United States Government Accountability Office

Report to the Chairman,
Committee on Armed Services,
House of Representatives

May 2025

U.S. SPACE COMMAND

Air Force's Reevaluation of Headquarters Location and Status of Operations

GAO-25-107092

GAO Highlights

Highlights of GAO-25-107092, a report to the Chairman, Committee on Armed Services, House of Representatives

May 2025

U.S. SPACE COMMAND

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Why GAO Did This Study

Space is essential to national security, providing the military with global command and control, monitoring of adversary activities, and warnings of threats and attacks. In August 2019, the Department of Defense (DOD) established U.S. Space Command at the direction of the President to defend U.S. vital interests. The Command has operated out of Colorado Springs, Colorado since January 2020.

In January 2021, the Air Force announced Redstone Arsenal in Huntsville, Alabama as the preferred location for the permanent Command headquarters. In June 2022, GAO reported the Air Force's headquarters selection process had shortcomings because it did not fully or substantially meet most GAO AOA best practices.

GAO was asked to review DOD's efforts to determine the permanent U.S. Space Command headquarters location since the completion of GAO's prior work. This report addresses (1) steps the Air Force and other decision-makers took between May 2022 and July 2023 to identify the permanent headquarters location, (2) the extent to which the Air Force basing reevaluation process incorporated relevant AOA best practices, and (3) the status of U.S. Space Command headquarters as of fall 2024.

GAO visited U.S. Space Command headquarters, reviewed documentation, interviewed officials, and assessed information against relevant GAO best practices for a high-quality AOA process.

View GAO-25-107092. For more information, contact Alissa H. Czyz at CzyzA@gao.gov.

What GAO Found

From May 2022 through June 2023, the Air Force employed an evolving three-phased process to reevaluate its preferred location for U.S. Space Command headquarters in response to GAO and DOD Office of Inspector General report recommendations and requests from senior DOD officials. During its reevaluation, the Air Force reviewed basing requirements, selection criteria, and senior officials' advice; analyzed costs; and evaluated implications of the Command's declaration of full operational capability, among other things. At the culmination of this process in June 2023, the Air Force revalidated Redstone Arsenal in Huntsville, Alabama as its preferred headquarters location. However, the then Secretary of the Air Force did not announce a final decision, and in July 2023, DOD announced the then President had selected Colorado Springs, Colorado as the permanent location for U.S. Space Command headquarters.

The Air Force's reevaluation process incorporated some elements of 11 selected Analysis of Alternatives (AOA) best practices to revalidate its preferred location for U.S. Space Command headquarters. Air Force officials told GAO the reevaluation intended to address the seven best practices GAO found to be not met or minimally met in its 2022 report. GAO also determined the Air Force incorporated elements of four other best practices that GAO previously found were partially or substantially met. Although GAO found that shortfalls persisted in these best practices, in March 2024, the Air Force strengthened its future strategic basing process by addressing GAO's June 2022 recommendation to develop related guidance that is consistent with GAO's AOA best practices.

Summary Examples of GAO Analysis of the Air Force's Reevaluation Process for U.S. Space Command Against Selected GAO Analysis of Alternatives (AOA) Best Practices

Define functional requirements	The Air Force did not change U.S. Space Command's functional requirements during the reevaluation, but did evaluate how a higher number of personnel would affect parking and square footage requirements.
Identify significant risks and mitigation strategies	The Air Force examined colocation and full operational capability risks it had not previously analyzed, but did not identify or connect mitigations with other risks, obtain input from U.S. Space Command on the feasibility of the risk mitigations, or include the costs of the mitigations in its cost estimate.
Perform sensitivity analysis	The Air Force contracted a private firm to perform a sensitivity analysis, which varied some cost drivers. However, this analysis did not include inputs most likely to change cost estimates.
Weight selection criteria	The Air Force took steps to evaluate a new selection criterion, *disruption to operational capability,* but it did not weight this criterion in relation to its original 21 selection criteria to account for the new addition.

Source: GAO analysis of Air Force and U.S. Space Command information; GAO (icons). | GAO-25-107092

U.S. Space Command has rapidly increased its personnel and operational capabilities to meet mission objectives, reaching full operational capability in December 2023, nearly two years earlier than initially projected. The Command is fully operational, but U.S. Space Command officials told GAO that they faced ongoing personnel, facilities, and communications challenges. Officials also cited benefits in being colocated with operational space missions and centers. As a result of identified challenges, officials stated the Command's posture is not sustainable long term and new military construction would be needed to support the headquarters' operations in Colorado Springs, Colorado.

Contents

Abbreviations

AOA	Analysis of Alternatives
DOD	Department of Defense
DOD OIG	Department of Defense Office of Inspector General
FOC	Full Operational Capability
NEPA	National Environmental Policy Act

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

May 29, 2025

The Honorable Mike Rogers
Chairman
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

Space is essential to U.S. national security, providing our military with global command and control, monitoring of adversary activities, and indications and warnings of threats or attacks. Within the Department of Defense (DOD), each of the military services employs a range of weapons and information platforms—from aircraft to intelligence systems—that rely on continued access to space. In December 2018, President Donald Trump directed DOD to establish U.S. Space Command as the 11th unified combatant command to defend these U.S. vital interests in space.[1] In this capacity, U.S. Space Command is responsible for planning and executing global space operations in coordination with or in support of the military services, other combatant commands, DOD agencies, and other partners.[2] In keeping with goals of the National Defense Strategy, U.S. Space Command provides satellite communications, space domain awareness, offensive and defensive space control capabilities, positioning and navigation services, transregional missile defense, and defense of the national security space architecture.[3] U.S. Space Command was officially established in August 2019, and in January 2020, the Air Force named Peterson Air Force Base in Colorado Springs, Colorado as the provisional headquarters.

[1]Presidential Memorandum for the Secretary of Defense, *Establishment of United States Space Command as a Unified Combatant Command*, 83 Fed. Reg. 65,483 (Dec. 18, 2018).

[2]Section 161 of title 10, U.S. Code defines a unified combatant command as a military command which has broad, continuing missions and which is composed of forces from two or more military departments. 10 U.S.C. § 161(c). U.S. U.S. Space Command consists of two subordinate commands: the Combined Force Space Component Command and the Joint Task Force–Space Defense. U.S. Space Command personnel include servicemembers, civilians, and contractors.

[3]James H. Dickinson, Commander, U.S. Space Command, testimony before the House Committee on Armed Services, 118th Cong., 1st sess., September 28, 2023.

In April 2019, DOD designated the Secretary of the Air Force as the Interim Combatant Command Support Agent for U.S. Space Command.[4] In May 2019, the Air Force used its strategic basing process to identify six locations as potential permanent locations for U.S. Space Command headquarters, including Peterson Air Force Base (Colorado Springs, Colorado) and Redstone Arsenal (Huntsville, Alabama).[5]

At the direction of the former Secretary of Defense, the Air Force reopened its selection process in March 2020, identifying a new group of potential permanent locations using a broadened, revised strategic basing approach intended to be more transparent and inclusive of potential candidates.[6] In January 2021, the Air Force announced that it selected Redstone Arsenal in Huntsville, Alabama as the preferred location for the permanent headquarters. However, according to then Secretary of the Air Force Frank Kendall, he took no further action pending the outcome of GAO and DOD Office of Inspector General (DOD OIG) reviews of the Air Force's revised basing process.

[4]A Combatant Command Support Agent is the Secretary of the Military Department to whom the Secretary of Defense or the Deputy Secretary of Defense assigns administrative and logistical support of the headquarters of a combatant command. *See* Department of Defense Directive 5100.03, *Support of the Headquarters of Combatant and Subordinate Unified Commands,* (Feb. 9, 2011) (incorporating change 1, effective Sept. 7, 2017).

[5]The initial six candidate locations were Redstone Arsenal (Huntsville, AL), Vandenberg Air Force Base (Lompoc, CA), Buckley Air Force Base (Aurora, CO), Cheyenne Mountain Air Force Station (Colorado Springs, CO), Peterson Air Force Base (Colorado Springs, CO), and Schriever Air Force Base (Colorado Springs, CO).

[6]*See Hearing to Receive Testimony on the Department of Defense Budget Posture in Review of the Defense Authorization Request for Fiscal Year 2021 and the Future Years Defense Program, Before the S. Comm. on Armed Services,* 116th Cong. 53-56 (2020) (statement of Secretary of Defense Mark Esper). The final six candidates were Redstone Arsenal (Huntsville, AL), Peterson Air Force Base (Colorado Springs, CO), Patrick Air Force Base (FL), Offutt Air Force Base (Bellevue, NE), Kirtland Air Force Base (Albuquerque, NM), and Joint Base San Antonio (San Antonio, TX).

In May and June 2022, we[7] and DOD OIG[8] issued reports recommending actions to address deficiencies identified in the Air Force's U.S. Space Command revised basing selection process. In response, the Secretary of Defense directed the Secretary of the Air Force to review selected senior military leaders' concerns pertaining to U.S. Space Command's ability to declare Full Operational Capability (FOC), while allowing the Secretary of the Air Force to determine the scope and duration of the review.[9] From May 2022 through June 2023, the Air Force responded to this directive and subsequent requests through a three-phased process, which it described as a reevaluation process of its preferred location, including producing a series of qualitative and quantitative analyses.[10] Then Secretary of the Air Force Kendall stated in September 2023 that throughout this reevaluation process, he kept the Secretary of Defense

[7]GAO, *U.S. Space Command: Air Force Should Develop Guidance for Strengthening Future Basing Decisions,* GAO-22-106055 (Washington, D.C.: June 2, 2022). This report is the public version of a sensitive report we issued in May 2022. In our report, we found that the Air Force's revised process fully or substantially met seven of 21 GAO Analysis of Alternatives (AOA) best practices. We recommended the Secretary of the Air Force ensure the Assistant Secretary of the Air Force for Energy, Installations, and Environment develops guidance for future strategic basing decisions that is consistent with our AOA best practices and determines the basing actions to which it should apply. The Air Force neither agreed nor disagreed. In March 2024, the Assistant Secretary of the Air Force for Energy, Installations, and Environment issued a memorandum directing the Air Force Strategic Basing Office to examine our AOA best practices and include them as appropriate for complex basing decisions, fully addressing our recommendation. Assistant Secretary of the Air Force for Energy, Installations, and Environment Memorandum, *Use of Government Accountability Office Analysis of Alternatives Best Practices* (Mar. 7, 2024).

[8]Department of Defense Office of the Inspector General, *Evaluation of the Air Force Selection Process for the Permanent Location of the U.S. Space Command Headquarters*, DODIG-2022-096 (Alexandria, Virginia: May 11, 2022). In this report, DOD OIG recommended that the Secretary of Defense establish policy and procedures for combatant command basing actions and review selected senior military leaders' concerns pertaining to full operational capability for U.S. Space Command. DOD OIG also recommended that the Secretary of the Air Force issue a memorandum emphasizing the requirement to retain all records of basing actions, and for the Air Force to conduct additional analysis of "Childcare," "Housing Affordability," and "Access to Military/Veteran Support" criteria. As of April 2025, three of the four recommendations had been closed. According to DOD OIG officials, the recommendation to establish policy and procedures for combatant command basing actions was "Resolved but Open," pending new policy issuance.

[9]Secretary of Defense Memorandum, *Review of United States Space Command Full Operational Capability* (May 4, 2022). Full Operational Capability means the command had achieved all manning, capability, and training requirements necessary to perform its assigned missions.

[10]*See generally* Air Force Memorandum for SAF/IE, *Headquarters United States Space Command Basing Action* (June 30, 2022).

and White House National Security Council staff informed regarding the status of the basing team's analysis.[11] In June 2023, the Air Force completed its review with no changes to its preferred location of Redstone Arsenal. In July 2023, DOD announced that then President Joseph Biden had selected Peterson Space Force Base in Colorado Springs, Colorado as the permanent headquarters for U.S. Space Command, citing the need to, among other things, ensure peak readiness in the space domain. U.S. Space Command subsequently declared FOC in December 2023.

You asked us to examine the actions DOD took to determine the permanent U.S. Space Command headquarters location since the completion of our previous work in 2022. This report (1) describes the steps the Air Force and other decision-makers took between May 2022 and July 2023 to identify the permanent location for U.S. Space Command headquarters, (2) assesses the extent to which the Air Force basing reevaluation process incorporated relevant GAO best practices for analyzing alternatives, and (3) describes the status of the establishment of U.S. Space Command headquarters in Colorado Springs, Colorado as of fall 2024.[12]

For our first objective, we reviewed Air Force basing guidance, analyses, briefings, meeting records, emails, and memorandums to determine the process the Air Force and other decision-makers took between May 2022 and July 2023 to identify the permanent location for U.S. Space Command headquarters.[13]

For our second objective, we reviewed Air Force documentation of the reevaluation process, including selection criteria, analyses, site visit reports, briefings, emails, and memorandums. We compared the Air Force's documentation against 11 of our 22 best practices for Analysis of Alternatives (AOA) process, and to the findings for these best practices from our prior May 2022 report, to determine the ways in which the Air

[11]The Honorable Frank Kendall, Secretary of the Air Force, U.S. Department of Defense, *Examining Irregularity in the Strategic Basing Process for U.S. Space Command,* testimony before the House Armed Services Committee, 118th Cong., 1st sess., September 28, 2023.

[12]GAO, *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs,* GAO-20-195G (Washington, D.C.: Mar. 12, 2020).

[13]Air Force Instruction 10-503, *Strategic Basing* (June 12, 2023); Air Force Instruction 10-503, *Strategic Basing* (Oct. 14, 2020) (prior version); Air Force Policy Directive 10-5, *Basing* (Oct. 2, 2019).

Force reevaluation addressed or did not address our prior findings.[14] Although we assessed the Air Force's work against a selection of our best practices, we did not score the Air Force's work against the best practices because the Air Force reevaluation process did not constitute a full AOA. Accordingly, we also did not assess the reevaluation process work at the characteristic level (i.e., comprehensive, well-documented, credible, unbiased). We did not use our best practices for an AOA process to determine whether the Air Force or President made the correct decision on the preferred and permanent locations for the U.S. Space Command headquarters, respectively, or whether a different conclusion would have been reached had the Air Force more fully addressed the best practice findings from our prior report. Rather, we used our best practices to determine the extent to which the Air Force's reevaluation incorporated relevant AOA best practices and addressed or did not address the findings of our June 2022 report.

For our third objective, we conducted a site visit to U.S. Space Command headquarters in Colorado Springs, Colorado. During the site visit we toured headquarters facilities, including both leased and federally owned space. We also received Command-related briefings and spoke to officials from the Command directorates that were involved, in some capacity, with the basing process.[15] Additionally, we spoke with current and retired senior military officials from U.S. Space Command that were involved in the basing process. After the site visit, we reviewed briefings, summaries, cost estimates, and other site visit-related documentation provided by U.S. Space Command officials and confirmed the status of the Command as of March 2025.

For all three objectives, we interviewed or received written responses from officials with the DOD Office of General Counsel, the Air Force Strategic Basing Office, and U.S. Space Command. We also interviewed and received written responses from the former Secretary of the Air

[14]GAO-22-106055. Air Force officials told us that certain analyses completed during the reevaluation process were intended to address the seven best practices that we had previously scored as not met or minimally met in our June 2022 report. Additionally, upon our review of revaluation process documentation, we determined that the Air Force also incorporated elements of four additional best practices we previously found were partially or substantially met in our June 2022 report. Together, we assessed the Air Force's reevaluation process against these 11 best practices. See the background section of this report for additional information regarding our AOA best practices.

[15]We met with officials from the J1 (Human Capital), J2 (Intelligence), J3 (Global Space Operations), J4 (Logistics and Engineering), J5 (Plans and Policy), J6 (Digital Superiority), and J8 (Capability and Resource Integration) directorates.

Force; the Acting Assistant Secretary of the Air Force for Energy, Installations, and Environment; the former U.S. Space Command Combatant Commander; and the current and former Chiefs of Staff of U.S. Space Command. As noted later in this report, DOD deferred to the White House with respect to certain information. In October 2024, the White House declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level. However, despite the White House's decision not to share certain information, we were able to meet our objectives with the information otherwise obtained.

We conducted this performance audit from October 2023 to May 2025 in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Air Force Initial Headquarters Selection Process

The effort to determine a location for U.S. Space Command headquarters dates to December 2018, when President Donald Trump directed the establishment of the Command. This same month, the Air Force received the initial U.S. Space Command basing request.[16] Also in December 2018, the Joint Force Space Component Command,[17] using functional requirements it developed with the Air Force, identified six candidate installations: Redstone Arsenal, Alabama; Vandenberg Air Force Base, California; Buckley Air Force Base, Colorado; Cheyenne Mountain Air Force Station, Colorado; Peterson Air Force Base, Colorado; and Schriever Air Force Base, Colorado.[18] From December 2018 through

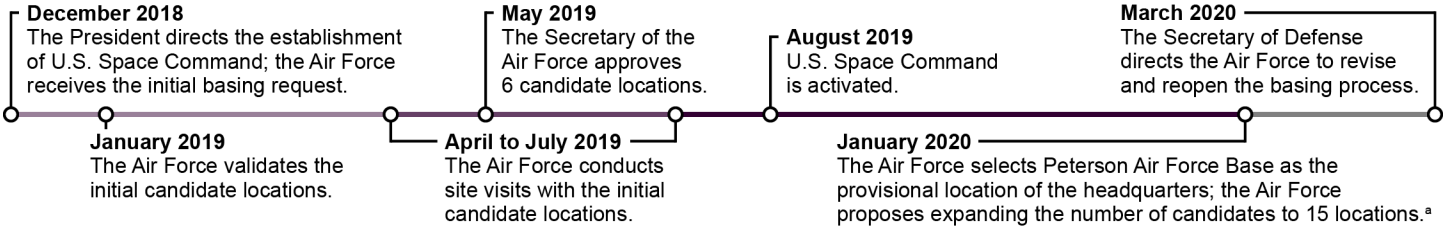
[16]DOD subsequently approved the use of the Air Force's strategic basing process to select a headquarters location, needed to achieve full operational capability.

[17]The Joint Force Space Component Command is the entity that was elevated to become the U.S. Space Command headquarters.

[18]DOD renamed Vandenberg Air Force Base to Vandenberg Space Force Base on May 14, 2021. DOD renamed Buckley Air Force Base to Buckley Space Force Base on June 4, 2021. DOD renamed Cheyenne Mountain Air Force Station, Peterson Air Force Base, and Schriever Air Force Base to Cheyenne Mountain Space Force Station, Peterson Space Force Base, and Schriever Space Force Base, respectively, on July 26, 2021.

March 2020, the Air Force largely followed its established strategic basing process to help determine the preferred location for U.S. Space Command headquarters.[19] Figure 1 shows the timeline of key events between December 2018 and March 2020.

Figure 1: Air Force Initial Selection Process for U.S. Space Command's Preferred Location, December 2018–March 2020



Source: GAO analysis of Air Force information. | GAO-25-107092

[a]DOD renamed Peterson Air Force Base to Peterson Space Force Base on July 26, 2021.

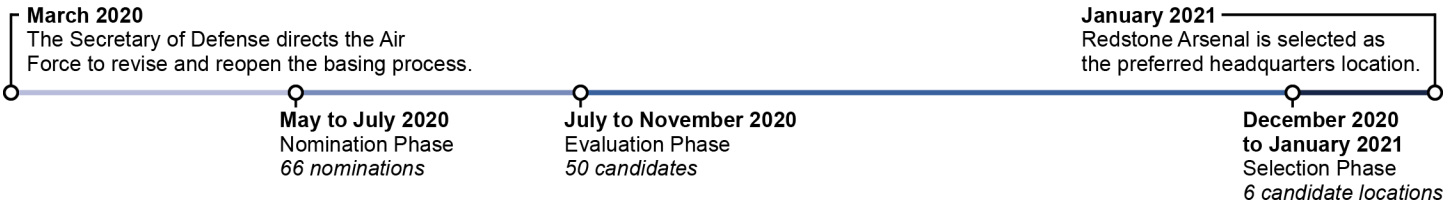
Air Force Revised Headquarters Selection Process

In early March 2020, the Air Force reopened its selection process to determine the location of U.S. Space Command headquarters at the direction of then Secretary of Defense Mark Esper.[20] The Air Force's revised process included soliciting nominations from candidate communities (Nomination Phase), evaluating community submissions to determine the final candidate pool (Evaluation Phase), and selecting a preferred location among the six final candidate locations (Selection Phase). This three-phased process followed selected elements of the Air Force's established strategic basing process but included different steps and altered others. The Air Force executed the revised process over an 11-month period, from March 2020 through mid-January 2021. Figure 2 shows some of the key events during this period.

[19]*See generally* Air Force Policy Directive 10-5, *Basing* (Oct. 2, 2019); Air Force Instruction 10-503, *Strategic Basing* (July 28, 2017). The Air Force revised Air Force Instruction 10-503 in October 2020, and again in June 2023.

[20]The then Secretary of Defense referenced the change in direction in a March 2020 testimony before the Senate Armed Services Committee. *Hearing to Receive Testimony on the Department of Defense Budget Posture in Review of the Defense Authorization Request for Fiscal Year 2021 and the Future Years Defense Program, Before the S. Comm. on Armed Services*, 116th Cong. 53-56 (2020) (statement of Secretary of Defense Mark Esper). We asked the Air Force whether it was still required to follow the basing process in Air Force Instruction 10-503 after the then Secretary of Defense's direction. Air Force officials told us the direction from the then Secretary of Defense to revise and reopen the process was patterned after the Army Futures Command process, and superseded the Air Force strategic basing instruction.

Figure 2: Air Force Revised Selection Process for U.S. Space Command's Preferred Headquarters Location, March 2020–January 2021



Source: GAO analysis of Air Force information. | GAO-25-107092

Nomination Phase. In May 2020, the Air Force sent a letter and nomination package to the governors of all 50 states inviting communities to self-nominate to host the permanent U.S. Space Command headquarters. The Air Force received 66 nominations from communities across the U.S. Out of the 66 communities that submitted a nomination, 50 advanced to the Evaluation Phase.[21]

Evaluation Phase. In July and August 2020, the Air Force sent questionnaires to the communities and military installations that advanced past the Nomination Phase. As the Air Force received the questionnaire responses, subject matter experts scored the nominations based on 21 weighted criteria under four evaluation factors—Mission (40 points), Capacity (30 points), Community (15 points), and Costs to the Department of Defense (15 points). After determining aggregate, weighted scores, the Air Force chose to advance the top six scoring locations to the Selection Phase. The locations were Redstone Arsenal, Alabama; Peterson Air Force Base, Colorado; Patrick Air Force Base, Florida; Offutt Air Force Base, Nebraska; Kirtland Air Force Base, New Mexico; and Joint Base San Antonio, Texas.

Selection Phase. From December 2020 through mid-January 2021, the Air Force executed its Selection Phase, wherein it requested more detailed information from the final candidate locations and conducted site visits to assess the top six potential locations for U.S. Space Command headquarters. Using information obtained from the questionnaires and

[21]Some communities that nominated themselves voluntarily withdrew from the process before the start of the Evaluation Phase, according to Air Force Strategic Basing Office officials. In other instances, multiple communities submitted nominations focused on the same military installation, and the officials said that they worked with those communities to consolidate the nomination around one location.

site visits, the Air Force qualitatively ranked the six final candidate locations into top, middle, and bottom thirds for each of the 21 criteria.

Preferred location decision. The Selection Phase included a meeting at the White House with high-ranking officials on January 11, 2021, and culminated with the selection of Redstone Arsenal in Huntsville, Alabama, as the preferred location for the U.S. Space Command headquarters.[22] At that time, the Air Force planned to make its final decision after completing the National Environmental Policy Act (NEPA) process. For a more detailed description of the Air Force's basing process, please see our June 2022 report.[23]

GAO Review of Air Force's Basing Process

In June 2022, we published a public version of a sensitive report we issued in May 2022.[24] In our report, we compared the Air Force's revised basing process against our 22 best practices for an analysis of alternatives (AOA) process, scoring the Air Force's body of work against each of the 21 best practices we assessed.[25] Figure 3 shows our 22 AOA best practices grouped by four characteristics that identify a high quality, reliable AOA process—comprehensive, well-documented, credible, and unbiased.

[22]Although the Department of the Air Force documented the general rationale for selecting Redstone Arsenal in a January 2021 memorandum and accompanying documents, there was not a consensus among the officials we interviewed as part of prior audit work regarding who ultimately made the decision to name Redstone Arsenal as the preferred location for U.S. Space Command headquarters in January 2021, including the role of the then President in making the decision. For example, one former official stated that the then Acting Secretary of Defense made the decision, with agreement from the President and other senior officials. A second former official told us that more clarity on who had authority to make the decision would have been helpful, but that it seemed the authority to make the decision remained with the Secretary of the Air Force and was not retracted by the President. Air Force Strategic Basing Office officials stated that the then Secretary of the Air Force retained the authority to make the decision on the preferred location, and that she made that decision on January 12, 2021, as indicated in an action memorandum.

[23]GAO-22-106055. This is a public version of our sensitive report issued in May 2022.

[24]GAO-22-106055.

[25]In our June 2022 report, we assessed the Air Force's revised basing process against 21 of our best practices. We did not score best practice 10, *include baseline alternative*, because we determined the best practice was not applicable to the U.S. Space Command basing process. At the onset of the revised process, no permanent headquarters existed for U.S. Space Command at any location. As such, assessment of locations against an existing baseline location was not possible.

Figure 3: GAO's 22 Best Practices for Analysis of Alternatives (AOA), Grouped into Four Characteristics

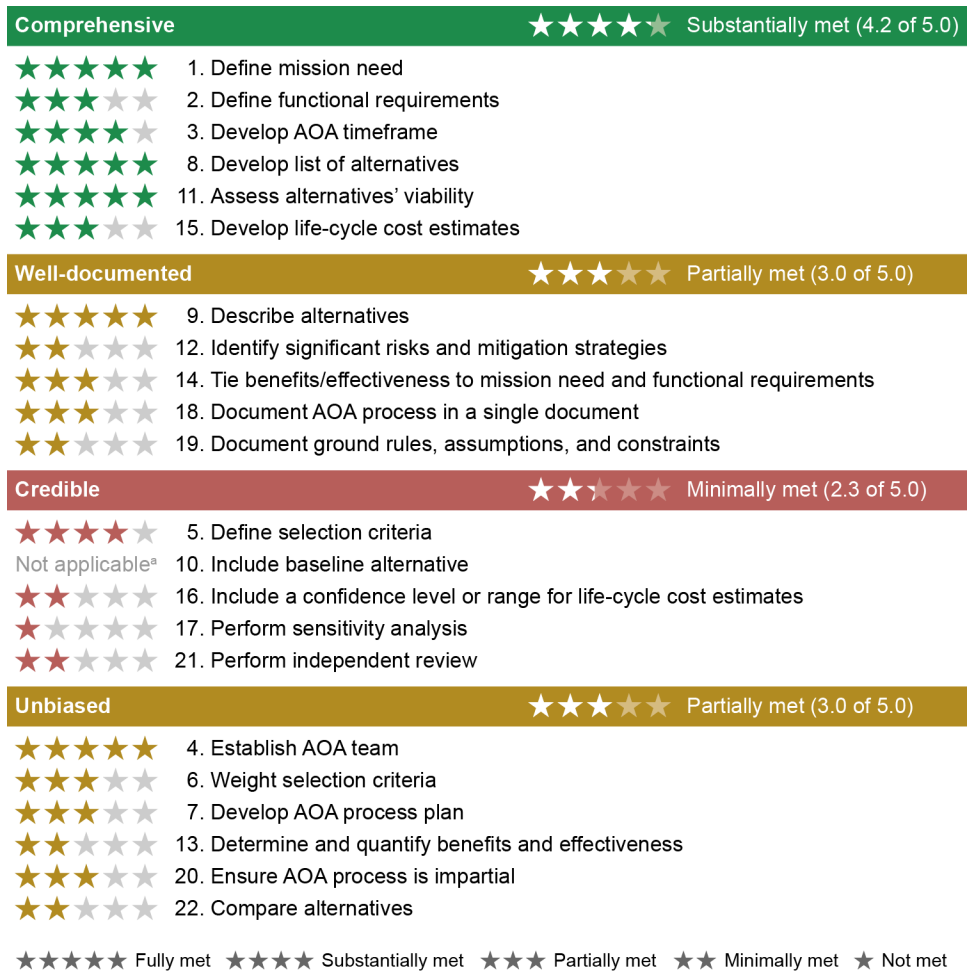
Comprehensive	
The level of detail for the AOA process ensures no alternatives are omitted and that each alternative is examined thoroughly for the program's entire life cycle.	1. Define mission need 2. Define functional requirements 3. Develop AOA timeframe 8. Develop list of alternatives 11. Assess alternatives' viability 15. Develop life-cycle cost estimates
Well-documented	
The AOA process is thoroughly described, including all source data, methodologies, calculations and results, and selection criteria are explained.	9. Describe alternatives 12. Identify significant risks and mitigation strategies 14. Tie benefits/effectiveness to mission need and functional requirements 18. Document AOA process in a single document 19. Document ground rules, assumptions, and constraints
Credible	
The AOA process discusses any limitations of the analysis resulting from the uncertainty surrounding the data to assumptions made for each alternative.	5. Define selection criteria 10. Include baseline alternative 16. Include a confidence level or range for life-cycle cost estimates 17. Perform sensitivity analysis 21. Perform independent review
Unbiased	
The AOA process does not have a predisposition towards one alternative over another but is based on traceable and verified information.	4. Establish AOA team 6. Weight selection criteria 7. Develop AOA process plan 13. Determine and quantify benefits and effectiveness 20. Ensure AOA process is impartial 22. Compare alternatives

Source: GAO. | GAO-25-107092

Overall, out of the 21 best practices we assessed in our June 2022 report, the Air Force's revised selection process fully or substantially met seven best practices, partially met seven best practices, and minimally met or did not meet seven best practices.[26] Figure 4 shows the scoring of our assessment.

[26]*See* GAO-22-106055 for a for a detailed discussion of our assessment of the Air Force's revised basing process against our best practices.

Figure 4: GAO 2022 Assessment of the Air Force's Revised Process for U.S. Space Command Basing Against GAO's 22 Analysis of Alternatives (AOA) Best Practices, Grouped into Four Characteristics



Source: GAO analysis of Air Force and U.S. Space Command information. | GAO-25-107092

Note: We determined the overall assessment rating by assigning each individual rating a number: Not Met = 1, Minimally Met = 2, Partially Met = 3, Substantially Met = 4, and Fully Met = 5. Then, we took the average of the individual assessment ratings to determine the overall rating for each of the four characteristics. The resulting average became the overall assessment as follows: Not Met = 1.0 to 1.4, Minimally Met = 1.5 to 2.4, Partially Met = 2.5 to 3.4, Substantially Met = 3.5 to 4.4, and Fully Met = 4.5 to 5.0.

[a]We did not score best practice 10, include baseline alternative, because we determined the best practice was not applicable to the U.S. Space Command basing process. At the onset of the revised process, no permanent headquarters existed for U.S. Space Command at any location. As such, assessment of locations against an existing baseline location was not possible.

The Air Force Employed a Three-Phased Process to Reevaluate Its Preferred Location Prior to the President's July 2023 Decision

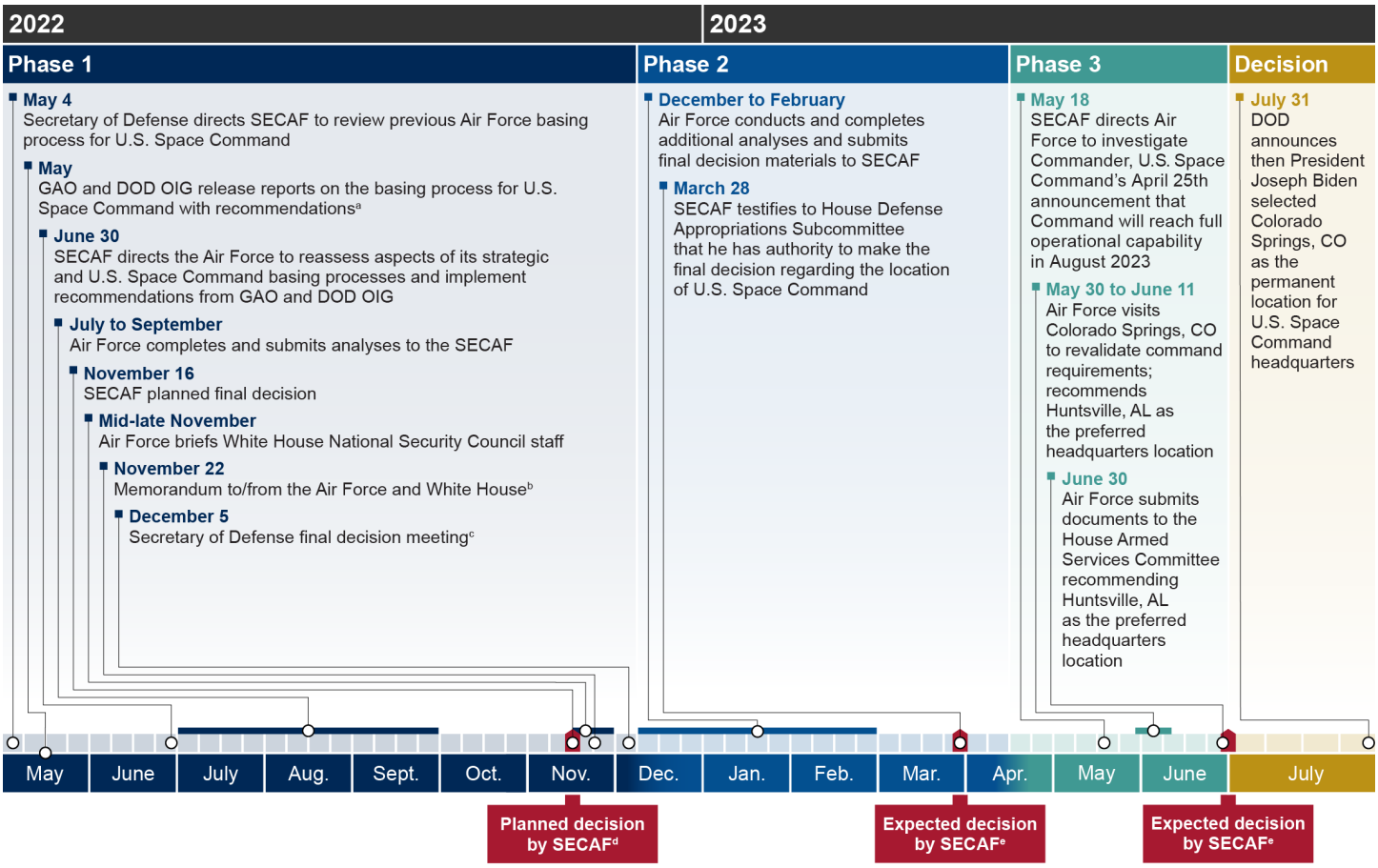
From May 2022 through June 2023, the Air Force employed an evolving three-phased process to reevaluate its preferred location for U.S. Space Command headquarters in response to GAO and DOD OIG report recommendations and requests from senior DOD officials. Then Secretary of Air Force Frank Kendall stated in September 2023 that throughout the Air Force's reevaluation of the basing process, he kept the Secretary of Defense and White House National Security Council staff informed regarding the status of the Air Force basing team's analysis.[27] At the culmination of this process in June 2023, the Air Force revalidated Redstone Arsenal in Huntsville, Alabama as its preferred location for U.S. Space Command headquarters.[28] Then Secretary of the Air Force Kendall was empowered to make the final decision on the location and, according to Air Force officials, he was expected to do so at multiple points during the reevaluation process.[29] However, the Secretary never announced a final decision, and in July 2023, DOD announced that then President Joseph Biden made the final decision to permanently locate U.S. Space Command headquarters in Colorado Springs, Colorado. Figure 5 shows a timeline of key events between May 2022 and July 2023, spanning the Air Force's review process and the final location decision.

[27]The Honorable Frank Kendall, Secretary of the Air Force, U.S. Department of Defense, *Examining Irregularity in the Strategic Basing Process for U.S. Space Command,* testimony before the House Armed Services Committee, 118th Cong., 1st sess., September 28, 2023. The National Security Council is the President's principal forum for considering national security and foreign policy matters with his senior national security advisors and cabinet officials. Since its inception under President Truman, the Council's function has been to advise and assist the President on national security and foreign policies. The Council also serves as the President's principal arm for coordinating these policies among various government agencies.

[28]In January 2021, then Secretary of the Air Force Barbara Barrett announced Huntsville, AL as the Air Force's preferred location for the U.S. Space Command headquarters and approved Albuquerque, NM; Bellevue, NE; Cape Canaveral, FL; Colorado Springs, CO; and San Antonio, TX as reasonable alternatives. She further stated the Department of the Air Force would make its final decision following compliance with the National Environmental Policy Act and other regulatory and planning processes. In the context of the Air Force strategic basing process, the "preferred alternative" is the preferred location for a basing action. "Reasonable alternatives" are locations that meet the basing criteria and could be selected if the Air Force does not choose the preferred alternative.

[29]Specifically, a May 2022 memorandum from the then Secretary of Defense stated that the Secretary of the Air Force was responsible for selecting a permanent location for the U.S. Space Command headquarters. Secretary of Defense Memorandum, *Review of United States Space Command Full Operational Capability* (May 4, 2022).

Figure 5: Air Force Three-Phased Review Process and Final Decision, May 2022 through July 2023



DOD OIG Department of Defense Office of Inspector General
SECAF Secretary of the Air Force

Source: GAO analysis of Department of Defense (DOD) information. | GAO-25-107092

[a]The May 2022 report is the sensitive version of a public report we issued in June 2022. *See* GAO, *U.S. Space Command: Air Force Should Develop Guidance for Strengthening Future Basing Decisions*, GAO-22-106055 (Washington, D.C.: June 2, 2022). *See also* Department of Defense, Office of Inspector General, *Evaluation of the Air Force Selection Process for the Permanent Location of the U.S. Space Command Headquarters*, DODIG-2022-096 (Alexandria, Virginia: May 10, 2022).

[b]We requested information from DOD on the content, sender, and recipient of this memorandum. DOD deferred to the White House, and the White House in October 2024 declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level.

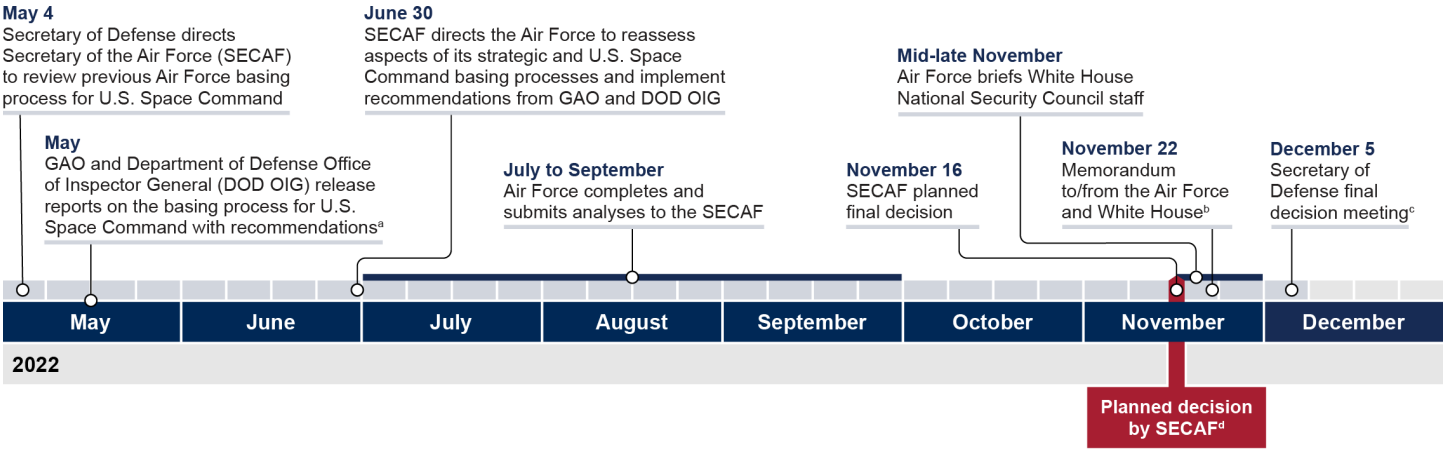
[c]We requested information from DOD regarding the details of this meeting, including who participated in the meeting. DOD deferred to the White House, and the White House in October 2024 declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level.

[d] For the purposes of this figure, planned decision refers to a statement in Air Force documentation that the Secretary of the Air Force was to make a decision regarding the final location for U.S. Space Command headquarters.

[e]For the purposes of this figure, expected decision refers to points in time where the Air Force had completed all requested analyses, and the Secretary of the Air Force was widely expected to make a decision regarding the final location for U.S. Space Command headquarters.

Phase One. From May 2022 through December 5, 2022, the Air Force reviewed several aspects of its revised U.S. Space Command basing process, including basing requirements, selection criteria, FOC concerns, and senior officials' best military advice, at the direction of then Secretary of Defense Lloyd Austin and then Secretary of the Air Force Kendall. According to Air Force documentation, the intent was to address findings and recommendations related to the Air Force's revised basing process made by GAO and DOD OIG in May 2022. Air Force documentation characterized this review process as a reevaluation, and Air Force officials described the process as a revalidation of the previously identified preferred location of Redstone Arsenal in Huntsville, Alabama. Figure 6 shows the timeline of key events in Phase One of the Air Force's reevaluation process between May 4, 2022, and December 5, 2022.

Figure 6: Air Force Process Phase One Key Events, May 4, 2022–December 5, 2022



Source: GAO analysis of Department of Defense (DOD) information. | GAO-25-107092

[a]The May 2022 report is the sensitive version of a public report we issued in June 2022. *See* GAO, *U.S. Space Command: Air Force Should Develop Guidance for Strengthening Future Basing Decisions*, GAO-22-106055 (Washington, D.C.: June 2, 2022). *See also* Department of Defense, Office of Inspector General, *Evaluation of the Air Force Selection Process for the Permanent Location of the U.S. Space Command Headquarters*, DODIG-2022-096 (Alexandria, Virginia: May 10, 2022).

[b]We requested information from DOD on the content, sender, and recipient of this memorandum. DOD deferred to the White House, and the White House in October 2024 declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level.

[c]We requested information from DOD regarding the details of this meeting, including who participated in the meeting. DOD deferred to the White House, and the White House in October 2024 declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level.

[d]For the purposes of this figure, planned decision refers to a statement in Air Force documentation that the Secretary of the Air Force was expected to make a decision regarding the final location for U.S. Space Command headquarters.

The Air Force initiated its Phase One work in response to a May 4, 2022, memorandum from then Secretary of Defense Austin directing then Secretary of the Air Force Kendall to conduct a review of the basing process using a scope he deemed appropriate, including concerns that relocating U.S Space Command headquarters would delay it in reaching FOC.[30] On June 30, 2022, then Secretary of the Air Force Kendall directed the Assistant Secretary of the Air Force for Energy, Installations, and Environment to review the concerns regarding FOC for U.S. Space Command, analyze how revised staffing requirements would affect the preferred location, and consider senior officials' best military advice on the risks of colocating two combatant command headquarters (U.S. Northern Command and U.S. Space Command). The Secretary also directed the Assistant Secretary of the Air Force for Energy, Installations, and Environment to verify the results from the basing selection criteria analysis, assess the impact of GAO best practices for analyzing alternatives on the preferred location decision, and complete the NEPA environmental assessment.[31]

These actions were to be completed and submitted to then Secretary of the Air Force Kendall by September 30, 2022. In the June 30, 2022, memorandum, then Secretary of the Air Force Kendall stated that although Huntsville, Alabama remained the preferred location for U.S. Space Command headquarters and that the five reasonable alternative locations remained unchanged, he would consider the results of these reviews in making his final decision on a permanent location. According to

[30]Secretary of Defense Memorandum, *Review of United States Space Command Full Operational Capacity* (May 4, 2022).

[31]Secretary of the Air Force Memorandum, *Headquarters United States Space Command Basing Action* (June 30, 2022). The National Environmental Policy Act of 1969 requires federal agencies to evaluate the potential environmental effects of proposed projects on the human environment. *See generally* Pub. L. No. 91- 190 (1970) (codified, as amended, at 42 U.S.C. §§ 4321 et seq.). Specifically, the Air Force's implementing regulations for this act implement the Air Force Environmental Impact Analysis Process and provide procedures for environmental impact analysis both within the United States and abroad. 32 C.F.R. § 989.1 (2025).

Air Force documentation, the Secretary's final decision was expected in November 2022.

In response to the May 4, 2022, memorandum from then Secretary of Defense Austin and the June 30, 2022, memorandum from then Secretary of the Air Force Kendall, the Air Force completed and submitted several deliverables to then Secretary of the Air Force Kendall, as outlined below.

- **Assessment on co-locating two combatant command headquarters:** Air Force officials requested and received best military advice from the Chairman of the Joint Chiefs of Staff and the Commander of U.S. Northern Command and North American Aerospace Defense Command on risks associated with colocating two combatant commands. Details regarding this assessment are sensitive and are therefore omitted from this report.
- **Sensitivity analysis:** The Air Force contracted a private firm to complete a sensitivity analysis using existing Air Force data from the prior, revised basing selection process that concluded in January 2021. According to Air Force documentation, the sensitivity analysis consisted of two parts: (1) a quantitative analysis evaluating how changes to selected inputs, such as area cost factors and basic allowance for housing, affected estimated basing costs; and (2) a qualitative assessment of the effects that basing criteria—such as *available qualified workforce*, *proximity to mutually supporting space entities*, and *facility and parking space*—had on the overall ranking of the candidate locations. The sensitivity analysis concluded that Huntsville, Alabama would be the lowest cost location, and that Huntsville and Colorado Springs, Colorado ranked equally for *available qualified workforce*, the most impactful non-cost criterion. The analysis further concluded that while Colorado Springs ranked highest for *proximity to mutually supporting space entities*, Huntsville ranked highest for *facility and parking space*.
- **Transition analysis:** The Air Force contracted the same private firm to complete a transition analysis assessing U.S. Space Command's ability to maintain operations after moving to different candidate locations. According to Air Force documentation, the transition analysis was conducted to address senior military leaders' concerns about maintaining operational readiness and a civilian workforce during a transition to a permanent location, and to examine transition costs and potential mitigation measures across all six candidate locations. The transition analysis concluded that moving to Huntsville would cost $426 million less than staying in Colorado Springs across

a 15-year period. The analysis further concluded that U.S. Space Command would achieve FOC in Colorado Springs, Colorado earlier than any other candidate location, and although a move from Colorado Springs would disrupt the civilian workforce, mitigation measures were available to support a move away from that location.

- **NEPA process:** In September 2022, the Air Force completed the environmental assessment portion of the NEPA process, which evaluated the potential environmental impacts associated with constructing and operating U.S. Space Command headquarters in each of the six candidate locations.[32] The NEPA process began in 2019, but a senior Air Force official told us the environmental assessment could not start until January 2021, when the preferred location of Huntsville, Alabama was announced. The Air Force concluded that, based on the analysis presented in the environmental assessment, with implementation of regulatory compliance measures and other alternative-specific design commitments, the proposed headquarters construction would have no significant impact on the human or natural environment for the preferred location of Huntsville, Alabama or any of the other reasonable alternatives. The finding, according to Air Force officials, was the final step in the NEPA process before a decision was to be made.

As of September 30, 2022, the Air Force had completed and submitted all requested reviews to then Secretary of the Air Force Kendall to inform his final decision on the permanent location of U.S. Space Command.[33] Then Secretary of the Air Force Kendall told us that he believed the review was essentially complete at this time, but that he delayed announcing a decision as a matter of policy as he did not want to announce any basing decisions in the weeks before the 2022 midterm elections. The Secretary further stated in September 2023 testimony that the results of the analyses conducted during Phase One concluded that all six locations were reasonable alternatives, but Huntsville, Alabama had the lower costs, and remaining in Colorado Springs, Colorado posed the lowest

[32]Department of the Air Force, *Final Environmental Assessment: United States Space Command Establishment of Permanent Headquarters* (September 2022).

[33]According to Air Force officials, the Air Force also completed and submitted a verification of the results from the Air Force's previous analysis of the Selection Phase criteria for "Childcare," "Housing Affordability," and "Access to Military/Veteran Support," as requested by the Secretary of the Air Force in his June 30, 2022, memorandum.

operational risk.[34] The analyses, according to Air Force officials, revalidated that Huntsville, Alabama remained the Air Force's preferred location for the headquarters of U.S. Space Command.

According to Air Force documentation, the final decision from then Secretary of the Air Force Kendall was planned for November 2022. However, no decision was announced and Air Force documentation shows that in November 2022, a memorandum related to the basing selection process was exchanged between the Air Force and the White House.[35] Around the same time, in mid-to-late November 2022, the Air Force briefed White House National Security Council staff. Subsequently, in December 2022, then Secretary of Defense Austin held a meeting to discuss a final decision on the location of U.S. Space Command headquarters; however, no final decision on the basing location came from it.[36]

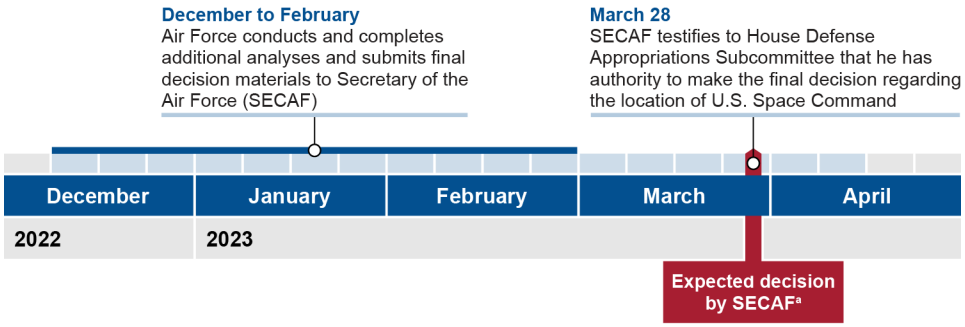
Phase Two. From December 2022 through March 2023, the Air Force analyzed costs and long-term economic impacts associated with U.S. Space Command headquarters candidate locations and validated Huntsville, Alabama as the preferred location. Figure 7 shows the timeline of key events between December 2022 and March 2023.

[34]The Honorable Frank Kendall, Secretary of the Air Force, U.S. Department of Defense, *Examining Irregularity in the Strategic Basing Process for U.S. Space Command, testimony before the House Armed Services Committee*, 118th Cong., 1st sess., September 28, 2023.

[35]We requested information from DOD on the content, sender, and recipient of this memorandum. DOD deferred to the White House, and in October 2024 the White House declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level.

[36]We requested information from DOD regarding the details of this meeting, including who participated in the meeting. DOD deferred to the White House, and in October 2024 the White House declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level.

Figure 7: Air Force Process Phase Two Key Events, December 6, 2022–March 2023



Source: GAO analysis of Department of Defense information. | GAO-25-107092

[a]For the purposes of this figure, expected decision refers to a point in time where the Air Force had completed all requested analyses, and the Secretary of the Air Force was widely expected to make a decision regarding the final location for U.S. Space Command headquarters.

Starting in December 2022—shortly after briefing National Security Council staff and the Secretary of Defense meeting to discuss a final decision—the Air Force began performing additional cost analyses and assessed long-term community forecasts. According to a senior Air Force official, the additional cost analyses were intended to address costs not analyzed by the private contractor's sensitivity analysis, including the effects right-to-work laws may have on candidate location costs.[37] The long-term community forecasts were intended to assess economic impact, employment trends, demographics, and local taxes across all candidate locations.

As a result of its additional cost analyses, the Air Force revalidated Huntsville, Alabama as having the lowest one-time and recurring costs of all the candidate locations. In its long-term community forecasts, the Air Force found that the presence of U.S. Space Command would have minimal economic impact on any of the candidate locations and that the presence or absence of right-to-work laws had little effect on cost considerations. According to then Secretary of the Air Force Kendall, these findings revalidated that Huntsville, Alabama remained the Air Force's preferred location for the headquarters of U.S. Space Command due to its lower costs.

[37]Air Force documentation on the basing process described right-to-work laws as state-specific laws that generally prohibit agreements requiring employees to either join a union or pay dues to the union as a condition of employment.

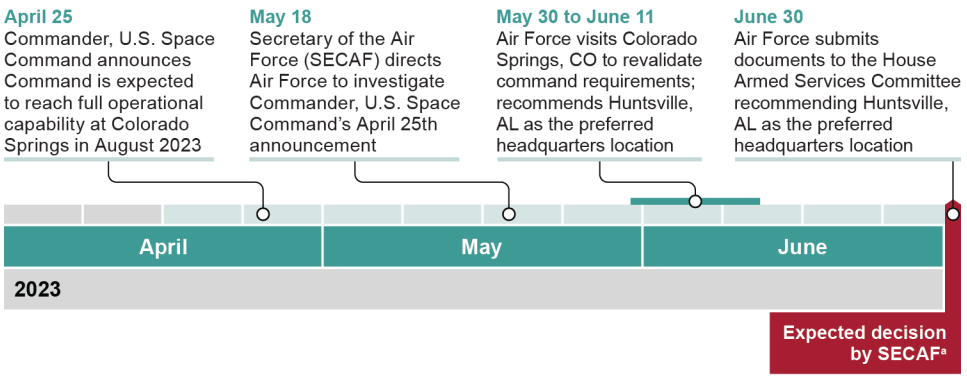
Air Force officials told us they believed the Secretary of the Air Force had the authority and information needed to make a final decision in February 2023 and they understood he would do so by March 2023. Around the same time, on March 28, 2023, then Secretary of the Air Force Kendall testified before the House Defense Appropriations Subcommittee that he possessed decision-making authority for the U.S. Space Command headquarters location.[38] However, no final decision was announced in March 2023. Air Force basing officials told us they were not aware of the reason a decision was not made. However, Secretary Kendall told us he did not make a decision at that time because he received news in April 2023 that U.S. Space Command would reach FOC at Colorado Springs, Colorado in summer 2023, which was earlier than previous estimates, and therefore needed to reconfirm the Command's requirements. DOD officials were not able to provide us any information on reevaluation process work or other activities that took place between the completion of the Phase Two analyses at the end of February 2023 and the receipt of the April 25, 2023, memorandum from Commander, U.S. Space Command.

Phase Three. From April 25, 2023, through June 2023, the Air Force evaluated the implications of an April 2023 memorandum from the Commander, U.S. Space Command, that informed then Secretary of the Air Force Kendall the Command was expected to reach FOC in Colorado Springs in August 2023—1 to 2 years ahead of schedule, according to the Commander—and that it would do so without the construction of a new, permanent headquarters building.[39] According to Air Force officials, this memorandum was the result of the Commander's ongoing efforts to accelerate reaching FOC. Figure 8 shows the timeline of key events between April 2023 and June 2023.

[38]*Department of Defense Appropriations for 2024: Hearings Before a Subcommittee of the Committee on Appropriations House of Representatives,* 118th Cong. (2023) (statement of Secretary of the Air Force Frank Kendall). Specifically, the Secretary stated that he had no indication the President was going to do anything with regard to the basing decision and that the Secretary of Defense had delegated decision authority to him as Secretary of the Air Force.

[39]*See* Commander, U.S. Space Command Memorandum*, Basing Requirements* (Apr. 25, 2023).

Figure 8: Air Force Process Phase Three Key Events, April 25, 2023–June 2023



Source: GAO analysis of Department of Defense information. | GAO-25-107092

[a]For the purposes of this figure, expected decision refers to a point in time where the Air Force had completed all requested analyses and the Secretary of the Air Force was widely expected to make a decision regarding the final location for U.S. Space Command headquarters.

According to a senior Air Force official, the announcement that U.S. Space Command would reach FOC by August 2023 was unexpected because achieving FOC without a new, permanent facility was not considered to be possible during the previous, revised basing process. In response to the Commander's memorandum, on May 18, 2023, then Secretary of the Air Force Kendall directed the Air Force to

- engage with the Commander, U.S. Space Command to analyze U.S. Space Command's operational requirements,
- assess the viability and life-cycle cost of using leased facilities in Colorado Springs, Colorado,
- assess the availability of on-base government-owned facilities in Colorado Springs, Colorado,
- evaluate the effectiveness and resilience of security measures and energy sources to meet U.S. Space Command mission requirements and identify any vulnerabilities,
- evaluate the risk to maintaining operational capability during any transition to a new permanent location, and
- assess the availability and viability of specific mitigation measures during a transition.[40]

[40]Secretary of the Air Force Memorandum, *Memorandum for SAF/IE* (May 18, 2023).

In response to then Secretary of the Air Force Kendall's direction, in May 2023 Air Force officials conducted a site visit to U.S. Space Command's provisional headquarters in Colorado Springs, Colorado, to validate the Command's basing needs and assess whether the headquarters could remain in its current configuration over the long term. During the site visit, the Air Force team met with current and former U.S. Space Command officials, visited existing headquarters facilities, and assessed security measures and energy systems, among other things.

Upon completion of the visit, the Air Force team submitted a memorandum to then Secretary of the Air Force Kendall addressing each of the directions. In the memorandum, the Air Force concluded that permanent facility requirements remained generally consistent with the requirements established during the revised basing process, and that while U.S. Space Command would reach FOC in its current facilities, the Command would need to transition to a newly constructed single facility (or a complex of facilities) at a contiguous location at some point in the future. Based on this work, Air Force officials recommended to then Secretary of the Air Force Kendall that Huntsville, Alabama remain the preferred permanent location for U.S. Space Command headquarters.

A senior Air Force official told us he believed the final basing decision would be made by then Secretary of the Air Force Kendall after his receipt of the site visit report on June 12, 2023, but no decision was made. On June 30, 2023, the Air Force submitted documents to the House Armed Services Committee which stated that Huntsville, Alabama remained the preferred location based on previously approved decision criteria.

President's decision. On July 31, 2023, DOD announced that then President Joseph Biden had selected Colorado Springs, Colorado as the permanent location for U.S. Space Command headquarters. According to DOD's announcement, locating the headquarters in Colorado Springs would, among other things, ensure peak readiness in the space domain during a critical period. We requested information from DOD, the Air Force, and the White House on their interactions during this time period and the rationale for then President Biden's decision but were not

provided any.[41] According to then Secretary of the Air Force Kendall, he was advised that then President Biden would make the decision shortly before DOD announced it on July 31, 2023.[42] Then Secretary of the Air Force Kendall further stated that the then President exercised his authority and discretion as Commander in Chief and chief executive to make the final decision and that he fully supports then President Biden's decision.

The Air Force Incorporated Some Elements of Selected AOA Best Practices into Its Reevaluation Process, but Shortfalls Remain

The Air Force's reevaluation process incorporated some elements of selected AOA best practices to revalidate its preferred location for U.S. Space Command headquarters. For example, the Air Force identified risks and mitigation strategies, and varied some costs associated with candidate locations as part of a sensitivity analysis. However, we found that shortfalls persisted in these areas and others, including the weighting of selection criteria.

As previously discussed, the Air Force initiated its reevaluation process, in part, to respond to the findings and recommendation in our June 2022 report.[43] In that report, we evaluated the Air Force's revised basing process for U.S. Space Command against 21 of our 22 best practices for AOA, finding that the process fully or substantially met seven best practices, partially met seven best practices, and minimally or did not meet seven best practices. Specifically, Air Force officials told us that certain analyses completed during the reevaluation process were intended to address the seven best practices that we had previously scored as not met or minimally met in our June 2022 report. These were

[41]DOD and the Air Force deferred to the White House on interactions during this time period, and in October 2024 the White House declined to provide further information regarding the President's Space Command headquarters basing decision or its involvement in the process, indicating that it involved presidential communications and presidential decision-making at the highest level.

[42]As noted above, a May 2022 memorandum from the then Secretary of Defense stated that the Secretary of the Air Force was responsible for selecting a permanent location for the U.S. Space Command headquarters. Secretary of Defense Memorandum, *Review of United States Space Command Full Operational Capability* (May 4, 2022). Additionally, as recently as March 2023, then Secretary Kendall testified that he had no indication the President was going to do anything with regard to the basing decision and that the Secretary of Defense had delegated decision authority to him as Secretary of the Air Force.

[43]GAO-22-106055. In this report, we recommended the Secretary of the Air Force ensure the Assistant Secretary of the Air Force for Energy, Installations, and Environment develops guidance for future strategic basing decisions that is consistent with GAO's AOA best practices and determines the basing actions to which it should apply. The Air Force neither agreed nor disagreed.

identify significant risks and mitigation strategies; *determine and quantify benefits and effectiveness*; *include a confidence level or range for life-cycle cost estimates*; *perform sensitivity analysis*; *document ground rules, assumptions, and constraints*; *perform independent review*; and *compare alternatives*.

Upon our review of Air Force documentation, we determined that the Air Force also incorporated elements of four additional best practices we previously found were partially or substantially met in our June 2022 report: *define functional requirements*, *define selection criteria*, *weight selection criteria*, and *develop life-cycle cost estimates*. Together, these 11 best practices span all four characteristics of an AOA process. Figure 9 below shows the 11 AOA best practices that the Air Force incorporated elements of during its reevaluation process grouped by AOA characteristic.

Figure 9: GAO Best Practices for Analysis of Alternatives (AOA) Incorporated by the Air Force's Reevaluation Process, Grouped by Four Characteristics

Comprehensive	
The level of detail for the AOA process ensures no alternatives are omitted and that each alternative is examined thoroughly for the program's entire life cycle.	**2. Define functional requirements:** Define functional requirements based on mission need without a predetermined solution.
	15. Develop life-cycle cost estimates: Develop cost estimates for each alternative that include all life-cycle costs.
Well-documented	
The AOA process is thoroughly described, including all source data, methodologies, calculations, and results, and selection criteria are explained.	**12. Identify significant risks and mitigation strategies:** Record significant cost, technical, and other risks and mitigation strategies for each alternative.
	19. Document ground rules, assumptions, and constraints: Document and justify all ground rules, assumptions, and constraints used in the AOA process.
Credible	
The AOA Process discusses any limitations of the analysis resulting from the uncertainty surrounding the data to assumptions made for each alternative.	**5. Define selection criteria:** Define selection criteria based on mission need prior to the analysis.
	16. Include a confidence level or range for life-cycle cost estimates: Include a confidence level or range for life cycle cost estimates based on risk and uncertainty analysis.
	17. Perform sensitivity analysis: Test and document the sensitivity of cost, benefit, and effectiveness estimates to risks and changes in key assumptions for each alternative.
	21. Perform independent review: An entity independent of the AOA validates the process to ensure the process and rationale for the selection of the preferred alternative can be understood.
Unbiased	
The AOA process does not have a predisposition towards one alternative over another but is based on traceable and verified information.	**6. Weight selection criteria:** Weight selection criteria prior to beginning the AOA to reflect the relative importance of each criterion.
	13. Determine and quantify benefits and effectiveness: Identify and quantify benefits and effectiveness of each alternative over the full life cycle.
	22. Compare alternatives: Compare alternatives using net present value to select a preferred alternative that best meets mission needs.

Source: GAO. | GAO-25-107092

As discussed earlier, we assessed how the Air Force incorporated our AOA best practices in its reevaluation process. However, we did not score the Air Force's reevaluation process at the best practice or characteristic level as we did for the revised basing process in our June 2022 report, because the Air Force did not perform a complete AOA as part of its reevaluation. Rather, it refined its earlier analysis based, in part, on findings from our report. Figure 10 shows our summary analysis of the Air Force's reevaluation process against the 11 selected best practices. Below the figure, we provide examples of our analysis of the 11 best practices across each of the four characteristics. See appendix I for our

full analysis of the 11 selected best practices we determined the Air Force incorporated during its reevaluation process.

Figure 10: Summary Analysis of the Extent the Air Force's Reevaluation Process Incorporated Selected Analysis of Alternatives (AOA) Best Practices, Grouped by Four Characteristics

AOA best practices	Summary analysis of reevaluation
Comprehensive	
2. Define functional requirements	The Air Force did not change U.S. Space Command's functional requirements during its reevaluation. The Air Force retained two requirements—parking and facility square footage—we previously found to be unrealistic because they were based on 1,450 authorized personnel instead of U.S. Space Command's projection of 1,800 personnel. However, the Air Force did evaluate how the higher personnel number would affect these two requirements in an analysis of personnel requirements and the environmental assessment.
15. Develop life-cycle cost estimates	The Air Force updated certain cost estimate elements—such as one-time military construction cost factors—and produced 15-year estimates with operating and transition costs. However, these estimates did not include costs from all phases of the command's life cycle and no rationales were provided to explain why costs were included or omitted.
Well-documented	
12. Identify significant risks and mitigation strategies	The Air Force examined colocation and Full Operational Capability risks it had not previously analyzed, along with related mitigations such as over-hiring and pay incentives. However, it did not identify or connect mitigations with other risks, obtain input from U.S. Space Command on the feasibility of the risk mitigations, or include the costs of the mitigations in its cost estimate.
19. Document ground rules, assumptions, and constraints	The Air Force documented some factors—such as building site considerations—that could qualify as ground rules, assumptions, and constraints. However, some assumptions—such as the availability of community incentives—were not reasonable.
Credible	
5. Define selection criteria	The Air Force retained the original 21 selection criteria from its revised basing process, and added a new mission related criterion—*disruption to operational capability.* Although U.S. Space Command did not define the criterion, the Air Force developed it based on the Command's input.
16. Include a confidence level or range for life-cycle cost estimates	The Air Force considered risk to one time construction costs by applying a contingency factor, but the estimates remained point estimates that neither included confidence levels and ranges, nor assessed the risks and uncertainties associated with other costs, such as labor.
17. Perform sensitivity analysis	The Air Force contracted a private firm to perform a sensitivity analysis, which varied some cost drivers—Area Cost Factor, Basic Allowance for Housing, and salaries—to see how differences in these inputs affected the ranking of candidate locations. However, this analysis did not include other inputs that are most likely to change cost estimates, such as changes to facility size, and the factors it did vary are not responsive to possible changes in basing assumptions because they are set by the federal government annually.
21. Perform independent review	No entity independent of the reevaluation team reviewed the reevaluation process.
Unbiased	
6. Weight selection criteria	The Air Force took steps to evaluate its new mission-related *disruption to operational capability* selection criterion when assessing risk and developing associated mitigations. However, the Air Force did not weight this criterion in relation to its original 21 selection criteria to account for the new addition because it decided to rely on its original selection criteria for making the selection.
13. Determine and quantify benefits and effectiveness	The Air Force identified and documented benefits associated with each location, such as additional cost savings over time, using standardized methods. However, some of the benefits were not rooted in complete or reliable analysis.
22. Compare alternatives	The Air Force used net present value to compare some life-cycle cost estimates, but some of these comparisons were based on incomplete information or were not documented. Also, some qualitative comparisons between locations were documented, but the methods used for others were not.

Source: GAO analysis of Air Force and U.S. Space Command information. | GAO-25-107092

Define functional requirements *(comprehensive characteristic)***.** The Air Force did not change U.S. Space Command's functional requirements during its reevaluation. The Air Force retained two requirements—parking and facility square footage—we previously found to be unrealistic because they were based on 1,450 authorized personnel instead of U.S. Space Command's projection of 1,800 personnel. However, the Air Force did evaluate how the higher personnel number would affect these two requirements in an analysis of personnel requirements and the environmental assessment. In June 2022, we reported the Air Force's revised basing process partially met the best practice of *define functional requirements* because although it defined functional requirements to meet mission need, several shifted over time, and the number of authorized personnel used to assess facility requirements was unrealistic.

According to Air Force officials, the Air Force continued to base facility and parking square footage functional requirements on 1,450 authorized personnel so the reevaluation process could move forward with environmental planning requirements without re-opening the original basing action. These officials also told us they used the 1,450 personnel number throughout the reevaluation process to be consistent with the personnel number used in the revised basing process.

However, the Air Force did take some steps to analyze how U.S. Space Command's 2019 projection of 1,800 personnel would affect candidate locations. For example, both the analysis of personnel requirements and environmental assessment varied the final headquarters personnel numbers by as many as 800 personnel (i.e., 1,000–1,800 total personnel) to examine how higher and lower personnel numbers affected different locations. Air Force officials told us the environmental assessment included 1,800 personnel to account for potential future personnel growth, in alignment with the 2019 U.S. Space Command projection and a June 2022 memorandum from the Commander, U.S. Space Command to the Secretary of the Air Force. This memorandum stated that any headquarters would need space for 1,800 personnel, including additional contractors and personnel from partner organizations. By assessing the impact of a higher number of personnel in its environmental assessment, the Air Force improved its ability to assess each candidate location's suitability in relation to U.S. Space Command's functional requirements.

Identify significant risks and mitigation strategies *(well-documented characteristic)***.** During its reevaluation process, the Air Force examined colocation and FOC risks it had not previously analyzed, along with related mitigations such as over-hiring and pay incentives. However, it did

not identify or connect mitigations with other risks, obtain input from U.S. Space Command on the feasibility of the risk mitigations, or include the costs of the mitigations in its cost estimate. In June 2022, we reported that the Air Force's revised basing process minimally met the best practice to *identify significant risks and mitigation strategies* because the Air Force neither documented all significant risks and mitigation strategies, nor assessed the impact of risks to the mission need and functional requirements. Specifically, at that time, the Air Force had not clearly documented and addressed risks associated with two issues—the colocation of two combatant commands and delays in reaching FOC.

During its reevaluation, the Air Force solicited input from the Chairman of the Joint Chiefs of Staff on colocation risks and assessed delays in reaching FOC through a transition analysis assessing a potential move to each candidate location. The Air Force also identified and proposed mitigations for some of the risks it identified during the transition analysis. For example, to mitigate the potential risks to maintaining adequate numbers of personnel during a potential move, and the associated impact to operational readiness, the Air Force proposed over-hiring to offset personnel losses and offering pay incentives to retain current civilian employees.

However, the Air Force did not identify mitigations for other risks it identified in the transition analysis, such as those related to information technology and communication systems. Additionally, some of the mitigations the Air Force proposed were not clearly linked with risks in the transition analysis. For example, the Air Force proposed delaying the transition to a different combatant command support agent—in this case, the Army—until after the move to Huntsville, Alabama, but this mitigation was not clearly linked with risks identified during the transition analysis.[44]

Further, we found the Air Force did not determine the feasibility of its mitigations with its customer—U.S. Space Command—or include associated costs in its cost estimate. The former U.S. Space Command Chief of Staff told us the Command proposed separate mitigations for reducing operational risks during a move to a new location and shared these with the Air Force, but neither the Command nor the Air Force could provide us with documentation of this assessment or the Command's full cost estimate. U.S. Space Command's assessment of key mitigation costs—such as for information technology—were

[44]Redstone Arsenal is an Army Installation located in Huntsville, AL.

significantly higher than the Air Force's. An Air Force official said that the Air Force did not see value in assessing the differences in Air Force and U.S. Space Command mitigation costs because it assumed DOD would provide the support the Command needed to maintain FOC through a transition. As a result of these shortfalls, it is not clear how each risk may affect each candidate location and whether identified mitigations are feasible.

Perform sensitivity analysis *(credible characteristic)***.** The Air Force contracted a private firm to perform a sensitivity analysis, which varied some cost drivers—Area Cost Factor, Basic Allowance for Housing, and salaries—to see how differences in these inputs affected the ranking of candidate locations. However, this analysis did not include other inputs that are most likely to change cost estimates, such as changes to facility size, and the factors it did vary are not responsive to possible changes in basing assumptions because they are set by the federal government annually. In June 2022, we reported that the Air Force did not meet the best practice of *perform sensitivity analysis* because it did not perform a sensitivity analysis to vary key cost parameters and examine the candidate locations' sensitivity to such changes.

The sensitivity analysis performed during the reevaluation process varied some cost drivers to see how differences in these inputs affected the ranking of candidate locations. As mentioned, these inputs included the Area Cost Factor, Basic Allowance for Housing, and salaries. Additionally, the analysis varied one other input—the amount of time it would take a subset of the available qualified workforce to drive into the headquarters at each candidate location. However, the sensitivity analysis did not include inputs that are most likely to change cost estimates, such as changes in the size of the facility or associated personnel. Additionally, the Area Cost Factor, Basic Allowance for Housing, and salaries are not meaningful for a sensitivity analysis because they are set by the federal government on an annual basis and are not responsive to possible

changes in key basing assumptions, such as the availability of a qualified civilian workforce.[45]

Officials from the contracted firm that performed the analysis told us several factors affected their approach. For example, officials stated that the Air Force set specific parameters for the sensitivity analysis, thus precluding the independent determination of those inputs with the most impact on the selection of the preferred location. Additionally, the data available to the contracted firm were primarily qualitative, which is not conducive to a traditional, quantitative data-driven sensitivity analysis. Without varying additional data inputs that are most likely to change cost estimates, the sensitivity analysis provides an incomplete picture of the relative influence of factors on the costs associated with each candidate location.

Weight selection criteria *(unbiased characteristic)***.** The Air Force took steps to evaluate a new mission-related selection criterion—*disruption to operational capability*—when assessing risk and developing associated mitigations. However, the Air Force did not weight this criterion in relation to its original 21 selection criteria to account for the new addition because it decided to rely on its original selection criteria for making the selection.[46] In June 2022, we found that the Air Force's revised process for selecting the preferred location partially met the best practice of *weight selection criteria*. We reached this determination because although the Air

[45]*See* DOD, Unified Facilities Criteria 3-701-01, *DOD Facilities Pricing Guide* (Mar. 17, 2022) (incorporating change 6, effective May 15, 2025) and Unified Facilities Criteria 3-730-01, *Programming Cost Estimates for Military Construction* (Mar. 1, 2024). The Unified Facilities Criteria provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the military departments, the defense agencies, and the DOD field activities. DOD's Unified Facilities Criteria establishes area cost factors—ratios used to adjust a unit cost in order to account for location-specific costs for the most common locations. For example, area cost factors account for geographical differences in the costs of labor, materials, and equipment.

[46]GAO-22-106055. In the Evaluation Phase of the revised basing process, the Air Force sent questionnaires to 50 communities and military installations and then evaluated the communities' submissions against 21 criteria to determine the final candidate pool. These 21 criteria were scored and weighted under four evaluation factors—*Mission* (40 points), *Capacity* (30 points), *Community* (15 points), and *Costs to the Department of Defense* (15 points). In contrast, the Selection Phase of the revised basing process focused on selecting a preferred location among the final six locations. During the Selection Phase, the Air Force requested more detailed information from the final candidate locations, conducted site visits to validate information previously provided by candidates, and collected additional information related to the criteria used during the Evaluation Phase. The Air Force then qualitatively ranked the six final candidate locations into top, middle, and bottom thirds based on the 21 criteria used in the Evaluation Phase.

Force weighted the criteria used during its Evaluation Phase with some input from U.S. Space Command, the rationale for weighting was not documented, and it was not clear how the weighting factored into the Selection Phase analysis of the final six candidates.[47]

During its reevaluation process, the Air Force broadly considered *disruption to operational capability* when assessing risks and developing associated mitigation strategies. For example, the Air Force used U.S. Space Command FOC criteria and personnel authorization data in its transition analysis to assess risks to operational capability resulting from potential personnel losses. However, a senior Air Force official told us this criterion was not weighted in combination with the 21 selection criteria from the revised basing process because the Air Force decided to rely on its original selection criteria when revalidating Huntsville, Alabama, as the preferred location. Similarly, another Air Force official stated that although *disruption to operational capability* was considered during the reevaluation process when identifying risks and mitigation strategies, there were no conversations about how the Air Force might weight this factor in relation to its original 21 selection criteria.

In September 2023, then Secretary of the Air Force Kendall stated that, as noted and emphasized by U.S. Space Command leadership, there would be operational risk associated with the disruption of moving the provisional headquarters in Colorado Springs to any other location. Specifically, Secretary Kendall stated that the qualitative judgment about the reduced cost of Huntsville versus the operational risk of moving from Colorado Springs to another location became an important area of focus in the basing decision. Further, Secretary Kendall stated that, during the reevaluation process, the Air Force placed considerable weight on the projected cost savings and, while recognizing the risks to maintaining operational readiness, believed that potential mitigation measures were available. Contrastingly, he noted that the Commander of U.S. Space Command—the customer—expressed the view that operational risk was

[47]GAO-22-106055. In the Selection Phase of its revised basing process, the Air Force qualitatively ranked candidates based on 21 criteria: *available qualified workforce*, *proximity to mutually supporting space entities*, *emergency and incident response*, *enable mobility*, *facility and parking space*, *nearest installation support*, *anti-terrorism/force protection and security requirements*, *communications bandwidth and redundancy*, *energy resilience*, *support available to military families*, *access to military/veteran support*, *cost of living, housing affordability*, *one-time infrastructure costs*, *area construction factors*, *area locality pay*, and *basic allowance for housing rate*.

significant.[48] Similarly, Air Force officials told us that although operational readiness was recognized by the Air Force as a risk in the reevaluation process, the Air Force assessed that mitigations were sufficient to ease the risk and that costs remained the primary focus. However, because no documentation exists explaining the Air Force's process for weighing these competing interests in relation to its original 21 selection criteria, and Air Force officials could not explain this analysis in detail, it remains unclear how the *disruption to operational capability* and cost criteria were compared and weighed in relation to the other existing criteria to determine the preferred location.

Although several of the shortfalls we identified in the Air Force's revised basing process persisted in its reevaluation, the Air Force has since taken steps to strengthen its overall strategic basing process. Specifically, in March 2024, the Assistant Secretary of the Air Force for Energy, Installations, and Environment implemented GAO's June 2022 recommendation by issuing a memorandum directing the Air Force's Strategic Basing Division to examine GAO's AOA best practices and include them as appropriate for complex basing decisions, such as new mission types or basing actions involving multiple higher headquarters equities.[49] The memorandum further directed the Air Force's Strategic Basing Division to update Department of the Air Force Instruction 10-503, *Strategic Basing*, to include this guidance. In doing so, the Air Force should be better positioned to demonstrate the transparency and credibility of future basing decisions to key stakeholders.

U.S. Space Command Has Reached Full Operational Capability, but Challenges Exist

Since its establishment as the provisional headquarters in January 2020, U.S. Space Command in Colorado Springs, Colorado has rapidly increased its personnel and operational capabilities to meet its mission objectives. According to the former Commander of U.S. Space Command, the Command's priority since its establishment was to continually increase its capacity and reach FOC as quickly as possible. In December 2023, nearly 2 years earlier than initially projected, the Commander declared the Command to be FOC, meaning the Command

[48]The Honorable Frank Kendall, Secretary of the Air Force, U.S. Department of Defense, *Examining Irregularity in the Strategic Basing Process for U.S. Space Command,* testimony before the House Armed Services Committee, 118th Cong., 1st sess., September 28, 2023.

[49]Assistant Secretary of the Air Force for Energy, Installations, & Environment Memorandum, *Use of Government Accountability Office Analysis of Alternatives Best Practices* (Mar. 7, 2024).

had the right capabilities in place to fully accomplish its mission.[50] Although the Command had reached FOC status, U.S. Space Command officials told us in September 2024, and confirmed again in March 2025, that they faced ongoing personnel, facilities, and communications challenges in fully establishing the headquarters.

- **Personnel.** As of fall 2024, U.S. Space Command had not reached full staffing. As a result, the Command was operating without needed civilian personnel across a variety of positions. Specifically, as of October 2024, the Command had filled 1,024 of 1,379 authorized positions, including 576 of 809 government civilian positions.[51] U.S. Space Command officials stated that the Command has experienced challenges in hiring civilian personnel, who are intended to comprise 60 percent of overall Command staff. According to those officials, this was due to uncertainty regarding the Command's final location and the complexities of hiring government civilians over the more straightforward process of assigning military personnel. To mitigate these challenges, a senior U.S. Space Command official told us the Command hired contractor personnel to bridge the gap between authorized and assigned civilian personnel, thus increasing personnel costs and preventing the growth of longer-term institutional knowledge. Another U.S. Space Command official further noted that filling gaps with contractors is a temporary solution because contractors cannot perform the sensitive, unique work performed by government civilian personnel. U.S. Space Command officials told us that the Command has been supported by approximately 380 contractor personnel since declaring FOC in December 2023.
- **Facilities.** As of March 2025, U.S. Space Command headquarters operated out of four separate buildings, or "nodes," within the Colorado Springs area. Two of the nodes reside on military installations, while the other two are leased facilities located in commercial and residential areas. According to U.S. Space Command officials, this footprint, which is temporary pending construction of a permanent headquarters facility, allows for the Command to execute its mission but presents some challenges. Similarly, U.S. Space

[50]In April 2023, the then Commander of U.S. Space Command informed then Secretary of the Air Force Kendall the Command was expected to reach FOC in Colorado Springs in August 2023—1 to 2 years ahead of schedule—and that it would do so without the construction of a new, permanent headquarters building. Commander, U.S. Space Command Memorandum*, Basing Requirements* (Apr. 25, 2023).

[51]According to command officials, the 1,379 authorized positions do not include contractor personnel, foreign partners, or representatives from other U.S. government agencies.

Command documentation states that the ad hoc temporary organization of U.S. Space Command facilities is inefficient and cumbersome, adversely affecting both mission and command and control.

Specifically, Command officials told us that there are significant space restrictions with the current facilities that limit their suitability for long-term use. During our site visit, we observed entire floors of cubicles where each cubicle was occupied by at least two employees working staggered schedules. We also observed a sensitive compartmented information facility trailer adjacent to the main facility, which U.S. Space Command officials told us had been transferred from a previous deployment. Additionally, officials stated that three of the four nodes are over 40 years old and possess aging infrastructure that cannot fully support the dynamic information technology requirements of the Command. These officials also told us there are general challenges with being geographically dispersed, including travel time among nodes and the loss of collaboration associated with colocation.

Officials told us that as a result of such challenges, the Command requires military construction of a permanent, purpose-built facility that is better suited to meet its unique power, information technology, square footage, and security needs. According to Air Force documentation, without new construction, command, control, and mission operations will continue to operate inefficiently with greater vulnerabilities to mission, facilities, and personnel.

- **Communications.** According to a senior U.S. Space Command official, the Command shares an information technology network owned and operated by the Air Force on Peterson Space Force Base, creating several challenges for U.S. Space Command including delays and unexpected downtime. For example, according to a senior U.S. Space Command official, U.S. Space Command does not have its own point of presence at Peterson Space Force Base, limiting the Command's ability to prioritize and balance data needs on the Air Force's network.[52] Officials told us that other combatant commands either have their own dedicated networks that they operationally control or use military service networks for which they have special permissions and authorities. According to these officials, this allows for efficient information technology resolutions and the ability to

[52]A point-of-presence is a point or physical location where two or more networks or communication devices build a connection from one place to the rest of the internet. A point of presence primarily refers to a location, facility or access point that connects to and helps other devices establish connections to the internet.

control planned maintenance outages, system upgrades, and accreditation of new technologies.

Despite such challenges, officials told us that there are also benefits associated with being colocated with other operational space missions and centers. For example, current U.S. Space Command facilities benefit from extensive operational communications infrastructure, networks, and systems in Colorado Springs due, in part, to being colocated with U.S. Northern Command and North American Aerospace Defense Command. According to U.S. Space Command officials, the ability to leverage existing operational networks provides U.S. Space Command with critical redundancy that would take considerable resources to recreate in other candidate locations.

U.S. Space Command officials stated that although they are fully operational, the current command posture is not sustainable long-term due to the challenges described above, among others. These officials told us that new military construction will be needed in Colorado Springs, Colorado, to support the headquarters' long-term operations. According to a July 2023 U.S. Space Command document, U.S Space Command proposed a construction project for a new multi-story, permanent headquarters facility to replace its current temporary and leased facilities. The document specified a start date of January 2029, a completion date of January 2034, and a construction cost of approximately $1.5 billion.[53]

However, according to U.S. Space Command officials, this project was put on hold and no further planning for the construction of a headquarters facility in Colorado Springs had been initiated as of March 2025. These officials stated that planning work was held in response to a statutory provision in the National Defense Authorization Act for Fiscal Year 2024

[53]U.S. Space Command officials told us the $1.5 billion cost only includes construction and does not include additional requirements, such as outfitting the facility and information technology needs. Further, the $1.5 billion cost has grown due to several factors that include the passage of time and high inflation rates during the time period.

and a proposed statutory provision for fiscal year 2025.[54] When enacted in December 2024, the Servicemember Quality of Life Improvement and National Defense Authorization Act for Fiscal Year 2025 did not include the proposed provision and did not extend the National Defense Authorization Act for Fiscal Year 2024 funding restrictions.[55] In March 2025, an Air Force official told us that there are no updates on funding the military construction for the permanent headquarters in Colorado Springs.

Agency Comments and Our Evaluation

We provided a draft of this report to DOD for review and comment. DOD provided technical comments, which we incorporated as appropriate.

We are providing copies of this report to the appropriate congressional committees; the Secretary of Defense; the Secretary of the Air Force; the Combatant Commander, U.S. Space Command; and other interested parties. In addition, this report is available at no charge on the GAO website at https://www.gao.gov.

If you or your staff have any questions concerning this report, please contact me at CzyzA@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page

[54]Specifically, section 2889 of the National Defense Authorization Act for Fiscal Year 2024, Pub. L. No. 118-31 (2023) stated that none of the funds authorized to be appropriated by the act or otherwise made available for FY 2024 for DOD could be obligated or expended to acquire, construct, plan, or design a new U.S. Space Command headquarters building until June 30, 2024, when the DODIG and GAO complete reviews of the July 2023 selection of Peterson Space Force Base in Colorado Springs as the permanent headquarters location. For the remainder of fiscal year 2024 and part of fiscal year 2025, DOD officials told us the project was put on hold in response to a provision in a House Armed Services Committee bill for the National Defense Authorization Act for Fiscal Year 2025, which proposed extending this funding restriction to funds authorized to be appropriated by the National Defense Authorization Act for Fiscal Year 2025 until DODIG and GAO complete their reviews. H.R. 8070, 118th. Cong. § 2853 (as engrossed in House June 14, 2024).

[55]See generally Pub. L. No. 118-159 (2024).

of this report. GAO staff who made key contributions to this report are listed in appendix II.

Sincerely,

//SIGNED//

Alissa H. Czyz
Director, Defense Capabilities and Management

Appendix I: Analysis of the Extent the Air Force Reevaluation Process Incorporated Selected AOA Best Practices

Table 1 summarizes our analysis of the extent to which the Air Force's reevaluation process incorporated elements of selected Analysis of Alternatives (AOA) best practices to validate its preferred location for U.S. Space Command headquarters.[1] We found that although the Air Force's reevaluation process incorporated some elements of selected AOA best practices to revalidate its preferred location for U.S. Space Command headquarters, shortfalls persisted in these areas and others.

While we assessed how the Air Force incorporated the AOA best practices in its reevaluation process, we did not score the Air Force's reevaluation process at the best practice or characteristic level, as we did for the revised basing process in our June 2022 report. This was because the Air Force did not perform a complete AOA as part of its reevaluation.[2]

Table 1: Analysis of the Air Force Reevaluation Process for Selecting a U.S. Space Command Headquarters Against Selected Best Practices of a High Quality, Reliable Analysis of Alternatives (AOA)

2. Define functional requirements: *The customer defines functional requirements (i.e., the general parameters that the selected alternative must have in order to address the mission need) based on the mission need without a predetermined solution. The customer defines the capabilities that the AOA process seeks to refine through characterized gaps between capabilities in the current environment and the capabilities required to meet the stated objectives for the future environment. These functional requirements are realistic, organized, clear, prioritized, and traceable. It is advisable that functional requirements be set early in the AOA process, prior to the identification of alternatives, and agreed upon by all stakeholders*.
AOA Characteristic: Comprehensive

[1]As discussed in this report, Air Force officials told us that certain analyses completed during the reevaluation process were intended to address the seven best practices that we had previously scored as not met or minimally met in our June 2022 report. Additionally, upon our review of revaluation process documentation, we determined that the Air Force also incorporated elements of four additional best practices we previously found were partially or substantially met in our June 2022 report. Together, we assessed the Air Force's reevaluation process against these 11 best practices.

[2]GAO, *U.S. Space Command: Air Force Should Develop Guidance for Strengthening Future Basing Decisions,* GAO-22-106055 (Washington, D.C.: June 2022). This report is the public version of a sensitive report we issued in May 2022.

Revised basing process summary analysis and score from GAO-22-106055:[a] The Air Force established functional requirements to address the mission need for the U.S. Space Command headquarters, but several shifted over time, and we found one requirement to be unrealistic. For example, the Air Force changed its functional requirements related to the available qualified workforce and communications infrastructure after the Evaluation Phase based on feedback from U.S. Space Command officials. In addition, we found that the square footage requirements were based on an unrealistic overall number of personnel likely to require space in the headquarters building. Specifically, the Air Force based its required square footage on the number of U.S. Space Command authorized personnel, but did not account for additional personnel to be located at the headquarters, such as representatives from partner organizations. Original AOA Score 3 – Partially Met	**Reevaluation process summary analysis:** The Air Force did not change U.S. Space Command's functional requirements during its reevaluation. The Air Force retained two requirements—parking and facility square footage—we previously found to be unrealistic because they were based on 1,450 authorized personnel instead of U.S. Space Command's projection of 1,800 personnel. However, the Air Force did evaluate how the higher personnel number would affect these two requirements in an analysis of personnel requirements and the environmental assessment. According to Air Force officials, the Air Force continued to base facility and parking square footage functional requirements on 1,450 authorized personnel so the reevaluation process could move forward with environmental planning requirements without re-opening the original basing action. These officials also told us they used the 1,450 personnel number throughout the reevaluation process to be consistent with the personnel number used in the revised basing process. However, the Air Force did take some steps to analyze how U.S. Space Command's 2019 projection of 1,800 personnel would affect candidate locations. For example, both the analysis of personnel requirements and the environmental assessment varied the final headquarters personnel numbers by as many as 800 personnel (i.e., 1,000–1,800 total personnel) to examine how higher and lower personnel numbers affected different locations. Air Force officials told us the environmental assessment included 1,800 personnel to account for potential future personnel growth, in alignment with the 2019 U.S. Space Command projection and a June 2022 memorandum from the Commander, U.S. Space Command to the Secretary of the Air Force. This memorandum stated that any headquarters would need space for 1,800 personnel, including additional contractors and personnel from partner organizations. By assessing the impact of a higher number of personnel in its environmental assessment, the Air Force improved its ability to assess each candidate location's suitability in relation to U.S. Space Command's functional requirements.

5. Define selection criteria: *The customer, with input as needed from the decision-maker and the AOA team, and prior to the analysis, defines selection criteria based on the mission need. The selection criteria are independent of a particular solution. For example, the selection criteria could consider trade-offs between costs and capabilities, schedule flexibility of the alternatives, analysis of risks for each alternative, and other factors identified by the customer or the AOA team.*

AOA Characteristic: Credible

Revised basing process summary analysis and score from GAO-22-106055: The Air Force defined criteria based on mission need. The criteria were also independent of a particular solution, and they considered tradeoffs between mission, capacity, cost, and community support. Specifically, the Air Force identified four evaluation factors—*Mission*, *Capacity*, *Community/Support*, and *Costs to DOD*—which comprised the 21 criteria assessed in the Evaluation and Selection Phases. The 21 criteria included *proximity to mutually supporting space entities*, *childcare*, *housing affordability*, and *one-time infrastructure costs*, among others. U.S. Space Command officials stated that, consistent with the 21 criteria, command priorities for the headquarters included mission success and caring for people while being fiscally responsible. Although U.S. Space Command—in this case the customer—did not itself define the criteria, U.S. Space Command did provide significant input to the Air Force's final selection criteria. Original AOA Score 4 – Substantially Met	**Reevaluation process summary analysis:** The Air Force retained the original 21 selection criteria from its revised basing process and added a new mission related criterion—*disruption to operational capability*. Although U.S. Space Command did not define the criterion, the Air Force developed it based on the Command's input. Adding this criterion allowed the Air Force to consider risks associated with a potential transition to a new location.
6. Weight selection criteria: *The customer, with input as needed from the decision-maker and the AOA team, decides on the weighting of the selection criteria to reflect the relative importance of each criterion prior to the beginning of the AOA. The rationale for the weighting of the selection criteria should be documented and explained in the AOA report. The AOA team applies the selection criteria during the analysis phase to inform the decision-maker.* AOA Characteristic: Unbiased	
Revised basing process summary analysis and score from GAO-22-106055: The Air Force determined the weighting of its evaluation factors and 21 criteria for the Evaluation Phase, with input from its customer—U.S. Space Command—early in the revised process. However, the Air Force did not document the rationale for the weighting of criteria in the Evaluation Phase. In addition, Air Force statements about criteria weighting in Selection Phase analysis and in the selection of the preferred location were not reflected in documentation. Air Force officials stated they did not apply weighting to criteria in the Selection Phase, but instead qualitatively ranked the six finalists into top, middle, and bottom thirds for each of the 21 criteria. However, Air Force documentation states that certain sub-criteria were weighted differently. Further, the Air Force rationale for selecting the preferred location states that the most important criteria used in the selection were two mission-related criteria. However, the locations identified as having advantages in terms of mission were assigned one point—the same number of points assigned to other, lesser weighted categories, including capacity, community support, cost, and impact to full operational capability. As a result, the points assigned to select a preferred alternative did not reflect the stated weighting across categories. Original AOA Score 3 – Partially Met	**Reevaluation process summary analysis:** The Air Force took steps to evaluate its new mission-related selection criterion—*disruption to operational capability*—when assessing risk and developing associated mitigations. However, the Air Force did not weight this criterion in relation to its original 21 selection criteria to account for the new addition because it decided to rely on its original selection criteria for making the selection. During its reevaluation process, the Air Force broadly considered *disruption to operational capability* when assessing risks and developing associated mitigation strategies. For example, the Air Force used U.S. Space Command Full Operational Capability (FOC) criteria and personnel authorization data in its transition analysis to assess risks to operational capability resulting from potential personnel losses. However, a senior Air Force official told us this criterion was not weighted in combination with the 21 selection criteria from the revised basing process because the Air Force decided to rely on its original selection criteria when revalidating Huntsville, Alabama, as the preferred location. Similarly, another Air Force official stated that although *disruption to operational capability* was considered during the reevaluation process when identifying risks and mitigation strategies, there were no conversations about how the Air Force might weight this factor in relation to its original 21 selection criteria.

	In September 2023, then Secretary of the Air Force Kendall stated that, as noted and emphasized by U.S. Space Command leadership, there would be operational risk associated with the disruption of moving the provisional headquarters in Colorado Springs to any other location. Specifically, Secretary Kendall stated that the qualitative judgment about the reduced cost of Huntsville versus the operational risk of moving from Colorado Springs to another location became an important area of focus in the basing decision. Further, Secretary Kendall stated that, during the reevaluation process, the Air Force placed considerable weight on the projected cost savings and, while recognizing the risks to maintaining operational readiness, believed that potential mitigation measures were available. Contrastingly, he noted that the Commander of U.S. Space Command—the customer—expressed the view that operational risk was significant.[b] Similarly, Air Force officials told us that although operational readiness was recognized by the Air Force as a risk in the reevaluation process, the Air Force assessed that mitigations were sufficient to ease the risk and that costs remained the primary focus. However, because no documentation exists explaining the Air Force's process for weighing these competing interests in relation to its original 21 selection criteria, and Air Force officials could not explain this analysis in detail, it remains unclear how the *disruption to operational capability* and cost criteria were compared and weighed in relation to the other existing criteria to determine the preferred location.
12. Identify significant risks and mitigation strategies: *The AOA team identifies and documents the significant risks and mitigation strategies for each analyzed alternative. Risks are ranked in terms of significance to the mission need and functional requirements. All risks are documented for each alternative along with any overarching or alternative specific mitigation strategies. Schedule risk, cost risk, technical feasibility, risk of technical obsolescence, dependencies between a new program and other projects or systems, procurement and contract risk, resource risks, and other risks are examined.* AOA Characteristic: Well-documented	
Revised basing process summary analysis and score from GAO-22-106055: We found that the Air Force did not document all significant risks and mitigation strategies or assess the impact of risks to the mission need and functional requirements. Specifically, the Air Force did not clearly document and address in its analysis the risk of two issues—the colocation of two combatant commands and delays in reaching full operational capability. However, the Air Force did identify both risks in general terms after completion of Selection Phase analysis when documenting the rationale for selecting Redstone Arsenal as the preferred location. Air Force officials told us that risk assessment was embedded in certain criteria, such as in the *anti-terrorism/force protection and security* criterion in the Selection Phase. However, such risks and related assessments were not documented in relation to the locations or corresponding criteria. Original AOA Score 2 – Minimally Met	**Reevaluation process summary analysis:** The Air Force examined colocation and FOC risks it had not previously analyzed, along with related mitigations such as over-hiring and pay incentives. However, it did not identify or connect mitigations with other risks, obtain input from U.S. Space Command on the feasibility of the risk mitigations, or include the costs of the mitigations in its cost estimate. Specifically, we found that the Air Force solicited input from the Chairman of the Joint Chiefs of Staff on colocation risks and assessed delays in reaching FOC through a transition analysis assessing a potential move to each candidate location. The Air Force also identified and proposed mitigations for some risks it identified during the transition analysis. For example, to mitigate the potential risks to maintaining adequate numbers of personnel during a potential move, and the associated impact to operational readiness, the Air Force proposed over-hiring to offset personnel losses and offering pay incentives to retain current civilian employees.

	However, the Air Force did not identify mitigations for other risks it identified in the transition analysis, such as those related to information technology and communication systems. Additionally, some of the mitigations the Air Force proposed were not clearly linked with risks in the transition analysis. For example, the Air Force proposed delaying the transition to a different combatant command support agent—in this case, the Army—until after the move to Huntsville, Alabama, but this mitigation was not clearly linked with risks identified during the transition analysis.[c] Finally, the Air Force did not determine the feasibility of its mitigations with its customer—U.S. Space Command—or include associated costs in its cost estimate. The former U.S. Space Command Chief of Staff told us the Command proposed separate mitigations for reducing operational risks during a move to a new location and shared these with the Air Force, but neither the Command nor the Air Force could provide us with documentation of this assessment or the Command's full cost estimate. U.S. Space Command's assessment of certain key mitigation costs—such as for information technology costs—were significantly higher than the Air Force's. An Air Force official said that the Air Force did not see value in assessing the differences in Air Force and U.S. Space Command mitigation costs because it assumed DOD would provide the support the Command needed to maintain FOC through a transition. As a result of these shortfalls, it is not clear how each risk may affect each candidate location and whether identified mitigations are feasible.
13. Determine and quantify benefits and effectiveness: *The AOA team uses a standard process to identify and document the benefits and effectiveness of each analyzed alternative. The AOA team drafts a metric framework that details the methods used to evaluate and quantify the measures of effectiveness and measures of performance for the whole mission need. The AOA team quantifies the benefits and effectiveness of each alternative over the alternative's full life cycle, if possible. Just as costs cover the entire life cycle for each alternative, the benefits and effectiveness measures cover each alternative's life cycle, if possible, in order to determine each alternative's net present value, defined as the discounted value of expected benefits minus the discounted value of expected costs. In cases where the means to monetize a benefit are too vague (for example, intangibles like scientific knowledge), the AOA team treats those benefits as strategic technical benefits and uses scalability assessments to quantify those benefits so that they are compared across all viable alternatives. In situations where benefits cannot be quantified, the AOA team explains why this is the case as part of their analysis and documentation.* AOA Characteristic: Unbiased	

Revised basing process summary analysis and score from GAO-22-106055: While it is possible to identify or infer certain benefits for each location and the ways in which each location could be effective as the U.S. Space Command headquarters, the Air Force's method of identifying these benefits was not standardized or well-documented, particularly in the Selection Phase. The Air Force did not use net present value to quantify benefits and effectiveness, but did use a scalability framework to quantify intangible benefits and effectiveness through scoring of criteria in the Evaluation Phase, as allowed for under the best practice. For example, the Air Force assessed Evaluation Phase locations on their available qualified workforces on a 0–20-point scale based on an established definition of relevant professionals across a specific geographic region. In the Selection Phase, the Air Force did not quantify benefits or compare them across all alternatives in a way that makes the analysis traceable and clear. Specifically, the method the Air Force initially used to document benefits and effectiveness in the Selection Phase—a qualitative ranking of the top six locations into top, middle, and bottom thirds—was deemed insufficient by the Air Force, according to a former senior Air Force official. Specifically, the official told us that the Selection Phase rankings did not provide sufficient clarity to effectively communicate the Secretary of the Air Force's rationale for the decision. As a result, the Air Force pivoted to a new method in early January 2021—the decision matrix. However, this new method was neither standardized nor well-documented. The Air Force did make efforts to quantify benefits related to cost in its analysis, but these cost estimates were not reliable. For example, the initial baseline construction analysis that informed the cost estimates provided rough order of magnitude square footage requirements and capabilities. As such, the baseline analysis was associated with a 2 percent confidence level, a number that represents a low level of confidence in the accuracy of estimate. Original AOA Score 2 – Minimally Met	**Reevaluation process summary analysis:** The Air Force identified and documented benefits associated with each location, such as additional cost savings over time, using standardized methods. However, some of the benefits were not rooted in complete or reliable analysis. The Air Force contracted a private firm to perform a transition analysis that used net present value in its 15-year cost estimates to quantify benefits for each candidate location. These estimates provided standardized comparisons on elements such as construction and leases, and on the time to transition and achieve operational capability milestones at each location. Additionally, the transition analysis used a standardized, scalable approach to analyze the impact to operational readiness during a transition from Colorado Springs, Colorado to each of the six candidate locations. This approach modeled transition timelines to achieve operational readiness and generated location-specific site summaries which informed qualitative rankings of each location on the *disruption to operational readiness* criterion. In addition to the transition analysis, the contracted firm also performed a sensitivity analysis to quantify other benefits associated with each candidate location. The sensitivity analysis clarified *available qualified workforce*, *access to mutually supporting space entities*, and *facility and parking space* as the most impactful criteria used to identify the 2021 preferred location, and quantified differences between candidate locations that had previously been ranked qualitatively in tiers. However, although the contracted firm's 15-year cost estimates identify Huntsville, Alabama, as the lowest cost option, the cost estimates were incomplete and did not fully compare alternatives' costs across the Command's entire life cycle. Additionally, the contracted firm did not include documentation demonstrating the methodology used to develop the costs or associated time frames, and the estimates did not include costs associated with transition mitigations. Further, the Air Force assigned a confidence level of 5 percent to the cost estimates, a number that represents a low level of confidence in the accuracy and reliability of the estimate. Without complete and reliable cost estimates, it can be hard to discern the comparative benefits associated with each candidate locations.

15. Develop life-cycle cost estimates: *The AOA team develops a life-cycle cost estimate for each analyzed alternative, including all costs from inception of the program through design, development, deployment, operation, maintenance, and disposal. The AOA team includes a cost expert who is responsible for development of a comprehensive, well-documented, accurate, and credible cost estimate for each viable alternative in the study. The life-cycle cost estimate for each alternative follows the cost estimating process described in the GAO Cost Estimating and Assessment Guide, as appropriate for an early acquisition cost estimate, and uses a common cost element structure for all alternatives and includes all costs for each alternative. Costs that are the same across the alternatives (for example, training costs) are included so that decision-makers can compare the total cost rather than just the portion of costs that varies across all viable alternatives. The level of detail included in the life-cycle cost estimate should be consistent with the maturity of the alternatives. The AOA team expresses the life-cycle cost estimate in present value terms and explains why it chose the specific discount rate used. The AOA team ensures that economic changes, such as inflation and the discount rate, are properly applied, realistically reflected, and documented in the life-cycle cost estimate for all alternatives.*

AOA Characteristic: Comprehensive

Revised basing process summary analysis and score from GAO-22-106055: Although Air Force cost estimates addressed certain costs, such as one-time infrastructure costs, they did not address all costs from inception of the program through operations and maintenance. For example, the cost estimates addressed the cost of utility upgrades and realignment, but not the cost of maintaining facility infrastructure annually. Similarly, the Air Force identified certain costs specific to the U.S. Space Command facility—such as costs for High Altitude Electromagnetic Pulse Shielding—but did not identify others, such as costs for needed Sensitive Compartmented Information Facilities, or relocation costs. Further, the costs the Air Force identified were not easily traceable, including because the Air Force did not document how subject matter experts developed baseline estimates for all cost elements. Original AOA Score 3 – Partially Met	**Reevaluation process summary analysis:** The Air Force updated certain cost estimate elements—such as one-time military construction cost factors—and produced 15-year estimates with operating and transition costs. However, these estimates did not include costs from all phases of the Command's life-cycle and no rationales were provided to explain why costs were included or omitted. The Air Force produced one-time military construction-related cost estimates to reflect current cost factor information, as well as 15-year cost estimates consisting of operating and transition costs. However, the 15-year cost estimates did not include all costs across the Command's 50-year lifecycle and the rationale for this decision was not documented. For example, the 15-year cost estimates for Huntsville, Alabama, included lease costs through 2026 to support a transition from Colorado Springs, Colorado. However, sustainment costs are not included in this estimate until 2031, when military construction for the permanent facility was expected to be complete, leaving a 4-year gap in sustainment costs. Further, according to an Air Force official, the Air Force determined during the reevaluation that the original temporary facilities in Huntsville, Alabama, were no longer available, but the 15-year cost estimates did not reflect the time to build new temporary facilities or state the rationale for the omission of attendant costs. In the absence of comprehensive life-cycle cost estimates, total candidate costs are unclear.

16. Include a confidence level or range for life-cycle cost estimates: *The AOA team presents the life-cycle cost estimate for each alternative with a confidence level or range, and not solely as a point estimate. Having a range of costs around a point estimate is useful because it conveys a level of confidence for each alternative to achieve a most likely cost. To document the level of risk associated with the point estimate for each analyzed alternative, the confidence level is included as part of the life-cycle cost estimate as part of the cost estimating Step 9, risk and uncertainty analysis. Decision-makers must have access to the confidence level associated with the point estimates for all viable alternatives in order to make informed decisions. Additionally, the AOA team uses a consistent method of comparing alternatives in order to present a comparable view of the risk associated with each alternative. For example, the comparison can be based on an established dollar value across alternatives (in order to observe the confidence level for each alternative at that dollar value). Alternatively, the comparison can be based on a predetermined confidence level across alternatives (in order to observe the dollar value associated with that confidence level for each alternative).*

AOA Characteristic: Credible

Revised basing process summary analysis and score from GAO-22-106055: Air Force cost estimates for the final six locations did not include confidence levels or ranges. All cost estimates developed in the revised process were point estimates that included one number for each cost element assessed. The Air Force addressed risk for each alternative location by multiplying a baseline number for each cost element by a contingency factor and other scalable multipliers. Other multipliers included a technology factor, historical adjustment, and design complexity contingency. However, there was no analysis assessing the risk of cost increasing or decreasing. Similarly, there was no uncertainty analysis showing the range across which each cost element and the total cost might vary. Original AOA Score 2 – Minimally Met	**Reevaluation process summary analysis:** The Air Force considered risk to one-time construction costs by applying a contingency factor. However, the estimates remained point estimates that neither included confidence levels and ranges, nor assessed the risks and uncertainties associated with other costs, such as labor.

	The Air Force addressed risk to its military construction cost estimates by including a design contingency factor of 125 percent to address unanticipated facility design complexity. However, the design contingency factor was not accompanied by confidence levels or other supporting analysis assessing the risks of facility design costs increasing or decreasing during the timespan covered by the basing project. Additionally, the Air Force's cost estimates did not address the risks of other costs—such as technology updates, labor, or materials costs—increasing or decreasing, or include an uncertainty analysis that would identify and quantify potential unknowns across each cost element (e.g., military construction build-related costs, sustainment costs, civilian personnel costs). In the absence of confidence levels and ranges, cost estimates may not adequately demonstrate the risk of cost fluctuation for each location.
17. Perform sensitivity analysis: *The AOA team tests and documents the sensitivity of the cost and benefit and effectiveness estimates for each analyzed alternative to risks and changes in key assumptions. Major outcomes and assumptions are varied in order to determine each alternative's sensitivity to changes in key assumptions. This analysis is performed in order to rank the key drivers that could influence the cost and benefit estimates based on how they affect the final results for each alternative. Each alternative includes both a sensitivity analysis and a risk and uncertainty analysis that identifies a range of possible costs based on varying key assumptions, parameters, and data inputs. As explained in best practice 16 (include a confidence level or range for life-cycle cost estimates), life cycle cost estimates are adjusted to account for risk and sensitivity analyses.* AOA Characteristic: Credible	
Revised basing process summary analysis and score from GAO-22-106055: The Air Force did not perform a sensitivity analysis to vary key assumptions and examine the alternatives' sensitivity to such changes. There are a variety of site-specific inputs to the cost estimates that could be varied to perform a sensitivity analysis, such as the length of road required for road realignment. However, the Air Force cost estimates considered sensitivity for only one input—the area cost factor, which drives the primary facilities cost. Varying the area cost factor to determine a one-time infrastructure cost for each location does not reflect a sensitivity analysis; instead, changes to key assumptions should include a variety of input changes. For example, Air Force cost estimates included one estimated dollar amount for each line item, such as for road realignment, antiterrorism and force protection improvements, and site improvements. A sensitivity analysis could have varied the assumptions specific to each site, such as such as including a low, medium, and high estimate for the length of road required for road realignment. Original AOA Score 1 – Did Not Meet	**Reevaluation process summary analysis:** The Air Force contracted a private firm to perform a sensitivity analysis, which varied some cost drivers—Area Cost Factor, Basic Allowance for Housing, and salaries—to see how differences in these inputs affected the ranking of candidate locations. However, this analysis did not include other inputs that are most likely to change cost estimates, such as changes to facility size. The factors it did vary are not responsive to possible changes in basing assumptions because they are set by the federal government annually. The sensitivity analysis performed during the reevaluation process varied some cost drivers to see how differences in these inputs affected the ranking of candidate locations. As mentioned, these inputs included the Area Cost Factor, Basic Allowance for Housing, and salaries. Additionally, the analysis varied one other input—the amount of time it would take a subset of the available qualified workforce to drive into the headquarters at each candidate location. However, the sensitivity analysis did not include inputs that are most likely to change cost estimates, such as changes in the size of the facility or associated personnel. Additionally, the Area Cost Factor, Basic Allowance for Housing, and salaries are not meaningful for a sensitivity analysis because they are set by the federal government on an annual basis and are not responsive to possible changes in key basing assumptions, such as the availability of a qualified civilian workforce.[d]

	Officials from the contracted firm that performed the analysis told us several factors affected their approach. For example, officials stated that the Air Force set specific parameters for the sensitivity analysis, thus precluding the independent determination of those inputs with the most impact on the selection of the preferred location. Additionally, the data available to the contracted firm were primarily qualitative, which is not conducive to a traditional, quantitative data-driven sensitivity analysis. Without varying additional data inputs that are most likely to change cost estimates, the sensitivity analysis provides an incomplete picture of the relative influence of factors on the costs associated with each candidate location.
19. Document ground rules, assumptions, and constraints: *The AOA team documents and justifies all ground rules, assumptions, and constraints used in the AOA process. Assumptions and constraints help to scope the AOA. Ground rules represent a common set of agreed upon standards that provide guidance and minimize conflicts in definitions. Assumptions are explicit statements used to specify precisely the environment to which the analysis applies, while constraints are requirements or other factors that cannot be changed to achieve a more beneficial approach. Ground rules, assumptions and constraints are detailed and justified for each alternative in the AOA plan.* AOA Characteristic: Well-documented	
Revised basing process summary analysis and score from GAO-22-106055: It was possible, through reviewing documentation and applying judgment, to identify some factors in the Air Force process that could qualify as ground rules, assumptions, and constraints, but these were not clearly documented in all cases. For example, then Secretary of Defense Mark Esper established ground rules for the revised process as a whole in a March 2020 hearing before the Senate Armed Services Committee, but Air Force documentation did not clearly outline all ground rules. In addition, the Air Force did not clearly document all key assumptions, such as the assumptions that no civilian personnel would relocate to the permanent location and that U.S. Space Command would hire civilian personnel from the local community. In addition, although the Air Force documented its initial assumption that all candidate locations would reach full operational capability within 6 years, its documentation of the rationale for selecting Redstone Arsenal as the preferred location included discussion of a different assumption—that Peterson Air Force Base could reach full operational capability within different, though unstated timeframes. Last, the Air Force documented certain constraints, but not comprehensively. For example, the site visit report did not comprehensively document constraints that might affect the building site, such as whether each location was in or near a floodplain. Original AOA Score 2 – Minimally Met	**Reevaluation process summary analysis:** The Air Force documented some factors—such as building site considerations—that could qualify as ground rules, assumptions, and constraints. However, some assumptions—such as the availability of community incentives—were not reasonable. The Secretary of Defense established ground rules for the reevaluation in a May 2022 memorandum to the Secretary of the Air Force that included reviewing senior leaders' operational capability concerns, and the Secretary of the Air Force subsequently outlined specific analyses to be conducted. In addition, the Air Force documented constraints in the 2022 environmental assessment that might affect the potential building site, such as radon levels, proximity to wetlands, or location in a floodplain.[e] However, some of the Air Force's assumptions were not reasonable. For example, the Air Force based its cost estimates on assumptions that military construction cost estimates from January 2021 remained accurate, and that community incentives remained readily available. However, the Air Force did not confirm the accuracy of the January 2021 estimates or the continued availability of all community incentives despite the passage of time. As a result of these assumptions, related analyses did not fully capture differences in candidate locations' costs, transition timeframes, and required resources.

21. Perform independent review: *An entity independent of the AOA process reviews the extent to which all best practices are followed. An independent review is one of the most reliable means to validate an AOA process. The AOA process is completed and documented with enough thoroughness to ensure that an independent organization outside of the program's chain of command can review the AOA documentation and clearly understand the process and rationale that led to the selection of the preferred alternative. Part of the documentation includes approval and review from an office outside of the one that asked for or performed the AOA process. Recommendations provided by the review(s) throughout the AOA process should be followed by the AOA team. In the exceptional case that the AOA team does not follow a recommendation, the AOA team documents the reasons why those recommendations were not adopted. For certain projects, in addition to an independent review at the end of the AOA process, additional reviews are necessary at earlier stages of the process. Such reviews may be conducted after key steps are performed in the AOA process, for example the selection of the AOA team (Step 4), the development of the AOA process plan (Step 7), or the identification of viable alternatives (Step 11). While early reviews are not a substitute for the independent review conducted at the end of the AOA process, they help ensure that bias is not added throughout the course of the AOA process. Reviews throughout the AOA process can also keep the customer and the decision-maker informed of the process. Any issues with the AOA work conducted prior to the review can be corrected immediately, if necessary, rather than wait until the independent review at the end and redoing the work then.*

AOA Characteristic: Credible

Revised basing process summary analysis and score from GAO-22-106055:	Reevaluation process summary analysis:
Senior DOD and Air Force officials outside of the Air Force Strategic Basing Office conducted reviews of the revised process after key steps, such as criteria development, and the completion of Evaluation Phase results. These reviews were conducted by the Assistant Secretary of the Air Force for Installations, Environment, and Energy; the Secretary of the Air Force; and the Secretary of Defense, all of whom are within the chain of command. In addition, as the customer, U.S. Space Command reviewed functional requirements, selection criteria, and weighting at multiple stages, ensuring it had input and awareness of key steps as the revised process progressed, according to U.S. Space Command officials. However, Air Force officials we interviewed confirmed that no entity independent of the AOA team reviewed the revised selection process. Original AOA Score 2 – Minimally Met	No entity independent of the reevaluation team reviewed the reevaluation process. Air Force officials outside of the Air Force Strategic Basing Division conducted periodic reviews of the reevaluation process after key steps, such as the conclusion of Phase Two studies. These reviews were conducted by the Assistant Secretary of the Air Force for Installations, Environment, and Energy and the Secretary of the Air Force. In addition, U.S. Space Command officials provided limited input to the reevaluation process by confirming functional and FOC requirements per the Air Force's request. Air Force officials also stated they believe the private firm they contracted to perform the sensitivity and transition analyses served as an independent reviewer of the Air Force's revised basing selection process. However, neither the Assistant Secretary of the Air Force for Installations, Environment, and Energy nor the Secretary of the Air Force are outside the Air Force's chain of command. Further, using a private firm for specific analyses does not constitute an independent review because the firm performed reevaluation work directed by the Air Force. Independent reviews could have helped ensure that bias did not affect the reevaluation process and further informed U.S. Space Command, the customer, of the process and its progress.

22. Compare alternatives: *The AOA team or the decision-maker compares the alternatives in order to select a preferred alternative that best meets the mission need. This should be done using net present value, if possible. Net present value can be negative if discounted costs are greater than discounted benefits. Net present value is the standard criteria used when deciding whether an alternative can be justified based on economic principles. In some cases, net present value cannot be used, such as when quantifying benefits is not possible. In these cases, the AOA team documents why net present value cannot be used. Furthermore, if net present value is not used to differentiate among alternatives, the AOA team should explain why another method has been applied, describe the other method that is used to differentiate, and ensure that the rationale used to select a preferred alternative is clearly documented so that a reviewer outside of the AOA process will be able to follow the logical reasoning.*

AOA Characteristic: Unbiased

Revised basing process summary analysis and score from GAO-22-106055: Air Force officials stated they did not use net present value to compare alternatives; instead, the Air Force scored Evaluation Phase locations on a weighted 100-point scale and qualitatively ranked Selection Phase locations into tiered groupings of top, middle, and bottom thirds. However, the Air Force provided limited documentation of the methods used to qualitatively compare the final six locations in the Selection Phase. Air Force officials told us that they did not document the underlying analysis that led to the tiered rankings. Instead, the Air Force team reviewed data collected during the Evaluation and Selection Phases and came to a consensus on rankings across the 21 criteria during a series of business meetings, according to officials. It is possible to follow the logical reasoning of analysis for certain criteria, such as the *cost of living* criterion, which the Air Force assessed by comparing an average cost of living index for each location. For other criteria, it is not possible for an external reviewer to follow the logical reasoning due to insufficient information. For example, for the *childcare* criterion, the Air Force did not describe in its documentation the method of ranking the three sub-criteria, or the method for combining these to determine an overall ranking for childcare. There is also limited documentation of the rationale for selecting a preferred alternative from among the final six candidates. For example, the decision matrix and Air Force officials identified stronger long-term benefits as the rationale for selection Redstone Arsenal. However, the decision matrix does not make clear how the decision-makers weighed these long-term benefits against delays in reaching full operational capability.

Original AOA Score 2 – Minimally Met

Reevaluation process summary analysis: The Air Force used net present value to compare some life-cycle cost estimates, but some of these comparisons were based on incomplete information or were not documented. Also, some qualitative comparisons between locations were documented, but the methods used for others were not.

The Air Force used 15-year cost estimates presented as Net Present Value to compare locations by different cost categories, including construction, leases, sustainment, personnel, and moving. However, the cost estimates used to make these comparisons did not include some life-cycle costs—such as sustainment costs for Huntsville, Alabama between 2027 and 2030—or costs of proposed mitigations. Additionally, the Air Force compared alternatives on both the original 21 selection criteria and on a new *disruption to operational capability* criterion by qualitatively ranking locations into tiered groupings of top, middle, and bottom thirds. To further highlight relative strengths and weaknesses across the candidates, the Air Force layered a quantitative framework over the qualitative rankings for the original 21 selection criteria. However, the Air Force provided limited documentation of the methods used to generate the qualitative rankings on *disruption to operational capability* or how this information was to be used by decision-makers. Further, the Air Force's rationale for not including *disruption to operational capability* when selecting the preferred alternative is not documented, so it is not clear how decision-makers weighed these cost savings against impact to FOC and other criteria to determine the preferred location.

Source: GAO analysis of Air Force and U.S. Space Command information. | GAO-25-107092

[a]We determined the overall assessment rating by assigning each individual best practice rating a number: Not Met = 1, no evidence that satisfies any of the best practice; Minimally Met = 2, evidence that satisfies a small portion of the best practice; Partially Met =3, evidence that satisfies about half of the best practice; Substantially Met = 4, evidence that satisfies a large portion of the best practice; and Fully Met = 5, complete evidence that satisfies the best practice.

[b]The Honorable Frank Kendall, Secretary of the Air Force, U.S. Department of Defense, *Examining Irregularity in the Strategic Basing Process for U.S. Space Command*, testimony before the House Armed Services Committee, 118th Cong., 1st sess., September 28, 2023.

[c]Redstone Arsenal is an Army Installation located in Huntsville, AL.

[d]*See* Department of Defense, Unified Facilities Criteria 3-701-01, *DOD Facilities Pricing Guide* (Mar. 17, 2022) (incorporating change 6, effective May 15, 2025) and Department of Defense, Unified Facilities Criteria 3-730-01, *Programming Cost Estimates for Military Construction* (Mar. 1, 2024).

[e]Department of the Air Force, *Final Environmental Assessment: United States Space Command Establishment of Permanent Headquarters* (September 2022).

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

If you or your staff have questions about this report, please contact Alissa Czyz at CzyzA@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Ryan D'Amore (Assistant Director), Jeff Hubbard (Analyst-in-Charge), Sharon Ballinger, Taylin Bower, Victoria Coxon, Jennifer Echard, Emile Ettedgui, Jennie Leotta, Michael Shaughnessy, Michael Silver, Carter Stevens, and Emily Wilson made key contributions to this report.