

## Costs of Creating a Space National Guard

The National Defense Authorization Act for Fiscal Year 2020 established the Space Force as a new, independent military service within the Department of the Air Force. Intended to conduct operations that involve space—such as maintaining satellites that are used for communications, observing the weather, and monitoring other countries’ missile launches—the Space Force is currently authorized to operate only with regular (active component) personnel.

The creation of this new service has led to various proposals to establish a Space National Guard, which would supplement the Space Force’s active component forces as required. Such proposals have typically focused on existing units within the Air National Guard and Army National Guard that have space-related missions, including national space functions (such as missile warning and missile defense or space tracking) and deployable missions (primarily involving satellite communications). The Department of Defense (DoD) is studying the issue of whether to create a reserve component for the Space Force, either a Space National Guard or a Space Force Reserve, that would be similar to those of the other services.<sup>1</sup>

In this report, the Congressional Budget Office examines two options for establishing a Space National Guard that would support the Space Force. In its analysis, CBO focused on a smaller version of a prospective Space National Guard and a larger version, and estimated the

additional costs beyond those incurred for existing units in the Air National Guard and Army National Guard that have space-related missions. Specifically:

- CBO considered a smaller version of a Space National Guard that is based on a February 2020 proposal by senior National Guard personnel. Under that proposal, 1,500 personnel in existing Air National Guard and Army National Guard units would be transferred to the new Space National Guard. CBO estimates that DoD would incur about \$100 million in additional costs annually to operate and support this smaller Space National Guard. Creation of such a force also would probably result in onetime costs of about \$20 million for the construction of additional facilities.
- CBO also considered a larger version of a Space National Guard that would be about one-third the size of the Space Force, the same size that the Air National Guard currently is in relation to the Air Force. (Unlike the first option, this one is not based on a specific public proposal.) Under that approach, the Space National Guard would consist of 4,900 to 5,800 personnel. CBO estimates that DoD would incur \$385 million to \$490 million in additional costs annually to operate and support this larger Space National Guard. Creation of this larger force also would probably result in onetime costs of \$400 million to \$900 million for constructing additional facilities and equipping the new units.

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1. Throughout this report, “reserve component” refers collectively to the nonactive component of the U.S. military, which encompasses the National Guard and reserves.

A reserve component to support the Space Force could be structured in other ways—including a Space Force Reserve that would operate exclusively at the federal level, rather than a National Guard that would allow for shared control between the federal government and states and territories. However, the costs of National Guard or reserve units would not differ significantly. The size of the reserve component would be the primary factor affecting costs.

## Background

The creation of the Space Force has led to various proposals to create a Space National Guard. Those proposals have been influenced by the historical experience and organization of existing National Guard and reserve forces.

### Creation of the Space Force

Enacted in December 2019, the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116-92) established the Space Force as a new military service within the Department of the Air Force. That act did not create either a Space National Guard or a Space Force Reserve, so, at present, the Space Force has legal authority to operate only with active component (AC) military personnel.

DoD is still developing its plans to organize and equip the Space Force. In its budget request for fiscal year 2021, the department indicates that the Space Force will consist of 6,400 military personnel in 2021 and grow to a force of 8,100 military personnel by 2025. At least in the short term, the Department of the Air Force will create the Space Force primarily by transferring existing Air Force organizations and units with space-related missions to the Space Force. Although there are units with space-related missions in the other military services, DoD has not yet issued a plan to transfer those units to the Space Force.

The most recent guidance detailing the Department of the Air Force's plans for structuring the Space Force is described in a February 2020 report titled *Comprehensive Plan for the Organizational Structure of the U.S. Space Force*.<sup>2</sup> That report indicates that the new service will depend on the Air Force for many support and overhead

functions (just as the Marine Corps depends on the Navy for such functions). The report does not include a plan for the organization of Space Force reserve component (RC) forces, stating that the matter would be addressed in a report to be issued in March 2020. The department has not yet issued that report.

### History and Organization of National Guard and Reserve Forces

All U.S. armed services other than the Space Force have an active component and a reserve component. Each service's RC includes a reserve (the Air Force Reserve, Army Reserve, Navy Reserve, and Marine Corps Reserve). The Air Force and the Army (but not the Navy or Marine Corps) also have National Guards (the Air National Guard and the Army National Guard). Thus, for example, the entire Army is composed of the regular Army, the Army Reserve, and the Army National Guard.

The primary difference between service reserves and National Guards is that reserves are organized as single entities wholly under federal government control (as provided by title 10 of the U.S. Code). By contrast, National Guards are organized on the basis of states and territories, with legal authorities that allow for hybrid state–territory and federal control (as provided by titles 10 and 32 of the U.S. Code). Governors' authorities extend only to Guard units within their respective state or territory: The governor of Texas, for example, may call up (activate) and command the Texas National Guard but not Guard forces from other states.<sup>3</sup>

Before the Vietnam War, RC forces were considered to represent additional increments of capability that could be maintained at relatively low cost in peacetime and then activated in times of conflict when active component forces were insufficient to deal with the military challenges (the “strategic reserve” model). The combination of very small AC ground forces during peacetime and this traditional view of reserves as providing additional increments of capability led the United States to rely heavily on RC units in military conflicts. During the Vietnam War, however, in a break from historical precedent, policymakers chose to limit reliance on RC forces.

2. See Department of the Air Force, *Comprehensive Plan for the Organizational Structure of the U.S. Space Force*, Report to Congressional Committees (February 2020), <https://tinyurl.com/y9mm8zth> (PDF, 824 KB).

3. All state National Guards are also part of the United States National Guard (which is administered by the National Guard Bureau). For example, the Army National Guard is part of both the Army and the United States National Guard. The same applies at the state level. For example, the Texas Army National Guard is part of both the Army and the Texas National Guard.

In the post–Vietnam War era, DoD has transitioned away from the strategic reserve model and instead operates under what is known as the Total Force Policy. Although each military service interprets this policy somewhat differently, the policy in general requires the services to integrate RC personnel and units into their plans by using such units when they are best able to meet needs or perform missions. That approach differs from simply assuming that AC personnel and units should be prioritized in all circumstances and RC units used only when AC capabilities are insufficient to meet needs or perform missions. Thus, DoD does not generally operate under the assumption that AC units will be the preferred response for every mission; for many missions, RC units, or a mix of AC and RC units, will be the preferred response or perhaps the only possible response.

For example, because RC units are generally less costly to sustain in peacetime than AC units, a Total Force approach will tend to emphasize maintaining in the RC capabilities (such as those provided by construction engineers) that are used only occasionally during peacetime, where they may be sustained at lower cost until needed. Similarly, because National Guard units are readily available for state and local missions, a Total Force approach will tend to emphasize sustaining units that are useful for state and local missions (such as transportation or utility helicopters) in the National Guard, where they will be more available for those missions.

### Issues Raised by Historical Experience

A Space Force RC could be organized in different ways. It could include a reserve that operates at the federal level like those of the other services. It also could include a National Guard like those of the Air Force and the Army. (Those are not exclusive—the Space Force could have both a National Guard and a reserve, which would mirror Air Force and Army practice.) Historical experience raises several issues for policymakers to consider:

- Reserve units support U.S. forces in national missions. If RC units in the Space Force primarily or exclusively supported national missions (jamming satellite links in a theater, for example), a Space Reserve could allow them to do so without the additional organizational and legal complexities of a Space National Guard.
- National Guard units perform many state and local missions. If state and local missions related to space

are expected to be important for RC units in the Space Force, transferring the current Air National Guard and Army National Guard units that conduct space missions to a Space National Guard—as outlined in the first option that CBO analyzed—could allow them to do so.

- U.S. forces routinely employ joint commands and do not require units to be in the same service in order to employ them.<sup>4</sup> Leaving current space-related units where they are—in the Air National Guard and the Army National Guard—could still allow them to support the Space Force.

### Costs of a Smaller Space National Guard

Various proposals for creating a Space National Guard have been made since the Administration announced its intention to seek authorization for a separate Space Force. The most prominent such proposal was presented in a February 12, 2020, briefing when senior leaders of the National Guard Bureau and several state adjutant generals proposed a plan to create a Space National Guard by converting existing Air and Army National Guard units with space-related missions into a new Space National Guard.<sup>5</sup>

### Description

Under this proposal, roughly 1,500 personnel would be transferred from Air and Army National Guard units in seven states and one territory to a new Space National

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4. Some maintain that it would be unusual for one service to depend on another service for performing the organize, train, and equip (OTE) functions. However, the joint command arrangements are well codified and understood, and it is standard DoD practice to describe combat commanders—rather than a particular service—as the ultimate “customers” for whom the services perform OTE functions. Under that arrangement, whether units involved in space activities reside in the Space Force or the Air Force and the Army, they should be organized, trained, and equipped to support Space Command, the unified commander for space operations.
  5. This proposal was widely reported. See, for example, Rachel S. Cohen, “Pentagon Mulls Space National Guard Options,” *Air Force Magazine* (February 12, 2020), <https://tinyurl.com/yakbvks5>; Sandra Erwin, “National Guard Leaders Press Case for a Space National Guard,” *Space News* (February 12, 2020), <https://tinyurl.com/spsnfym>; and Valerie Insinna, “Does the Space Force Need a Guard Component? The National Guard Says Yes,” *Defense News* (February 14, 2020), <https://tinyurl.com/yb8zqrnc>.

Guard.<sup>6</sup> Those units currently have space-related missions. The largest state National Guard contingent of those units is in the Colorado National Guard. Current Guard units include some with missions that support national space functions, such as missile warning and missile defense or space tracking (which, for instance, involves the monitoring of objects in space). Many of the other units include expeditionary (deployable) forces, primarily involving satellite communications—both protecting the ability of U.S. forces to rely on such communications and interfering with the ability of hostile forces to rely on such communications.

The argument for transferring those units is that doing so would accomplish the following:

- Simplify command arrangements (by allowing Space National Guard units to respond to the Space Force, rather than requiring Air National Guard units to respond to the Space Force);
- Result in either no or modest additional costs (because the units already exist, are already funded, and have required infrastructure, facilities, and equipment in place); and
- Allow for the straightforward creation of a reserve component for the Space Force that would preserve the benefits of RC units without extensive study or a lengthy implementation process.

Although not explicitly stated, such a proposal also would probably entail some other transfers: For example, transferring 1,500 personnel from currently existing units would suggest that a training pipeline of about 50 to 90 personnel—depending on assumptions about additional overhead personnel—also would need to be transferred from existing National Guard personnel. (To maintain any given number of units, the services must maintain a flow of trainees that are being prepared to

replace personnel in those units who leave the service, referred to as the training pipeline.)

A Space National Guard created in such a manner would be much smaller than other National Guards in absolute terms and smaller as a proportion of the total Space Force than the Air National Guard's size in relation to the total Air Force. It also would be geographically restricted in scope to far fewer states and territories than other Guard forces (which are present in 50 states, 3 territories, and the District of Columbia). The second option that CBO analyzed, which is discussed below, would involve a larger force and more states with Space National Guard units.

### Costs

CBO estimates that creating a smaller Space National Guard would result in additional annual operation and support (O&S) costs totaling \$100 million, along with onetime construction costs of \$20 million.

It is unclear to what degree such a force would require additional administrative overhead—each state and territory that would be affected by the transfer already has a state organization to administer and command its National Guards, so moving units to the Space National Guard probably would not require many more overhead personnel to administer and command them. However, it is likely that a small number of additional personnel would be needed in each state or territory affected, as well as some personnel for national functions. The National Guard leaders making this proposal did not present a specific number of personnel for administrative functions, other than to suggest that they believed the Space National Guard could operate with a relatively small amount of overhead. Because the estimate for a smaller Space National Guard is structured to reflect the National Guard Bureau's proposal, CBO included a lean force that consisted of approximately 100 additional full-time personnel to perform national functions and an additional 20 full-time personnel for each state and territory (for 260 additional personnel in total). If such a lean force was not achievable, costs would be higher.<sup>7</sup>

6. Public sources differ about the number of states involved, with reports of either seven or eight states engaged in such activities. The *2021 National Guard Bureau Posture Statement* (available at <https://tinyurl.com/ycvxwxb7>) indicates that there are seven National Guard states (Alaska, California, Colorado, Florida, Hawaii, New York, and Ohio) and one territory (Guam) engaged in space-related operations (see page 34). Public sources generally agree that 1,100 of the proposed personnel would come from Air National Guard units; the remaining 400 would be drawn from Army National Guard units.

7. The assumptions used in CBO's estimate would produce a Space National Guard with a much lower proportion of overhead positions than the Air National Guard. Using the 260-person estimate above for new overhead positions (plus the 50 to 90 personnel for a training pipeline that also would be transferred to the Space National Guard) would yield a ratio of 0.21 to 0.23 for the Space National Guard. By comparison, the Air National

For its estimates of personnel costs, CBO used annual costs of approximately \$51,000 for a part-time position and \$268,000 for a full-time position. Those amounts are based on average O&S costs per capita for Air National Guard personnel, as reported in DoD's most recent budget submission.<sup>8</sup>

CBO estimates that the new costs of the February 2020 proposal would result from the following: the (uncertain) requirement for additional overhead personnel to perform national functions and to augment state organizations in the affected states and territories, and some allowance for national functions such as advertising for recruiting. Those 260 additional personnel, who would be full-time personnel, would result in O&S costs of approximately \$70 million per year (260 full-time personnel at a cost of \$268,000 each per year). CBO also estimates that \$30 million per year would support national functions.

According to CBO's estimates, there would be minimal onetime costs to construct additional facilities to support the Space National Guard—their current armories and other facilities, which would be transferred along with the units, would suffice. However, a new national headquarters with 100 additional personnel could require about \$20 million in military construction. Because the February 2020 proposal would not create new units, CBO estimates that there would be no significant onetime costs to equip those units (because they are already equipped).

For its estimate of construction costs, CBO used a per-project cost of slightly less than \$20 million. That amount is based on the funding requested over the past four years in DoD's budget submissions for the Air National Guard for such projects.

An alternative organization, a Space Force Reserve, of the same size would probably have essentially the same costs—National Guard and reserve units have very

similar costs for their personnel and units. Moving existing units from the Air National Guard and Army National Guard to a Space Reserve might result in slightly lower costs (because they would not need additional personnel within state organizations) or the same costs (if the functions performed by those personnel still needed to be performed but using national staff instead of state-level staff).

## Costs of a Larger Space National Guard

CBO also examined the costs of establishing a larger Space National Guard, which would be more similar in scope to the Air National Guard in two ways. First, the relative size of the active and reserve components would be similar. Second, the geographic spread of the Guard would be wider—both the Air National Guard and the Army National Guard are present in every state, the District of Columbia, and several territories.<sup>9</sup>

### Description

If a Space National Guard were to reach a size that was proportional to the Air National Guard's size relative to the Air Force (about 32 percent of the size of the active component), then the Space National Guard would probably be considerably larger than the 1,500 personnel presented in the February 2020 proposal. Although DoD has not fully defined its vision for the eventual size of the Space Force, the *Comprehensive Plan for the Organizational Structure of the U.S. Space Force* suggested that the active component would consist of 15,000 to 16,000 military personnel. In an earlier report, CBO estimated that the AC of a new Space Force within the Department of the Air Force would consist of about 18,000 military personnel.<sup>10</sup> Assuming a Space Force consisting of 15,000 to 18,000 AC military personnel and the same National Guard fraction as the Air Force

Guard has a ratio of 0.68 overhead positions for each position in operational units. If a Space National Guard required overhead positions at a ratio comparable to that of the Air National Guard, it would need an additional 1,030 personnel (about one-quarter of which would be full time, with the remainder being part time) rather than 260. That would increase annual costs by about \$140 million a year rather than by \$100 million.

8. Funding for O&S is the sum of two appropriation titles: military personnel and operation and maintenance. O&S generally represents recurring costs to maintain forces, unlike appropriations for purchasing equipment or constructing new facilities, which generally represent onetime costs.

9. The only territories without National Guard units are the Northern Mariana Islands, American Samoa, and the Minor Outlying Islands. In recent years, the Congress has considered, but not passed, legislation to establish National Guard units in the Northern Mariana Islands.

10. See Congressional Budget Office, *The Personnel Requirements and Costs of New Military Space Organizations* (May 2019), [www.cbo.gov/publication/55178](http://www.cbo.gov/publication/55178). CBO's estimate for a space force within the Department of the Air Force presented all personnel requirements in full-time-equivalent positions, without considering whether those positions would be filled with active or reserve military or civilian personnel. However, if the Space Force filled those positions with the same ratio of active and reserve personnel that the Air Force does currently, the midpoint of that estimate would show about 18,000 active component military personnel.

(32 percent) would suggest a Space National Guard of 4,900 to 5,800 personnel.

Such a Space National Guard might still not be large enough to allow for National Guards in all of the states and territories that currently have Air and Army National Guards. There is presumably some threshold below which a state Space National Guard would be too small to be viable as an organization (a concern that has been raised in discussions about creating a Northern Mariana Islands or American Samoa National Guard). It is unclear to what degree a Space National Guard in states and territories with existing National Guards would be able to rely on existing personnel in state organizations, rather than requiring additional personnel to operate as a separate service. Each additional state or territory that had a National Guard probably would require at least one construction project (an armory or similar facility).

### Costs

If the space-related units in the National Guard today—which consist of 1,500 personnel—were transferred to the Space National Guard, this option would require another 3,400 to 4,300 personnel (to reach a total of 4,900 to 5,800 personnel). Those additional personnel would be a mix of full-time and part-time personnel, which reflects the current composition of the Air National Guard. (Approximately 25 percent are full-time personnel, costing an estimated \$268,000 each, and about 75 percent are part-time personnel, costing an estimated \$51,000 each.)<sup>11</sup> Those personnel would result in additional operation and support costs of \$355 million to \$460 million per year. CBO also estimates that \$30 million per year would be needed to support national functions, resulting in total O&S costs of \$385 million to \$490 million per year for this option.

In addition, CBO estimates that the larger Space National Guard would require \$400 million to

\$900 million in onetime costs to construct additional facilities (such as armories) and to equip the new units. The difference in onetime costs between the low and high end of that range primarily reflects the number of construction projects a more geographically limited Space National Guard might require versus the much larger number of construction projects that might be needed for a Space National Guard that would be present in all states and territories that currently have Air and Army National Guards. At the lower end of the range, the Space National Guard would be present in fewer than half of the states and territories and thus would require relatively few construction projects. At the high end of the range, the Space National Guard would be present in all states and territories and thus would require more construction projects.

This Congressional Budget Office report was prepared at the request of the Chairman and Ranking Member of the Senate Armed Services Committee. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

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CBO continually seeks feedback to make its work as useful as possible. Please send any comments to [communications@cbo.gov](mailto:communications@cbo.gov).



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11. Thus, the lower end of that cost range would require about 850 full-time and 2,500 part-time personnel (for a total of roughly 3,400 additional personnel), and the higher end of that cost range would require 1,100 full-time and 3,200 part-time personnel (for a total of 4,300 additional personnel).