



ANALYSIS OF ALTERNATIVES

BEST PRACTICES & LESSONS LEARNED

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AoA Requirements



- **DOE Order 413.3B (Table 2.1 CD-1 Requirements)**
 - “Conduct an ‘Analysis of Alternatives’ that is independent of the contractor organization responsible for managing the construction or constructing the capital asset project...”
- **Fiscal Year 2017 National Defense Authorization Act, Section 3111: “INDEPENDENT ACQUISITION PROJECT REVIEWS OF CAPITAL ASSETS ACQUISITION PROJECTS”**
 - a) Reviews.--The appropriate head shall ensure that an independent entity conducts reviews of each capital assets acquisition project as the project moves toward the approval of each of critical decision 0, critical decision 1, and critical decision 2 in the acquisition process.
 - “(b) Pre-critical Decision 1 Reviews ... such review shall include-
 - “(1) a review using best practices of the analysis of alternatives for the project; and
 - “(2) identification of any deficiencies in such analysis of alternatives for the appropriate head to address.”

The Office of Cost Estimating & Program Evaluation (CEPE) conducts the independent AoA review for NNSA



- Government Accountability Office 22 Best Practices
 - Initialize the AoA process (7)
 - Identify alternatives (4)
 - Analyze alternatives (6)
 - Document and review the AoA process (4)
 - Select a preferred alternative (1)
- Lesson learned: best practices are largely about process, but independent review is about quality and content



Institutionalizing AoAs across the NNSA

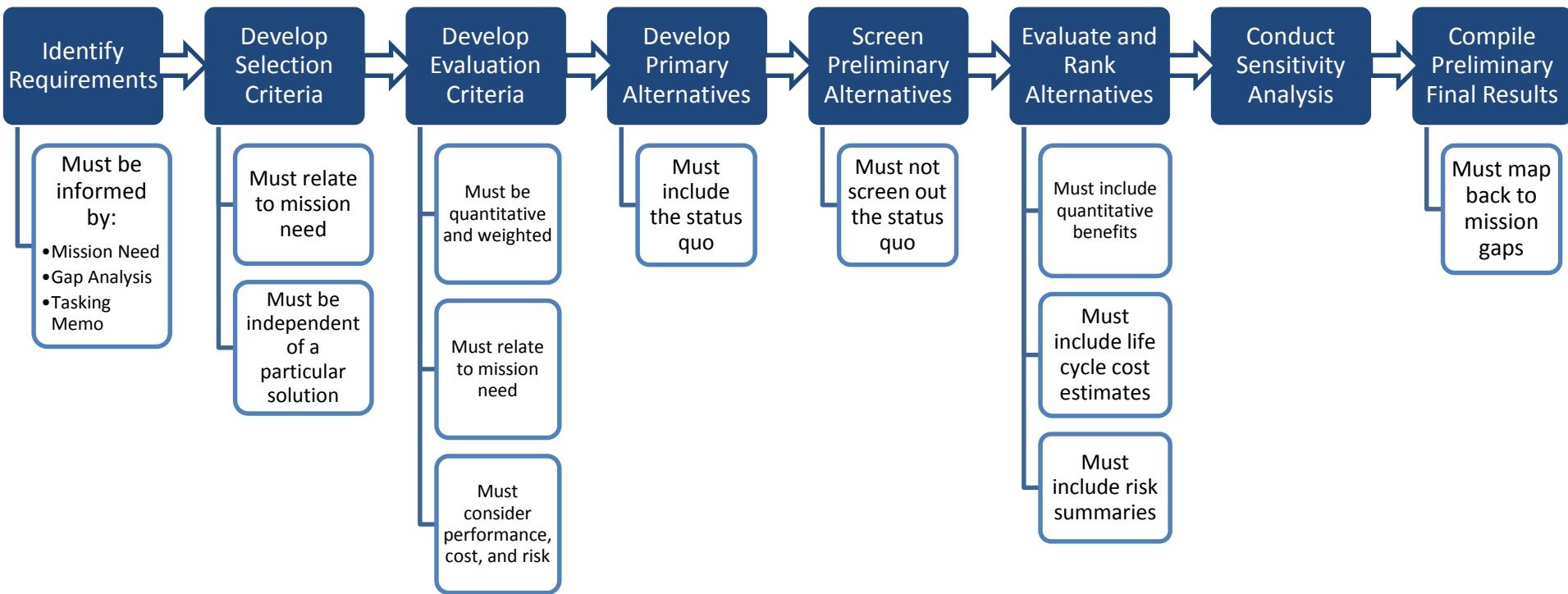


Stage	AoA Initiation	AoA Kick-Off	AoA Planning	AoA Analysis	AoA Preliminary Results Review	AoA Finalization	AoA Review	Alternative Selection
Process Description	The Project Owner directs the PME to conduct the AoA. The PME chooses an AoA Team and selects a Federal AoA Lead as the team lead.	The Project Owner conducts a kick-off meeting with the AoA Team and the Steering Committee .	The AoA Team describes the structure and methodology of the AoA in a Study Plan. The Director of CEPE and PME approves the Study Plan.	The AoA Team conducts the AoA analysis by defining mission requirements, screening and evaluating alternatives, conducting a sensitivity analysis, and documenting the results.	The Steering Committee conducts a review of the AoA Team's initial results, providing additional guidance as necessary.	The AoA Team compiles the results of the AoA analysis into one document with all supporting information. After receiving review by the Steering Committee , the Final Report is approved by the PME .	The Director of CEPE reviews the Final Report and submits a Sufficiency Memo to the PME and the Administrator .	The PME chooses an alternative based on the results of the AoA.
Deliverable	Tasking Memo		Study Plan			Final Report	Sufficiency Memo	Alternative Selection Document

NNSA Business Operating Procedure-03.07 “Analysis of Alternatives”:
 Establishes governance and deliverables, follows best practices, and leads to a
repeatable process and defensible analysis

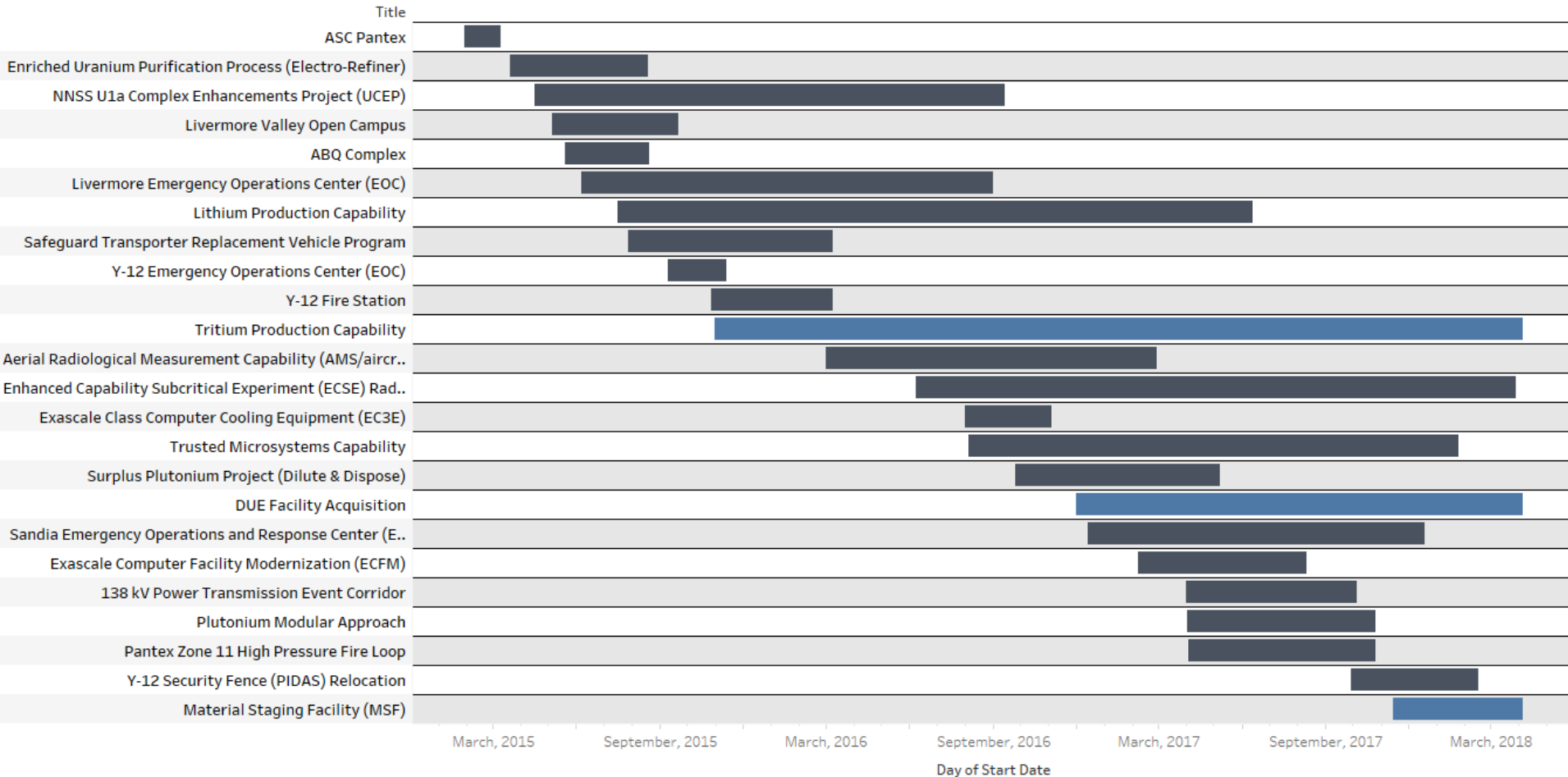


AoA Analysis Process





NNSA AoAs (circa 2018)



Status
 ■ Completed
 ■ Ongoing



Lessons Learned



- Keep the status quo!
- Requirements should precede, not be concurrent, with the AoA
- Offices external to program (e.g., budget, AoA independent reviewer, project management, field office, and general counsel, ...) provide valuable advice to steer AoA execution
- Cost estimates should bound the option space, not just be comparative among alternatives
- We never have time to do it right, but we always have time to do it twice



Back Up



AoA Steering Committee Composition



Organization(s)	Role	Representation
Program (10/20/40/50/70/80/IM) - Project Owner - PME (Chairs Steering Committee) - Program / Project Office	Execution Responsibility	Standing
CEPE	Independent Review	
MB	Budgetary Expertise	
APM	Project Management Expertise	Standing for Capital Asset Acquisition Projects (DOE Order 413.3B), otherwise Tailored
Field Offices Other Programs	Stakeholders & Subject Matter Experts	Tailored



NNSA Major System Acquisition Projects Under Prior AoA & 413.3B Process



Project Title	CD-0 Cost Range	CD-1 Cost Range	CD-1 Reaffirmation	CD-2/3	Current Estimate	Notes
Mixed Oxide Fuel Fabrication Facility (MOX)	\$1.4B Oct 1997	\$1.4B Mar 1999	--	\$4.8B April 2007	\$17.2B	Terminated
Chemistry and Metallurgy Research Building Replacement (CMRR)	\$420 – 955M July 2002	\$745 – 975M May 2005	\$2.4 – 2.9B Aug 2014	--	--	CMRR-NF cancelled after costs balloon to > \$5B. CMRR broken into multiple subprojects (RLUOB, REI1, REI2, PEI, RC3...)
Uranium Processing Facility (UPF)	\$0.6 – 1.1B Dec 2004	\$1.4B – 3.5B July 2007	\$4.2 – \$6.5B June 2012	\$6.5B Mar 2018	\$6.5B	Space fit issues emerged post CD-1R (2012) and led to Red Team review & current approach

