



October 2017

# FEDERAL AVIATION ADMINISTRATION

## Stakeholders' Perspectives on Potentially Moving the Office of Commercial Space Transportation

# GAO Highlights

Highlights of [GAO-18-96](#), a report to congressional requesters

## Why GAO Did This Study

The Office of Commercial Space Transportation, which regulates and promotes the U.S. commercial space launch industry, was established in 1984 within the Office of the Secretary of Transportation and transferred to FAA in 1995. In 2015, GAO reported that the Office of Commercial Space Transportation faced challenges associated with the growth of the commercial space launch industry such as licensing more launches. To help meet these and other challenges such as updating regulations, some industry stakeholders and others suggested that the Office of Commercial Space Transportation should be moved back to the Office of the Secretary of Transportation.

GAO was asked to review issues regarding transferring the Office of Commercial Space Transportation from FAA to the Office of the Secretary of Transportation. This report addresses: (1) selected stakeholders' and officials' perspectives on transferring the Office of Commercial Space Transportation from FAA to the Office of the Secretary of Transportation, (2) what steps would be required to make this transfer, and (3) key practices and considerations GAO has previously identified for organizational changes that could be instructive for such a transfer. GAO interviewed industry stakeholders and FAA and DOT officials, reviewed the steps taken during the office's 1995 transfer, and reviewed prior reports on key practices and questions to consider regarding organizational changes.

GAO is making no recommendations in this report.

View [GAO-18-96](#). For more information, contact Gerald L. Dillingham, Ph.D. at (202) 512-2834 or [dillingham@gao.gov](mailto:dillingham@gao.gov)

October 2017

## FEDERAL AVIATION ADMINISTRATION

### Stakeholders' Perspectives on Potentially Moving the Office of Commercial Space Transportation

## What GAO Found

Representatives from commercial space launch companies and spaceports GAO interviewed described advantages and disadvantages of moving the Office of Commercial Space Transportation to the Office of the Secretary of Transportation, but most of them favored moving the office. Conversely, most Federal Aviation Administration (FAA) officials GAO interviewed did not favor the idea. A senior official in the Office of Commercial Space Transportation said that there are advantages and disadvantages to moving the office and that whether such an action would be beneficial depends on the implementation details and the administration's preferences. Officials from the Office of the Secretary of Transportation said they currently do not have plans to move the office. Stakeholders' and officials' perspectives are based on what they perceive could occur as a result of a move, for example:

- *Communication and coordination:* Department of Transportation (DOT) officials said that a possible advantage of moving the office would be having a unified point of contact for the industry in communicating about commercial space launch issues, while FAA officials said that moving the office could make it more difficult for FAA offices to coordinate on commercial space activities.
- *Regulations:* Some stakeholders said that moving the office could help accelerate the pace of commercial space regulatory reform, but DOT officials said that moving the office would not necessarily do so.
- *Resources:* According to some stakeholders and a senior official in the Office of Commercial Space Transportation, moving the office out of FAA could give commercial space launch issues a higher profile and more resources because FAA is focused on aviation as opposed to commercial space. However, officials from the Office of the Secretary of Transportation said that it is uncertain whether the office would receive more resources if it were moved to the Secretary's office.

The Secretary of Transportation could move all or part of the office through a delegation of responsibilities for commercial space, as was the case in the prior move in 1995. If the office were moved, other necessary steps would include addressing the differences in pay scales between FAA and the Office of the Secretary of Transportation, obtaining support services and office space, and establishing new coordination and communication processes and procedures.

GAO's prior work has identified key practices and questions for consideration when evaluating proposals for or implementing organizational changes such as a consolidation or merger. These key practices include: (1) focusing on a key set of principles and priorities at the outset of the transformation, (2) setting implementation goals and a timeline to build momentum and show progress, and (3) establishing a communication plan. Questions to consider when evaluating consolidation proposals include (1) What are the goals of the consolidation? and (2) What will be the likely costs and benefits of the consolidation?

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## **Abbreviations**

DOT	Department of Transportation
FAA	Federal Aviation Administration

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October 5, 2017

The Honorable Ami Bera  
Ranking Member  
Subcommittee on Space  
Committee on Science, Space, and Technology  
House of Representatives

The Honorable Jim Bridenstine  
House of Representatives

The Honorable Derek Kilmer  
House of Representatives

The Office of Commercial Space Transportation, which regulates and promotes the U.S. commercial space launch industry, was established in 1984 within the Office of the Secretary of Transportation and transferred to the Federal Aviation Administration (FAA) in 1995. In 2015, we reported that the Office of Commercial Space Transportation faced challenges associated with the growth of the commercial space launch industry, including licensing more launches as well as new types of vehicles and technologies, licensing more and complex launch sites, and responding to emerging business plans.<sup>1</sup> To help meet these and other challenges such as updating regulations, some industry stakeholders and others have suggested that the Office of Commercial Space Transportation should be moved back to the Office of the Secretary of Transportation.

You requested that we review issues regarding transferring the Office of Commercial Space Transportation from FAA to the Office of the Secretary of Transportation. This report addresses: (1) selected stakeholders' and officials' perspectives on transferring the Office of Commercial Space Transportation from FAA to the Office of the Secretary of Transportation, (2) what steps would be required to make this transfer, and (3) key practices and considerations we have identified for organizational changes that could be instructive for such a transfer.

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<sup>1</sup>GAO, *Federal Aviation Administration: Commercial Space Launch Industry Developments Present Multiple Challenges*, [GAO-15-706](#) (Washington, D.C.: Aug. 25, 2015).

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To obtain selected stakeholders' perspectives on transferring the Office of Commercial Space Transportation from FAA to the Office of the Secretary of Transportation, we interviewed representatives from four selected commercial space launch companies that have conducted launches and other activities under a permit within the last 5 years in the United States and that represent different sectors of the industry such as orbital launches and space tourism.<sup>2</sup> In addition to these companies and to obtain the perspectives of companies that have different types of licenses and are in different stages of the licensing process, we also interviewed representatives from (1) a company that indicated it is working with FAA on a launch license application, (2) a licensed spaceport, and (3) an airport in the launch site licensing process. Furthermore, to obtain the perspective of an industry association that represents a range of commercial space companies—including commercial spaceflight developers, operators, and spaceports—we interviewed a representative from the Commercial Spaceflight Federation, an association representing the commercial space industry.<sup>3</sup> Within FAA, we interviewed officials in offices that FAA identified as being involved in commercial space transportation issues, including the Office of the Administrator, the Office of Commercial Space Transportation, the Air Traffic Organization, and the Office of Airports. We also received written answers to our questions from FAA's Office of Aviation Safety. To obtain perspectives from the Department of Transportation (DOT), we interviewed officials from the Office of the Secretary of Transportation. In addition, we interviewed a former DOT official who served in a senior position when the Office of Commercial Space Transportation was transferred to FAA in 1995. Because there is no formal plan to move the office, stakeholders' perspectives are based on what they perceive could occur as a result of a move. Moreover, whether an effect of moving the office would be an advantage or disadvantage may vary depending on a stakeholder's or official's perspective and what would actually occur from a move.

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<sup>2</sup>We interviewed all three companies that had permitted launches and two of the four companies that had licensed launches in the United States since January 2013.

<sup>3</sup>According to its website, as of August 2017, the Commercial Spaceflight Federation had over 70 businesses and organizations as members.

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We also reviewed available documentation, including a 1992 report prepared by the National Academy of Public Administration<sup>4</sup> that included organizational options for the Office of Commercial Space Transportation and the FAA Air Traffic Organization's *Roadmap for Integration of Space Operations in the National Airspace System*.

To determine what would be required to move the Office of Commercial Space Transportation from FAA back to the Office of the Secretary of Transportation, we reviewed the steps taken regarding DOT's transfer of the Office of Commercial Space Transportation from the Office of the Secretary of Transportation to FAA in 1995. In addition, we reviewed the legislative histories for the Commercial Space Act of 1984 and legislation introduced in 1994 to require the transfer of the Office of Commercial Space Transportation from DOT to FAA. We also interviewed current and former officials from the Office of the Secretary of Transportation.

To determine what we have previously identified as key practices for successful transitions that might be instructive, we reviewed our prior reports on key practices for mergers and organizational transformations and questions to consider for consolidations.<sup>5</sup> For this prior work, we developed these key merger and transformation practices by convening a forum to identify and discuss useful practices and lessons learned from major private and public sector organizational mergers, acquisitions, and transformations; interviewing knowledgeable officials; reviewing relevant literature and agency documentation; and reviewing the status of high risk issues. To identify key questions that federal agencies should consider when evaluating whether to consolidate physical infrastructure or management functions, we reviewed prior GAO work that identified and reviewed relevant literature on public sector consolidations produced by academic institutions, professional associations, think tanks, news

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<sup>4</sup>In preparing the report, the National Academy of Public Administration convened a panel of five experts in transportation, space operations, organization, and general management. The panel and project staff consulted more than 20 officials who had knowledge of and responsibilities relevant to commercial space transportation and the objectives of the study. National Academy of Public Administration, *Organization and Management Analysis of the Office of Commercial Space Transportation: A Report to the U.S. Department of Transportation* (Washington, D.C.: 1992).

<sup>5</sup>GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, [GAO-03-669](#) (Washington, D.C.: July 2, 2003) and *Streamlining Government: Questions to Consider When Evaluating Proposals to Consolidate Physical Infrastructure and Management Functions*, [GAO-12-542](#) (Washington, D.C.: May 23, 2012).

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outlets, and various other organizations, and reviewed examples of agency consolidations. This information complemented our review of GAO's extensive body of work on government reform.

We conducted this performance audit from May 2017 to October 2017 in accordance with generally accepted government 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.

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## Background

In 1984, the Commercial Space Launch Act<sup>6</sup> gave DOT the authority, among other things, to license and monitor the safety of commercial space launches and to promote the industry. Executive Order 12465<sup>7</sup> designated DOT as the lead federal agency for enabling private-sector launch capability.<sup>8</sup> The Office of Commercial Space Transportation and its responsibilities, which were originally within the Office of the Secretary of Transportation, were transferred to FAA in 1995.<sup>9</sup>

The U.S. commercial space launch industry has achieved several milestones since 1984. For example, in recent years SpaceX, a commercial space launch company, has successfully tested reusable elements of expendable launch vehicles and landed them back on land and on an off-shore landing vessel called a drone ship. In addition, the industry is changing with the emergence of some suborbital launch

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<sup>6</sup>Pub. L. No. 98-575, 98 Stat. 3055 (1984).

<sup>7</sup>Exec. Order No. 12465, *Commercial Expendable Launch Vehicle Activities*, Feb. 24, 1984.

<sup>8</sup>49 Fed. Reg. 7211 (Feb. 28, 1984). A 1984 House of Representatives report noted that before the Office of Commercial Space Transportation was created, 17 different agencies had jurisdiction over commercial space launches. Report to accompany H.R. 3942, Committee on Science and Technology, Commercial Space Launch Act, H. Rep. No. 98-816, Appendix A (May 31, 1984).

<sup>9</sup>60 Fed. Reg. 62762 (Dec. 7, 1995). A 1995 House of Representatives Appropriations Committee report indicated that "[t]he Committee believes the office would more effectively serve its customers, and streamline the [Office of the Secretary of Transportation] organization, if it were relocated to the FAA. Report to accompany H.R. 2002, House Department of Transportation and Related Agencies Appropriations Bill, 1996, H. Rep. No. 104-177, p.55 (July 11, 1995).



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vehicles that are capable of being launched into space more than once and can enable space tourism.<sup>10</sup> For example, Blue Origin has successfully launched and landed the vehicle it intends to use in the future for space tourism. By adding an expendable upper stage, suborbital vehicles can also be used to transport small satellites to orbit. Furthermore, although licensed launches historically took place at federal launch sites such as Cape Canaveral Air Force Station and the National Aeronautics and Space Administration's Kennedy Space Center, launch sites now can be private spaceports or FAA-licensed launch sites. One launch site is co-located at an airport that has scheduled commercial airline flights and other spaceports are used for general aviation. As of August 2017, there were 10 licensed launch sites in the United States.

The Office of Commercial Space Transportation works with other FAA lines of business such as:

- the Air Traffic Organization on integrating licensed launches and permitted activities in the national airspace,
- the Office of Airports regarding airports that seek to be or already are licensed launch sites, and
- the Office of Aviation Safety on launch vehicles that follow aircraft rules and can be used for commercial space activities.

In fiscal year 2017, the Office of Commercial Space Transportation had 104 full-time equivalent positions and an operations budget of \$19.8 million—an increase of 20 full-time equivalent positions and \$2 million over fiscal year 2016. FAA has a staff of over 40,000 people and a budget of \$16.4 billion in fiscal year 2017. According to the Office of Commercial Space Transportation, its workload has increased significantly in recent years, particularly regarding pre-application consultations for launch and launch site licenses.<sup>11</sup>

The Office of the Secretary of Transportation has offices that are responsible for policy, legal, and government affairs among other issues.

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<sup>10</sup>According to FAA, suborbital spaceflight occurs when a spacecraft reaches space but its velocity is such that it cannot achieve orbit. FAA also indicates that many people believe that in order to achieve spaceflight, a spacecraft must reach an altitude higher than 100 kilometers (about 62 miles).

<sup>11</sup>In 2015, we recommended that FAA provide more information on its workload activities as part of its budget submissions to Congress. FAA has implemented the recommendation. [GAO-15-706](#).

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In 1987, the House Appropriations Committee recommended that DOT perform a comprehensive organization and management study of the Office of Commercial Space Transportation with the objectives of eliminating duplication of activities carried out by offices within the Office of the Secretary and DOT modal administrations, and determining potential areas for streamlining operations.<sup>12</sup> In 1991, DOT asked the National Academy of Public Administration to analyze and evaluate the key organizational and management issues facing the Office of Commercial Space Transportation which at that time was located in the Office of the Secretary of Transportation. The report considered organizational options for the office including establishing an independent regulatory office, merging the office into an existing operating administration such as FAA, transferring this office to bureau status in DOT, or creating a new operating administration in DOT. According to the report, three of the study's five panel members stated that they believed that the office should be removed from the Office of the Secretary of Transportation and established as an operating administration because its mission was inconsistent with the broad and cross-cutting organizations within the Secretary's Office that are focused on policy, budget, and administrative issues.<sup>13</sup>

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<sup>12</sup>The committee expressed concern that the Office of Commercial Space Transportation had (1) an inordinate level of administrative overhead, (2) too many high-graded positions, and (3) not taken advantage of the significant experience found in other federal agencies involved in space matters through the use of reimbursable details of staff. Department of Transportation Appropriations and Related Agencies Bill, H. Rep. No. 100-202, p.9, July 7, 1987. DOT did not conduct the study, and the House Appropriations Committee, in its report accompanying the fiscal year 1992 House DOT appropriations bill (H. Rep. No. 102-156), again asked DOT to conduct this management study.

<sup>13</sup>The other two panelists thought the office should not become an operating administration because it could result in an unjustified growth in staff and because the office's staff size at the time did not justify the establishment of an operating administration.

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## Stakeholders Cited Various Perspectives on Moving the Office of Commercial Space Transportation

Representatives from the commercial space launch companies and spaceports we spoke to described both potential advantages and disadvantages of moving the office, but most of them favored moving the office. On the other hand, most FAA officials we interviewed did not favor the idea. A senior official in the Office of Commercial Space Transportation said that there are advantages and disadvantages to moving the office and that whether such an action would be beneficial depended on the implementation details and the administration's preferences. Officials from the Office of the Secretary of Transportation said they currently do not have plans to move the office. Stakeholders and officials provided perspectives on what they believe might result from a move including discussions regarding communicating with the industry and coordinating within FAA, program operations, updating regulations, and obtaining resources for the office, and other issues.

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## Stakeholder Perspectives on Advantages and Disadvantages of a Move

### Communication and Coordination

Officials in the Office of the Secretary of Transportation said a possible advantage of moving all or part of the office would be having a unified point of contact for communicating with the industry on commercial space launch issues. Representatives from a commercial space launch company also said that rather than working with various FAA offices, they would like there to be a "one-stop shop" for commercial space launch issues and a senior official in the Office of Commercial Space Transportation indicated the office's original purpose was to fulfill that role.<sup>14</sup> Some company representatives further explained that although they generally work with the Office of Commercial Space Transportation on licensing issues and with the Air Traffic Organization on airspace access, in some cases, the lines of responsibility between the two offices are not clearly defined. Furthermore, a spaceport official said that in addition to working with the Office of Commercial Space Transportation

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<sup>14</sup>In 1984, Executive Order 12465, which pertained to the development of commercial space operations by private industry, discussed the concept of having the DOT as the contact point between the commercial space industry and the federal government. 49 Fed. Reg. 7211, Feb. 28, 1984.

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he also needs to work with FAA's Office of Airports, which reviews the effects of spaceports on airports, among other responsibilities.

In discussing these issues with the senior official involved in the Air Traffic Organization's emerging technologies integration efforts, the official said that although there is overlap and a need for more communication between the Office of Commercial Space Transportation and the Air Traffic Organization, coordination between the two offices is improving. He also said that later this year or early next year, FAA plans to start an aviation rulemaking advisory committee that will help to determine airspace access priorities for all national airspace users. Similarly, an official from the Office of Airports said the office is developing standard operating procedures and a memorandum of understanding with the Office of Commercial Space Transportation to resolve issues. A spaceport official who has been working on a launch site operator's license application for several years confirmed that coordination among various FAA offices on commercial space launch issues has significantly improved during the last 6 months.

Furthermore, several FAA senior officials said that moving the office could make it more difficult for FAA offices to coordinate on commercial space activities. For example, a senior official involved in the Air Traffic Organization's emerging technologies integration efforts said that although such a move may increase the visibility of the Office of Commercial Space Transportation, it would not necessarily improve airspace integration. In addition, written responses to our questions from the Office of Aviation Safety indicated that their ability to interact with the Office of Commercial Space Transportation at an internal agency level may be less cumbersome than having to go through the additional communication protocols at the level of the Office of the Secretary of Transportation. Similarly, officials from the Office of Airports indicated that coordinating airspace review is an inherently FAA function that uses the experience and knowledge of subject matter experts located within the FAA, and that moving the commercial space office to the Office of the Secretary of Transportation could affect the efficiency of these reviews. Officials from the Office of the Secretary of Transportation also said that even if the commercial space transportation office were moved to their office, they would still need to work with FAA on airspace access issues and that they would not necessarily favor the industry regarding airspace issues.

Moreover, FAA officials we interviewed said they are working on improving commercial space coordination through various working

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groups, particularly through the Commercial Space Transportation Executive Working Group that was formed earlier this year to coordinate on commercial space issues. This group is chaired by the official directing commercial space integration in the Office of Commercial Space Transportation and is comprised of executives from across the agency, including the Air Traffic Organization, the Office of Airports, and the Office of Aviation Safety. According to the group's chairman, this group was formed to formalize coordination on commercial space launch issues across the agency because there was confusion among commercial space stakeholders and across the agency, and commercial space launch companies were hearing different things from different FAA lines of business. The group's chairman said that the Executive Working Group reports to FAA's New Entrants Board, a group formed to provide status updates on activities and events as well as decide how to move forward on specific initiatives associated with new entrants to the airspace such as drones and commercial space launch vehicles and is comprised of the principal leaders of FAA lines of business working on these issues. An FAA senior official told us that he believes commercial space coordination issues will be resolved as launches become more routine. In addition, the Air Traffic Organization has formed an Emerging Technologies Integration Office to focus on integrating commercial space operations and unmanned aircraft system activities within the national airspace system. A senior official in that office said that for decades, the Air Traffic Organization was focused on airplanes and that any deviation in airplane flow was viewed as an impediment, but that his office's goal is to shift the understanding within the organization from an airplane-only focus to the idea that several types of vehicles can use the national airspace system.

## Program Operations

A representative from one commercial space launch company said that an advantage of moving the Office of Commercial Space Transportation and thereby making space transportation its own mode, is that it could facilitate a more "level playing field" for space activities operating in and through the national airspace system. The representative noted that the Air Traffic Organization is a much larger office than the Office of Commercial Space Transportation and is focused on aviation safety which is regulated differently than space activities. As a result, the representative said that companies perceive an unequal playing field between these two offices and the risk of negative effects if aviation standards are imposed on space, including airspace closures during launch and reentry. According to the representative, because of the Air Traffic Organization's lack of familiarity with space launch operations and the mechanics of placing a spacecraft into orbit or on a trajectory to another celestial body, the office has suggested launch times be limited to

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certain times of day and certain days of the month as dictated by the amount of air traffic. The representative said that the Air Traffic Organization's proposed approach is "untenable" for commercial space launches because launch times are dictated by orbital mechanics<sup>15</sup> and that the Air Traffic Organization has imposed airspace restrictions during the holidays that have required launches to be rescheduled. A representative from another commercial space launch company said that an unequal playing field between these two offices results in the Office of Commercial Space Transportation not having the practical authority commensurate with its responsibility. According to this representative, the impact of this mismatch results in confusion over authority and negatively affects when commercial space companies are able to launch as well as excessive time and volume of airspace closed during a launch. A representative from a third company said that there are multiple variables to consider about moving the office. The representative said that while moving the Office of Commercial Space Transportation to the Office of the Secretary of Transportation would provide it with much more visibility, the office may still be at a disadvantage when it disagrees with larger offices in the FAA. In addition, the representative said that most launch companies would still have to work with FAA on air traffic control issues as well as hybrid vehicles and experimental aircraft licenses.<sup>16</sup> Moreover, a representative from the Commercial Spaceflight Federation said that although the association does not have a consensus position on moving the Office of Commercial Space Transportation, its members are concerned that the Air Traffic Organization is attempting to treat the rapidly developing area of commercial space similarly to how it treats the mature commercial aviation industry.

In response to these comments, an Air Traffic Organization official told us that the airspace is restricted to commercial space launches for about 15 days per year during the holidays because a launch can affect hundreds of flights<sup>17</sup> and that they prefer that launches occur when there are fewer

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<sup>15</sup>Orbital mechanics are defined as the principles governing the motion of bodies in orbit around other bodies under gravitational influence, such as artificial earth satellites.

<sup>16</sup>A hybrid vehicle contains elements of both an aircraft and a rocket-powered launch vehicle. Experimental permits allow suborbital reusable rocket operations while conducting research and development showing compliance with licensing requirements or crew training.

<sup>17</sup>FAA's Air Traffic Control System Command Center and the Department of Defense Policy Board on Federal Aviation have a memorandum of understanding that lays out the Holiday Airspace Release Program to mitigate the effect of increased air traffic near Thanksgiving, Christmas, and New Year's Day.

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effects on the national airspace system, for example, at night. However, an official said that the Air Traffic Organization has only denied one launch request over the last 5 years. An Air Traffic Organization official also said that they do not regulate the commercial space launch industry and focus on providing safe access to the airspace by all users of the national airspace system. In addition, an official involved with commercial space integration in the Office of Commercial Space Transportation and a spaceport representative told us they expect that technology will allow for more efficient use of the national airspace in the future by reducing the amount of time that the airspace will need to be shut down for launches.

## Regulations

Some stakeholders said that moving the Office of Commercial Space Transportation could help accelerate the pace of updating regulations to reflect new technology, which they said was proceeding too slowly. A senior official in the Office of Commercial Space Transportation said that instead of competing with other FAA offices for rulemaking approval within the agency, moving the Office of Commercial Space Transportation to the Office of the Secretary might give the commercial space office a higher priority with regard to rulemaking. However, officials from the Office of the Secretary of Transportation also said that the regulatory rulemakings are not allocated by office but are set according to the priorities of each administration, so moving the office would not necessarily affect regulatory reform efforts.

## Resources

According to some stakeholders and a senior official in the Office of Commercial Space Transportation, moving the office out of FAA could give commercial space launch issues a higher profile and more resources because FAA is focused on aviation as opposed to commercial space. One stakeholder also said moving the office out of FAA would make the office a priority as an independent organization within DOT. Furthermore, a senior official in the Office of Commercial Space Transportation said that the office has reached the limits of what it can accomplish with existing resources, policies, and authorities, and that moving the office could enable industry growth.<sup>18</sup> In addition, a company representative said that the primary possible advantage of moving the office would be to have an Assistant Secretary for Commercial Space Transportation who would be in a leadership position to represent the growing industry

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<sup>18</sup>In 2015, we found that some FAA officials and industry representatives did not believe that at the time the Office of Commercial Space Transportation had sufficient resources to meet the increased pace of commercial launch activity. [GAO-15-706](#).

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directly to the Secretary of Transportation.<sup>19</sup> However, officials from the Office of the Secretary of Transportation said that it is uncertain whether the Office of Commercial Space Transportation would receive more resources if it were moved to the Secretary's office. In addition, some stakeholders said that if moved, the office would have to pay for support services that are currently available within FAA, such as legal, regulatory, human resources, and administrative support.<sup>20</sup>

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## Other Issues Noted by Stakeholders and Officials

A commercial space launch company representative suggested that the Office of Commercial Space Transportation's promotional responsibilities should be separate from its regulatory responsibilities to avoid even the appearance of a conflict of interest between regulating safety and promoting a company interest, but did not suggest that its promotional responsibilities had affected safety. In addition, a senior FAA official said that it would make sense to move the Office of Commercial Space Transportation's promotion duties out of FAA because of an inherent conflict with the office being both a promoter and a regulator. Officials from the Office of the Secretary said transferring the policy and promotion aspects of the Office of Commercial Space Transportation's work to the Secretary's office, but not the launch licensing responsibilities, is one of various options regarding the office but that they have not advanced a specific proposal. A senior official in the Office of Commercial Space Transportation said there is no specific office within the Office of Commercial Space Transportation that promotes the industry and that the office's promotional functions are part of its overall responsibilities, so moving only the promotional responsibilities would not be feasible.

A former DOT official who served in a senior position when the Office of Commercial Space Transportation was transferred to FAA in 1995 noted that one reason the office was moved was because of the belief that the Office of the Secretary of Transportation should not be involved in

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<sup>19</sup>In 2016, legislation was introduced in the House of Representatives to create the position of assistant secretary for commercial space transportation, which would also serve as the associate administrator for commercial space transportation. The Assistant Secretary would be an appointed position. The American Space Renaissance Act, H.R. 4945, 114<sup>th</sup> Cong. (2016). This bill has not been reintroduced in the 115<sup>th</sup> Congress.

<sup>20</sup>Similarly, the 1992 National Academy of Public Administration study on the Office of Commercial Space Transportation indicated that administrative costs could increase sharply if the office were to become an independent regulatory agency.



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programmatic activities that belong in the operating agencies. However, in 2014, Congress moved a programmatic office, the Research and Innovative Technology Administration (RITA), to the Office of the Secretary of Transportation.<sup>21</sup> This former DOT official also said that the Office of Commercial Space Transportation would benefit from the technological and engineering support available within FAA.

Finally, representatives from commercial space launch companies and an FAA official had different perspectives on whether the Office of Commercial Space Transportation would or should be its own modal agency within DOT or part of the Office of the Secretary of Transportation. For example, a company representative who favored moving the office said that commercial space could easily be considered its own transportation mode and not as part of aviation. Another company's representative expected that the Office of Commercial Space Transportation, if it were moved out of FAA, would start out as its own modal agency. A third stakeholder suggested that eventually space transportation will become its own independent mode of transportation such as air, sea, rail, and roads and that moving the Office of Commercial Space Transportation out of the FAA is an inevitable first step in that direction. A senior official from the Office of Commercial Space Transportation said that moving the Office of Commercial Space Transportation would be a step toward considering commercial space transportation as a mode similar to rail or highway transportation.

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## Steps Can Be Taken through DOT's Rulemaking Process to Move the Office of Commercial Space Transportation

All or part of the Office of Commercial Space Transportation can be transferred back to the Secretary's office through a rulemaking process as was used in 1995 to amend the existing DOT delegation regulation. This process, which does not require congressional approval, was used when the Secretary of Transportation delegated the office's responsibilities from DOT to FAA in 1995. FAA officials and the former Deputy Secretary of Transportation said moving the Office of Commercial Space Transportation from the Office of the Secretary of Transportation to FAA in 1995 was a "seamless" process. FAA and DOT officials said the following steps would need to be taken to move the office:

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<sup>21</sup>All of the powers and duties, functions, authorities and personnel of RITA were transferred over to the Office of the Secretary and assigned to the Office of the Assistant Secretary for Research and Technology.

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- Equivalent salaries would need to be determined for employees who are transferring because FAA and DOT have different pay scales.<sup>22</sup>
  - Legal, human capital, and administrative support currently provided by FAA would need to be obtained from DOT.
  - New physical space for the office would likely need to be obtained, as FAA and the Office of the Secretary of Transportation are in different buildings.
  - New processes and procedures for coordination and communication would need to be established.

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## Key Practices and Considerations for Organizational Changes

Our prior work has identified key practices and questions for consideration when evaluating proposals for or implementing organizational changes such as a consolidation or merger.<sup>23</sup> We have previously found that implementing large-scale change management initiatives, such as mergers and organizational transformations, are not simple endeavors and require the concentrated efforts of both leadership and employees to realize intended synergies and to accomplish new organizational goals. We have found that mergers and transformations that incorporate strategic human capital management approaches will help to sustain agency efforts and improve the efficiency, effectiveness, and accountability of the federal government. These key merger and transformation practices include focusing on a key set of principles and priorities at the outset of the transformation, setting implementation goals and a timeline to build momentum and show progress, and establishing a communication plan. Questions to consider when evaluating consolidation proposals include (1) What are the goals of the consolidation? and (2) What will be the likely costs and benefits of the consolidation?

Based on these key practices and considerations, DOT and FAA, for example, would need to determine the purpose of moving the Office of Commercial Space Transportation and the costs and benefits of such a move. Furthermore, to ensure employee and management support, DOT

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<sup>22</sup>In 1996, FAA was authorized to establish a different pay schedule than that in other parts of DOT which allowed FAA to offer higher salaries to its staff. Federal Aviation Reauthorization Act of 1996, Pub. L. No. 104-264, § 253, 110 Stat. 3213, 3237 (1996).

<sup>23</sup>Information about how the key practices were identified is described in the objectives, scope, and methodology section of this report.

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and FAA would need to obtain the buy-in of various FAA offices involved in commercial space launch issues such as the Air Traffic Organization. In addition, to assess the costs of the transformation, DOT and FAA would need to determine the costs of any additional support that would be needed by moving to the Office of the Secretary such as legal and administrative support.<sup>24</sup> Moreover, DOT could consider the risk of unintended consequences of moving the office such as incurring additional costs. In addition, a spaceport representative told us that he is more concerned about the execution of moving the office than its placement. The representative said that although conceptually moving the office to the Office of the Secretary of Transportation could bring it more visibility and resources, the move would be futile if it is executed poorly. Therefore, if a decision were made to move the office, an implementation plan would be needed, consistent with our key mergers and transformation practices. Implementing a large-scale organizational transformation requires the concentrated efforts of both leadership and employees to accomplish new organizational goals. Agencies should have an implementation plan that includes

- essential change-management practices such as active, engaged leadership of executives at the highest possible levels;
- a dedicated implementation team that can be held accountable for change; and
- a strategy for capturing best practices, measuring progress toward the established goals of the consolidation, retaining key talent, and assessing and mitigating risk, among others.

Table 1 of appendix I lists the key practices and implementation steps that we have previously identified for mergers and organizational transformations. Table 2 of appendix I provides the key questions we have identified for evaluating proposals to consolidate physical infrastructure and management functions. Although moving the office does not involve a consolidation, we believe that many of these questions would apply to other organizational changes such as an office move.

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<sup>24</sup>[GAO-03-669](#) and [GAO-12-542](#).

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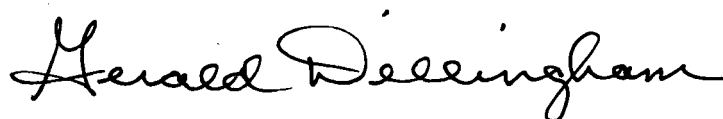
## Agency Comments

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

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We are sending copies of this report to the Secretary of Transportation, the Administrator of the Federal Aviation Administration, and other interested parties. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have questions concerning this report, please contact me at (202) 512-2834 or [dillingham@gao.gov](mailto:dillingham@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix II.



Gerald L. Dillingham, Ph.D.  
Director, Physical Infrastructure Issues

# Appendix I: Key Practices for Mergers and Organizational Transformations and Questions to Consider for Consolidations

**Table 1: Key Practices and Implementation Steps for Mergers and Organizational Transformations**

Practice	Implementation Step
Ensure top leadership drives the transformation.	<ul style="list-style-type: none"> <li>Define and articulate a succinct and compelling reason for change.</li> <li>Balance continued delivery of services with merger and transformation activities.</li> </ul>
Establish a coherent mission and integrated strategic goals to guide the transformation.	<ul style="list-style-type: none"> <li>Adopt leading practices for results-oriented strategic planning and reporting.</li> </ul>
Focus on a key set of principles and priorities at the outset of the transformation.	<ul style="list-style-type: none"> <li>Embed core values in every aspect of the organization to reinforce the new culture.</li> </ul>
Set implementation goals and a timeline to build momentum and show progress from day one.	<ul style="list-style-type: none"> <li>Make the implementation goals and timeline public.</li> <li>Seek and monitor employee attitudes and take appropriate follow-up actions.</li> <li>Identify cultural features of merging organizations to increase understanding of former work environments.</li> <li>Attract and retain key talent.</li> <li>Establish an organization-wide knowledge and skills inventory to exchange knowledge among merging organizations.</li> </ul>
Dedicate an implementation team to manage the transformation process.	<ul style="list-style-type: none"> <li>Establish networks to support implementation team.</li> <li>Select high-performing team members.</li> </ul>
Use the performance management system to define responsibility and assure accountability for change.	<ul style="list-style-type: none"> <li>Adopt leading practices to implement effective performance management systems with adequate safeguards.</li> </ul>
Establish a communication strategy to create shared expectations and report related progress.	<ul style="list-style-type: none"> <li>Communicate early and often to build trust.</li> <li>Ensure consistency of message.</li> <li>Encourage two-way communication.</li> <li>Provide information to meet specific needs of employees.</li> </ul>
Involve employees to obtain their ideas and gain their ownership for the transformation.	<ul style="list-style-type: none"> <li>Use employee teams.</li> <li>Involve employees in planning and sharing performance information.</li> <li>Incorporate employee feedback into new policies and procedures.</li> <li>Delegate authority to appropriate organizational levels.</li> </ul>
Build a world-class organization.	<ul style="list-style-type: none"> <li>Adopt leading practices to build a world-class organization.</li> </ul>

Source: GAO. | GAO-18-96

Note: For more information about these key practices, see [GAO-03-669](#).

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**Table 2: Questions to Consider When Evaluating Proposals to Consolidate Physical Infrastructure and Management Functions**

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**Key Questions**

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What are the goals of the consolidation? What opportunities will be addressed through the consolidation and what problems will be solved? What problems, if any, will be created?

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What will be the likely costs and benefits of the consolidation? Are sufficiently reliable data available to support a business-case analysis or cost-benefit analysis?

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How can the up-front costs associated with the consolidation be funded?

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Who are the consolidation stakeholders, and how will they be affected? How have the stakeholders been involved in the decision, and how have their views been considered? On balance, do stakeholders understand the rationale for consolidation?

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To what extent do plans show that change-management practices will be used to implement the consolidation? (Please see table 1 for the key merger and transformation practices.)

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Source: GAO. | GAO-18-96.

Note: For more information about these questions, see [GAO-12-542](#).

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# Appendix II: GAO Contact and Staff Acknowledgments

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## GAO Contact

Gerald L. Dillingham, Ph.D. at (202) 512-2834 or [dillinghamg@gao.gov](mailto:dillinghamg@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, Cathy Colwell (Assistant Director); Bob Homan (Analyst-in-Charge); Maureen Luna-Long; Dave Hooper; SaraAnn Moessbauer; and Sarah Veale made key contributions to this report.

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