contractor Plan, risk register)
- Regulatory agreement documentation (project commitments, milestones, deliverables, dates)
- Federal and contractor organization and staffing plans