

GAO@100 Highlights

Highlights of [GAO-21-194](#), a report to congressional committees

Why GAO Did This Study

NNSA is responsible for maintaining the nation's nuclear stockpile. To analyze the performance, safety, and reliability of nuclear weapons, it acquires high-performance computing (HPC) systems to conduct simulations. The latest system, El Capitan, is expected to be fully deployed by March 2024.

The committee report accompanying the Energy and Water Development and Related Agencies Appropriations Act, 2019, includes a provision for GAO to review NNSA's management of its Advanced Simulation and Computing program. This report examines, among other things, (1) the extent to which NNSA's AOA process for the El Capitan acquisition met best practices and followed agency policy and guidance and (2) the extent to which NNSA is implementing selected acquisition best practices in carrying out the El Capitan acquisition program. GAO reviewed documents and interviewed NNSA officials and laboratory representatives involved in carrying out the AOA and acquisition processes.

What GAO Recommends

GAO recommends that NNSA (1) ensure that future HPC acquisition programs follow AOA best practices, where possible, and justify and document any deviations consistent with policy; (2) ensure that an independent entity conducts future AOA processes; and (3) update and maintain acquisition program documents to include El Capitan requirements for the ongoing acquisition. NNSA generally concurred with these recommendations.

View [GAO-21-194](#). For more information, contact Allison Bawden at (202) 512-3841 or bawdena@gao.gov or Kevin Walsh at (202) 512-8151 or walshk@gao.gov.

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HIGH-PERFORMANCE COMPUTING

NNSA Could Improve Program Management Processes for System Acquisitions

What GAO Found

The National Nuclear Security Administration's (NNSA) analysis of alternatives (AOA) process for its \$600 million El Capitan HPC acquisition did not fully follow agency policy that states that AOA processes should be consistent with GAO best practices, where possible, and any deviations must be justified and documented. According to GAO best practices, a reliable AOA process should meet four characteristics: it should be comprehensive, well documented, unbiased, and credible. As seen in the table, the AOA process for El Capitan partially met one of these characteristics and minimally met the other three. NNSA did not justify or document the deviations from these best practices, as required by NNSA policy. GAO also found that the AOA process was conducted by the contractor that manages the El Capitan acquisition program, contrary to agency policy and guidance stating that AOAs should be conducted by an independent entity. Without following AOA best practices where possible; justifying and documenting any deviations; and ensuring AOA processes are conducted by an independent entity, as required, NNSA cannot be assured of a reliable assessment of options for meeting critical mission needs.

Extent to Which the National Nuclear Security Administration (NNSA) Met the Characteristics of a Reliable Analysis of Alternatives (AOA) Process

AOA characteristic	GAO assessment	Example of deviation
Comprehensive	Partially met	Cost estimates are incomplete and did not follow best practices.
Well documented	Minimally met	The alternatives' descriptions are not detailed enough for a robust analysis.
Unbiased	Minimally met	NNSA had a predetermined solution, acquiring an HPC system, before performing the AOA process.
Credible	Minimally met	The selection criteria appear to have been written for the preferred alternative.

Source: GAO analysis of NNSA information. | GAO-21-194

GAO found that, in the second year of the El Capitan acquisition program's 5-year acquisition life cycle, NNSA has fully implemented selected key practices related to program monitoring and control. However, NNSA has only partially implemented key practices related to requirements management. Specifically, El Capitan program officials did not update and maintain acquisition program documents to include current requirements. NNSA officials stated that once the program developed its program plan early in the program's life cycle, they did not require the program to update and maintain that program plan. However, NNSA's own program management policy requires programs to update program documents throughout the duration of the program. Without updating and maintaining El Capitan program documents to include current requirements, NNSA officials may be limited in their ability to ensure that all mission requirements are met.