THE SPACEFARING STATE

BUILDING THE INFRASTRUCTURE FOR AMERICAN POWER BEYOND EARTH

813 Strategies

Executive Summary

For most of the space age, the rocket was the problem; America is now getting very good at rockets, and success is moving the constraint somewhere else. Launch has gone from an exceptional national event toward a recurring industrial function, but the transportation, processing, communications, manufacturing, logistics, and military systems around it were largely built for an era when spacecraft were scarce and missions were bespoke. The United States has already demonstrated that it can put enormous amounts of hardware into orbit. The harder question now is whether everything around the launch vehicle can operate at the same scale.

In fiscal year 2025, the FAA recorded 195 licensed launches and nine licensed reentries, the highest annual total in its history. SpaceX conducted 161 of those launches, while more than two-thirds of licensed missions involved satellite-constellation deployment. Excluding Rocket Lab launches from New Zealand, Cape Canaveral, Kennedy Space Center, and Vandenberg accounted for more than 90% of FAA-licensed launches from U.S. sites. America has built extraordinary capacity, but much of it passes through a small number of providers, launch complexes, payload buildings, roads, bridges, communications systems, workforces, and geographic locations.

Washington is planning around much larger numbers. The FAA's high commercial forecast reaches 385 launches and reentries in fiscal year 2030 and 507 in 2036. The White House has directed U.S. ranges to support more than 1,000 launches and reentries annually by 2030, and Space Force planning has examined a scenario involving roughly 1,200 annual operations at Cape Canaveral and 1,800 at Vandenberg by 2036. Those figures describe different things and shouldn't be collapsed into one prediction, but all of them assume a space transportation system operating at a scale far beyond the one the country inherited.

The history of the last few years already shows what that kind of growth does to infrastructure. Autonomous flight-termination systems reduced some range reset periods from roughly three days to about nine hours, making other limits more important; booster reuse reduced pressure on first-stage production and increased the relative importance of recovery, transportation, refurbishment, integration, and pad access. Higher launch cadence exposed secure payload processing as a national-security constraint. Expanding processing capacity will put more pressure on satellite factories, components, skilled labor, spectrum, ground systems, and the ability to commission spacecraft quickly enough to turn launches into useful capability. If orbital refueling and servicing mature, depots, common interfaces, transfer vehicles, and an entirely new logistics layer will absorb more of the pressure. There isn't one final bottleneck waiting to be solved. The national task is to keep removing constraints faster than demand creates the next one.

SpaceX has already shown what industrialized space operations look like. By March 31, 2026, Starlink had grown to roughly 9,600 satellites in low Earth orbit, but Falcon 9 isn't the whole explanation; the network also depends on high-volume satellite manufacturing, recurring launch availability, automated spacecraft operations, payload integration, recovery infrastructure, ground stations, spectrum, network management, and a logistics chain built around continual replenishment. Reusable launch made the model possible, yet the larger lesson is that scale comes from the system around the vehicle as much as from the vehicle itself.

That distinction becomes more important once the infrastructure has to survive a war. The Space Development Agency's Proliferated Warfighter Space Architecture is planned around

hundreds of satellites, many with roughly five-year design lives, while the government is putting tens of billions of dollars into integrated air and missile defense associated with Golden Dome and related capabilities. Proliferation makes it harder for an enemy to cripple a network by destroying one spacecraft, but widespread losses create an immediate logistics problem. A constellation that survives individual attacks but cannot restore coverage, density, or connectivity under sustained attrition is only partially resilient.

Space Force has demonstrated through VICTUS NOX and VICTUS HAZE that a prepared spacecraft, launcher, range, and mission team can move with remarkable speed. Rocket Lab launched VICTUS HAZE 16 hours and 42 minutes after receiving its notice to launch. Those demonstrations began after much of the hard work had already been done: the spacecraft, launch vehicles, regulatory work, mission planning, and supporting infrastructure were substantially in place before the clock started. A conflict that destroys 50 or 100 satellites asks a different question: how many militarily useful spacecraft can the United States manufacture, integrate, process, launch, commission, and connect to an operational network within 30, 90, and 180 days? Reconstitution throughput should become a central military space metric alongside notice-to-launch time.

The infrastructure behind that capability deserves the same seriousness the United States applies to strategic transportation on Earth. Cape Canaveral and Vandenberg are better understood as strategic ports than collections of launch pads because their value comes from everything concentrated around the launch complex: payload-processing facilities, roads, bridges, utilities, communications, security systems, range equipment, and specialized workers. Government has a clear role in financing common-user infrastructure, secure national-security processing, range systems, and early assets whose strategic value cannot be captured by one company. Where functioning markets exist, it should buy launch, communications, transfer, servicing, refueling, and eventually lunar logistics competitively.

Space Force should grow with that infrastructure without becoming a civilian regulator or a government operator of the space economy. FAA, Commerce, FCC, NTIA, and NASA should retain the safety, traffic, spectrum, science, and exploration functions appropriate to them. Space Force should assure military mobility, access, logistics, infrastructure resilience, commercial augmentation, and freedom of action when normal conditions break down. Its emerging mission increasingly resembles elements of both the Navy and U.S. Transportation Command, preserving access through a contested domain while planning around a mixture of military and commercial transportation capacity. The service should also complete its institutional separation from the Air Force, including replacing general-officer titles with naval flag ranks and building promotion and education systems around the logistical and operational demands of its own domain.

China makes the timing consequential because the United States is defending a lead rather than trying to create one. China's two headline broadband constellations still totaled fewer than 450 spacecraft in orbit by late August 2026, compared with roughly 9,600 Starlink satellites reported five months earlier, but China is attacking the launch constraint that has slowed deployment. Long March 10B completed China's first controlled recovery of an orbital-class booster on July 10, and LandSpace landed Zhuque-3's first stage on August 18. China doesn't need to match Falcon 9 cadence immediately; it needs enough reusable launch, satellite-factory throughput, dedicated infrastructure, and state-backed demand to stop being launch-constrained.

America has a chance to compound its current advantage before that happens. It should use the next decade to turn launch supremacy into a transportation, industrial, military, and logistics system extending from Earth through orbit and eventually to the Moon. A country expecting hundreds and eventually thousands of annual space movements, proliferated military networks, orbital servicing, and sustained cislunar activity can't keep treating every mission like an expedition. If the United States intends to become a spacefaring nation, it should build the infrastructure and institutions of a spacefaring state.

From Missions to Infrastructure

For most of the space age, reaching orbit was the achievement, and the surrounding system reflected that scarcity. Rockets flew infrequently, spacecraft were expensive, payload processing could take months, and satellites were designed on the assumption that they would launch once and then live with whatever fuel, hardware, and redundancy they carried with them. That model worked when the national space enterprise revolved around discrete missions; it becomes much less useful once launches, spacecraft production, network replenishment, and military space operations begin running continuously.

The change is visible in the launch numbers. In fiscal year 2025, the FAA recorded 195 licensed launches and nine licensed reentries, the highest annual total in its history. SpaceX conducted 161 of those launches, while more than two-thirds of licensed missions involved satellite-constellation deployment. The activity was also highly concentrated geographically: Cape Canaveral supported 76 FAA-licensed launches, Vandenberg 61, and Kennedy Space Center 26. Excluding 15 Rocket Lab launches from New Zealand, those three sites handled 163 of 180 licensed launches from U.S. sites, or 90.6%.

Federal planning assumes the operating tempo will continue rising, although the principal forecasts and planning targets describe different things. The FAA's high commercial forecast reaches 385 launches and reentries in fiscal year 2030 and 507 in 2036. The White House has directed U.S. ranges to support more than 1,000 launches and reentries annually by 2030, and Space Force planning has examined a scenario involving roughly 1,200 annual operations at Cape Canaveral and 1,800 at Vandenberg by 2036. The first is a commercial forecast, the second a national capacity objective, and the third a force-planning scenario; they shouldn't be collapsed into one prediction, but all three assume a space transportation system operating at a scale well beyond the one the country built for the previous generation.

A rocket accounts for only part of that capacity. Every launch depends on factories, roads, bridges, payload-processing facilities, range safety, power, communications, airspace, spectrum, security, and skilled personnel, while every spacecraft entering orbit adds requirements for command and control, tracking, network integration, traffic coordination, maneuvering, and eventually replenishment or disposal. As launch rates rise, those surrounding systems take on more of the burden.

American transportation history offers a useful analogy without needing to be forced too far. Railroads became a national transportation system through track, bridges, depots, maintenance, signaling, financing, and shared operating practices; aviation required airports, navigation, weather services, fuel, maintenance, and traffic control. Space is reaching a similar point. The vehicle remains essential, but the capacity of the network around it increasingly determines how much of the vehicle's performance can actually be used.

A country can therefore post an impressive annual launch count and still depend heavily on a few ranges, compatible pads, processing buildings, specialized crews, communications systems, and transportation routes. Once the vehicle ceases to be the only major scarcity, the connections around it begin to determine how much national capacity really exists.

The Bottleneck Moves

Some of the clearest evidence comes from the Eastern and Western Ranges, where autonomous flight-termination systems reduced some range reset periods from roughly three days to about nine hours. Space Force officials told GAO that the ranges had supported two launches within a 12-hour period ten times in a single year, and launch-related airspace closures have also shortened as procedures and route design improved. Those changes created capacity without building an entirely new launch range, but the additional throughput made payload processing a more visible constraint.

Space Force officials told GAO that payload-processing capacity had become their greatest national-security launch challenge and projected shortages of as many as two processing bays annually between fiscal years 2026 and 2030. Roughly 70% of Defense Department missions are multimanifest missions, which can require several secure processing areas simultaneously because individual payloads have different classification, handling, and integration requirements.

The government is already spending against the shortage. Current investments include approximately $77 million for expanded processing at Vandenberg, another $78 million for additional capacity associated with Blue Origin, a July 2026 award of $250 million to All Points Logistics to expand Vandenberg processing capacity by 2029, and a broader $1.3 billion Spaceport of the Future infrastructure investment at the major national ranges.

A new processing bay can move more spacecraft toward launch, but those spacecraft still require production capacity, components, compatible vehicles, range access, integration personnel, spectrum, ground systems, and commissioning capacity once they reach orbit. Booster reuse produced a similar migration in the constraint: reducing demand for newly manufactured first stages increased the relative importance of recovery, oversized transportation, refurbishment, inspection, integration, and pad turnaround.

Vehicle families also remain highly specialized. A Vulcan cannot move onto a Falcon 9 pad when its own launch complex is unavailable, and New Glenn cannot simply use Starship infrastructure. Propellant systems, fueling procedures, electrical interfaces, integration methods, transporter systems, flame structures, water systems, software, and safety requirements differ among vehicles. Common roads, bridges, power systems, processing buildings, communications links, and range equipment create another kind of dependency because one shared failure can constrain several providers at once.

Ordinary accidents show the difference between provider resilience and national resilience. SpaceX's SLC-40 was unavailable for roughly 15 months after the September 2016 AMOS-6 explosion. The next Antares launch from Wallops after the October 2014 Orb-3 failure came roughly two years later, although that interval also included substantial vehicle redesign. Blue Origin's May 2026 accident at Launch Complex 36 damaged important ground equipment while other Eastern Range complexes remained available. A range can continue operating while one provider loses a critical node, and a provider with multiple compatible pads can absorb failures better than one tied to a single complex.

The infrastructure problem therefore keeps changing as throughput rises. Range automation can expose processing shortages; new processing capacity can shift pressure toward factories, integration teams, spectrum, or ground systems; later improvements will move it again. National planning has to follow that sequence rather than treating any one solved queue as the end of the problem.

SpaceX and the Industrialization of Orbit

SpaceX provides the clearest existing example of sustained space operations at industrial scale. As of March 31, 2026, the company reported approximately 9,600 Starlink broadband and mobile satellites in low Earth orbit, about 10.3 million subscribers across 164 countries and markets, and a constellation representing roughly 75% of active maneuverable satellites in orbit. During 2025 alone, SpaceX deployed more than 3,000 Starlink spacecraft.

Those numbers depend on much more than a reusable booster. Starlink requires high-volume satellite manufacturing, recurring launch availability, automated operations, payload integration, recovery infrastructure, ground stations, spectrum, network management, and a steady flow of replacement spacecraft. The constellation is built around successive generations, continuous replenishment, and planned deorbiting while the network remains in service rather than around a small number of spacecraft expected to operate for decades.

SpaceX projects that its planned V3 Starlink spacecraft will provide roughly one terabit per second of downlink capacity per satellite and that Starship could deploy as many as 60 on a single flight. Those figures have not yet been demonstrated operationally, but if realized they would make launch count an even less complete measure of capacity because one mission could deliver substantially more network capability than a current Falcon 9 deployment.

The scale also creates concentration. SpaceX conducted 83% of FAA-licensed launches in fiscal year 2025, while Starlink represented roughly three-quarters of active maneuverable satellites as of March 2026. The United States can use that capacity aggressively and still build enough provider-neutral processing, common infrastructure, compatible interfaces, and competing orbital services that national plans do not depend on one company remaining permanently available. Common-user processing and range assets can stay provider-neutral where security and technical requirements permit, national-security payload interfaces can be standardized where practical, and early government demand for orbital transfer, servicing, and refueling can help sustain more than one credible provider while those markets are still forming.

Networks Become Military Infrastructure

The military space architecture is already moving toward the same continuous-production model. GAO describes the Space Development Agency's Proliferated Warfighter Space Architecture as a planned constellation of at least 300 to 500 satellites, with nearly $35 billion in spending through fiscal year 2029. Many of those spacecraft have design lives of approximately five years, making replacement part of the architecture even in peacetime.

Starshield represents another path from commercial scale into national security, with SpaceX adapting satellite-manufacturing and network capabilities developed for its much larger commercial system. Public Law 119-21 provided $24.4 billion in fiscal year 2025 mandatory funding for integrated air and missile defense, available through September 30, 2029. The statute itself does not name Golden Dome, while a joint House and Senate Armed Services Committee overview associated the funding with Golden Dome and related capabilities.

PWSA, Starshield, and Golden Dome differ in mission, technology, acquisition structure, and classification, but all depend on production and logistics beyond the spacecraft itself: manufacturing, launch, ground systems, networking, software, orbital management, commissioning, and replenishment. Those requirements become more important as constellations grow.

Proliferation lowers the consequence of losing any single spacecraft, but widespread losses can produce a much larger replacement requirement than an architecture built around a handful of exquisite satellites. Once attrition reaches dozens of spacecraft, the factories, component inventories, secure processing facilities, compatible launch vehicles, ground stations, encryption systems, software, communications, and trained operators behind the constellation become part of the fight. An architecture can remain distributed in orbit and still become fragile if the logistics system underneath it cannot restore density, coverage, and connectivity fast enough.

Rapid Launch Is Not Rapid Reconstitution

Space Force has demonstrated tactically responsive launch under prepared conditions. During VICTUS NOX in September 2023, the team transported the spacecraft, processed and fueled it, completed testing, and reached launch readiness in 57 hours. Five days later, Space Force supplied a previously undisclosed target orbit and launch order; Firefly launched approximately 27 hours after receiving that order, while spacecraft initialization followed about 37 hours later. In June 2026, Rocket Lab launched VICTUS HAZE 16 hours and 42 minutes after receiving its Space Force notice to launch.

Those missions proved that a prepared spacecraft, launcher, range, and mission team can move quickly, but they began after much of the industrial work had already happened. VICTUS NOX used a spacecraft that already existed, had been taken from an active production line, modified, tested, certified, and placed into a readiness posture; spectrum, regulatory work, launch arrangements, and mission preparations were substantially complete before the most dramatic portion of the timeline began.

A conflict that damaged 50 or 100 spacecraft would create a different set of simultaneous demands. Replacement spacecraft would need to exist or move through production, components and propulsion systems would have to be available, secure payload-processing facilities would need capacity, launch vehicles would need compatibility with the payloads and access to the required orbital planes, and ground systems, encryption, networking, software, and command-and-control systems would have to absorb the replacements as they arrived. The launch itself is only one stage in restoring military capability.

Space Force should measure that chain directly. A classified reconstitution-throughput assessment, accompanied by an unclassified public summary, should report how many militarily useful spacecraft the United States can manufacture, integrate, process, launch, commission, and connect to an operational architecture within 30, 90, and 180 days under sustained attrition. Prepared spares should be reported separately from new production, and the assessment should identify the limiting node at each interval. Notice-to-launch remains useful because it shows how quickly a prepared system can move; reconstitution throughput answers the larger question of how long American military space power can keep replacing what it loses.

A Space Force for a Spacefaring Nation

Space Force was created in 2019 because military reliance on space had increased while the domain itself became more contested. Seven years later, the commercial and industrial environment around the service is becoming larger and more consequential to military operations, with launch, communications, servicing, data, and logistics networks increasingly supplied by companies whose systems were not designed as traditional military infrastructure.

Civilian agencies still have clearly defined responsibilities. FAA regulates commercial launch and reentry safety, FCC and NTIA retain their spectrum roles, NASA leads civil exploration and science, and Commerce is developing TraCSS to provide basic space situational awareness and spaceflight-safety services to civil and private operators. As of August 2026, TraCSS had 70 pilot users representing more than 11,345 satellites, along with national-government accounts from ten countries.

Space Force's military responsibility should focus on mobility, logistics, access, infrastructure resilience, commercial augmentation, and freedom of action when the peacetime system is disrupted or wartime demand overwhelms normal capacity. That leaves the existing civilian framework intact and gives the service a clearer operational role as commercial systems become more deeply embedded in military plans.

The Navy and U.S. Transportation Command offer useful institutional precedents. The Navy protects movement through a domain shared with commerce without regulating merchant shipping or operating civilian ports, while TRANSCOM plans around military and commercial transportation capacity without owning every airplane, ship, train, or truck it may need during war. Space Force increasingly has to preserve military access through a contested domain and integrate commercial infrastructure into wartime plans at the same time.

The service is already moving in this direction. Space Systems Command is soliciting industry concepts involving orbital warehouses, propellant distribution, reusable transfer vehicles, inspection, spares, repair, and forward logistics nodes. The August 2026 National Space Transportation Policy separately calls for in-space transportation services, greater interchangeability among launch interfaces, relocatable responsive-launch concepts, and transportation capabilities extending into cislunar space. Those activities belong closer to the center of the service's definition of military mobility as the operating environment expands.

Give the Space Force Admirals

Space Force inherited its officer rank structure, much of its administrative system, and much of its institutional culture from the Air Force when it was created in 2019. That was the practical way to establish a functioning service quickly, but the mission described elsewhere in this report is moving beyond the institution Space Force inherited.

Orbital logistics, protection of lines of communication, distributed infrastructure, commercial transportation, reconstitution, and sustained operations across cislunar space have more in common with the institutional problems traditionally associated with maritime power than with an organization focused primarily on operating satellites from terrestrial bases. Space Force should replace its general-officer titles with naval flag ranks: rear admiral (lower half), rear admiral, vice admiral, and admiral for O-7 through O-10.

Rank vocabulary can't create doctrine, resources, or competent officers, but it can reinforce a broader separation from the Air Force if promotion, command selection, and professional military education change with it. The Air Force itself eventually developed a professional identity distinct from the Army because operating in another domain required its own strategic vocabulary, career incentives, command structures, and institutional culture.

Senior officers should be rewarded for expertise in orbital logistics, reconstitution, commercial integration, range operations, and command of distributed infrastructure. Those functions should be treated as core warfighting experience, and professional education should draw deliberately on Navy logistics, TRANSCOM mobility planning, Coast Guard port-security concepts, Air Force operational planning, and allied space organizations. The rank change would make the institutional separation visible, but the larger objective is a military profession organized around the physical, logistical, and strategic demands of space rather than one whose identity remains largely inherited from the service that created it.

From Launch Infrastructure to Orbital Logistics

The next infrastructure layer begins after a payload separates from its launch vehicle. Most spacecraft still operate according to an expeditionary model: they carry nearly all the propellant they will ever possess, major component failures can end missions, repair is unusual, and operators ration maneuvering because each burn consumes part of a finite resource.

Space Systems Command is studying a different operating model built around orbital warehouses, propellant distribution, reusable transfer vehicles, inspection, repair, spares, fuel metering, and forward logistics nodes. Some concepts envision transfer vehicles moving cargo repeatedly from depots rather than being discarded after a single mission. These remain concepts and solicitations rather than a mature logistics network, but they point toward an environment in which orbital transportation becomes a recurring service instead of a mission-specific capability.

Refueling would change several operating constraints if it becomes routine. A spacecraft able to receive additional propellant could maneuver without treating every burn as an irreversible reduction in useful life. Transfer vehicles could move payloads after launch, reducing the requirement for every launch vehicle to deliver every spacecraft directly to its final orbit, and depots could separate payload launch from propellant launch so different vehicles, providers, and schedules contribute to the same mission.

For military operators, additional maneuver capacity can improve survivability and make repositioning less costly. Commercial operators could use the same infrastructure for life extension, inspection, repair, debris management, transfer, or other services if recurring demand develops. The economics will depend partly on whether operators can use more than one provider.

Docking interfaces, refueling connections, communications protocols, rendezvous procedures, fuel specifications, metering standards, and safety rules all create the possibility of vendor lock-in if incompatible standards become entrenched early. Government will be one of the major initial customers and can purchase against practical common standards where interoperability adds resilience, without selecting one national depot, tug, or servicing architecture in advance. Enough commonality to support several providers would make refueling, transfer, servicing, and logistics more likely to develop as markets rather than proprietary islands.

Booster reuse changed launch economics because valuable flight hardware no longer had to be discarded after every mission. Orbital logistics could extend the same principle beyond the launch vehicle by allowing spacecraft and transfer systems to be maintained, replenished, repositioned, and reused while the larger network remains in service.

Spectrum and Workforce

Some of the most important constraints are already moving away from the launch pad. Launch vehicles, tracking systems, spacecraft, ground stations, and large constellations all require reliable radio-frequency access, and in April 2026 NTIA introduced a launch-frequency coordination portal that replaced a more manual federal S-band coordination process. The August National Space Transportation Policy also directed Commerce and the FCC to ensure reliable spectrum access for launch, reentry, recovery, and on-orbit activities.

The coordination problem grows with persistent activity. Occasional launch windows place one kind of demand on spectrum management; thousands of spacecraft operating continuously alongside expanding commercial and military networks create another, particularly when the same broader transportation system is expected to support much higher launch rates.

Workforce can become a constraint just as quickly. GAO reported in July 2026 that Space Force had about 15,400 military and civilian Guardians in fiscal year 2025 and had filled only about 75% of the positions the service identified as necessary to meet its missions. Officials also reported shortages in areas including cybersecurity, intelligence, and enlisted expertise, while the service continued to rely heavily on Air Force personnel and contractors for support.

Those shortfalls already exist before Space Force assumes the full logistics, infrastructure, commercial-integration, and cislunar responsibilities contemplated in its planning. Training pipelines for range safety, civil engineering, cybersecurity, intelligence, software, acquisition, commercial contracting, orbital operations, and logistics cannot be expanded on the same timeline as a procurement contract, so workforce fill rates belong alongside payload-processing capacity, industrial production, range turnaround, spectrum availability, and commissioning time when the government measures infrastructure readiness.

The August 28, 2026 Space Academy commission recognizes the broader national workforce problem, but a proposed NASA-led academy will not solve near-term Space Force shortages. Broader educational programs can widen the pipeline while the service builds the professional expertise required for the mission it is already taking on.

Beyond Orbit: Infrastructure and Economic Option Value

The distinction between expedition and infrastructure becomes even clearer at the Moon. Apollo proved that the United States could send humans to the lunar surface and return them safely, but its architecture was built around discrete missions in which each expedition carried most of what it needed, operated for a limited period, and left relatively little behind that would materially lower the cost or complexity of the next mission.

Sustained activity changes the economics. Once several landers, rovers, crews, scientific missions, and commercial systems operate in the same region, power, communications, navigation, cargo movement, surface transportation, and logistics become useful to more than one mission. A short expedition can arrive with self-contained power generation and storage, while persistent operations create more value from systems serving several users. Communications and navigation develop similar network characteristics.

Repeated landing operations introduce another physical infrastructure problem because rocket exhaust can accelerate abrasive lunar material and damage nearby equipment, making prepared landing areas, barriers, roads, and construction systems more useful as activity increases. Surface transportation matters more once landing zones, power sources, resource sites, science targets, and habitats are no longer co-located.

Local resources could eventually reduce the burden on the terrestrial logistics chain. Water ice could support crews and potentially supply oxygen and hydrogen, while lunar material might provide shielding, construction material, or other industrial feedstock. None of those possibilities guarantees a profitable export industry, and the economics of extraction and processing remain uncertain; local production can still have logistical value because material produced where it is needed does not have to be launched from Earth.

The same option value exists closer to Earth. Orbital servicing, transfer, refueling, manufacturing, and even in-space computing are potential markets that infrastructure may allow companies to test. SpaceX has told investors that it intends to begin deploying orbital artificial-intelligence computing satellites as early as 2028, although radiation, thermal management, launch cost, communications, maintenance, and equipment replacement remain serious disadvantages. The concept may prove economical, fail, or settle into a narrower use than its proponents expect.

National infrastructure policy does not require making that commercial bet in advance. Government can finance common systems and standards when broad public or strategic benefits justify them, leaving speculative business models to prove themselves in the market.

China and the Competition to Scale

China's current deployment scale remains far below the American level. After an August 16 deployment, the state-backed Guowang constellation had roughly 195 satellites in orbit, while independent tracking listed 239 Qianfan satellites by late August. Together, the two prominent Chinese broadband constellations remained below 450 spacecraft. SpaceX had reported roughly 9,600 Starlink satellites five months earlier.

The more consequential change is occurring in launch capability. Long March 10B completed China's first controlled recovery of an orbital-class booster on July 10, and LandSpace successfully landed Zhuque-3's first stage on August 18. Neither system has demonstrated operational reuse approaching Falcon 9 cadence, so the recoveries do not yet amount to a mature high-volume reusable-launch architecture; they do show China working directly on one of the constraints that has slowed deployment of its planned constellations.

Guowang and Qianfan are planned at much larger scales than their current deployed fleets. If reusable launch becomes reliable, satellite production grows with it, and dedicated infrastructure can support the resulting flight rate, China could convert planned constellation size into deployed capacity much faster than the present numbers suggest.

The United States does not need to know exactly when that transition will occur to take advantage of the lead it already has. Payload processing, industrial production, reusable launch, ground infrastructure, orbital logistics, interoperability, and wartime reconstitution can all be expanded while China is still building the system required to operate at comparable scale, compounding an American advantage that would be much more expensive to recreate after parity arrives.

A National Space Infrastructure Strategy

The August 2026 National Space Transportation Policy already treats the transportation problem more broadly than launch vehicles alone. It directs federal ranges to support more than 1,000 launches and reentries annually by 2030 and calls for work on scheduling, infrastructure investment, additional launch locations, airspace integration, spectrum, workforce, industrial capacity, infrastructure security, responsive launch, interchangeable interfaces, in-space transportation, and lunar logistics.

The coordination problem sits across institutional boundaries. FAA, Space Force, Commerce, FCC, NTIA, NASA, the Defense Department, and private operators can each improve their portion of the system while leaving the national bottleneck somewhere between them. The White House should maintain a single interagency space-infrastructure scorecard through the National Security Council process, using the 2030 transportation objective and Space Force's reconstitution requirement as forcing functions. No new agency is necessary.

The scorecard should identify common dependencies, assign responsibility for major constraints, and publish unclassified measures where security permits. Payload-processing throughput, compatible launch availability, range turnaround, industrial production, spectrum access, workforce fill rates, spacecraft commissioning time, reconstitution throughput, and recovery time for common infrastructure describe usable capacity more accurately than raw counts of launch pads or vehicles.

Cape Canaveral and Vandenberg should be treated as strategic ports because their military and economic value comes from the combination of assets concentrated there. Launch complexes matter, but so do secure processing facilities, roads, bridges, power, communications, range systems, security, and specialized workers. Failure or saturation of one common-user asset can affect several providers simultaneously, making spare capacity and recovery planning a national-security requirement even where a purely commercial utilization model would not justify the investment.

Secure payload processing deserves particular attention because the shortage already exists. National-security launches cannot always use commercial processing facilities interchangeably, and multimanifest missions can require several secure areas at once. Federal investment should close the projected gap and provide enough spare capacity that maintenance, accident, attack, or a sudden surge in demand does not immediately create a queue.

Distributed launch options can add resilience without trying to reproduce Cape Canaveral or Vandenberg everywhere. Wallops, Alaska, commercial sites, mobile launch systems, sea-based systems, and allied locations can support missions suited to those facilities, although heavy and super-heavy vehicles still require substantial fixed infrastructure, classified payloads may need expensive secure processing, and geography limits trajectories from many sites. The useful objective is a larger portfolio of real options, supported by enough technical compatibility to preserve launch pathways when a particular provider or location becomes unavailable.

Common technical interfaces can make those options more valuable. Payloads permanently tied to one provider or one launch complex are harder to remanifest after an accident or attack. Practical standards for servicing, refueling, docking, communications, and orbital transfer can provide similar flexibility after launch.

Federal capital should concentrate on the parts of the system that create shared public or strategic value: common-user range infrastructure, secure national-security payload processing, range safety, classified common systems, and early common-user assets that no single provider has an incentive to finance at the level national resilience requires. Spare capacity can also warrant public support when its value lies primarily in resilience rather than ordinary utilization.

Where functioning markets exist, government should behave like a demanding customer. Launch services, orbital transfer, servicing, refueling, commercial communications, and eventually lunar logistics should be purchased competitively, with early demand structured where possible to sustain more than one credible provider.

Infrastructure security belongs in the same framework because high aggregate launch throughput can coexist with dependence on a processing building, bridge, communications link, power system, or compatible pad whose loss would have an operational effect far larger than its replacement cost suggests. Recovery time for those nodes should be measured and funded alongside nominal throughput.

Priority Actions

1. **Measure reconstitution throughput.** Space Force should produce a classified assessment and an unclassified 30-, 90-, and 180-day summary showing how many militarily useful spacecraft can be manufactured, integrated, processed, launched, commissioned, and connected to operational architectures under sustained attrition. Prepared spares should be separated from new production, with the limiting node identified at each interval.
2. **Maintain an NSC space-infrastructure scorecard.** The White House should track throughput, dependencies, workforce, compatible launch capacity, infrastructure recovery, and other cross-agency constraints, with responsibility assigned to named departments or agencies.
3. **Close the payload-processing gap and treat the major ranges as strategic ports.** Federal investment should prioritize secure payload processing and common-user roads, power, communications, security, range systems, and other infrastructure at Cape Canaveral and Vandenberg whose failure or saturation can affect several providers simultaneously.
4. **Standardize interfaces where commonality adds resilience.** Government should purchase against practical standards for payload interfaces, servicing, refueling, docking, and orbital logistics where interoperability can reduce dependence on a single vehicle, facility, or provider.
5. **Build distributed launch options around missions they can actually support.** Wallops, Alaska, commercial sites, mobile systems, sea-based launch, and allied locations should expand the number of usable pathways without pretending that every site can replace the fixed infrastructure available at the major ranges.
6. **Create competitive demand for orbital logistics.** Government should purchase servicing, transfer, and refueling from more than one credible provider where the market can support competition, using early demand to encourage interoperable systems rather than proprietary islands.

The Spacefaring State

The United States begins from a strong position. Its commercial launch sector leads the world; SpaceX has demonstrated industrial satellite production and high-cadence reusable launch, the Defense Department is moving toward proliferated architectures, Space Force is experimenting with responsive launch and orbital logistics, NASA is planning for sustained lunar activity, and federal policy increasingly treats space transportation as a national infrastructure problem. Those advantages are real, but they don't automatically combine into a system capable of sustaining much higher demand or absorbing serious disruption.

The next phase of American space power will depend on whether manufacturing, payload processing, launch, communications, spectrum, logistics, workforce, commercial capacity, and military planning can scale together. A constraint relieved at the range can reappear in a processing bay, a factory, a communications system, or a workforce shortage; a new orbital capability can create requirements for standards, servicing, depots, and logistics that barely existed before. Managing that sequence is how individual technical achievements become durable national capacity.

Space Force should become the military institution responsible for assuring American mobility, logistics, resilience, and freedom of action through that system when peacetime assumptions no longer hold. Civilian agencies should continue regulating launch safety, managing spectrum and traffic services, conducting science, and leading civil exploration. Private companies should compete over launch, communications, servicing, transfer, power, manufacturing, and other services wherever markets can support them, with government concentrating capital on common infrastructure, interoperability, strategic redundancy, and early demand that individual firms cannot efficiently supply on their own.

The service should also finish becoming an institution built around its own domain. Admirals alone won't accomplish that, but the rank change makes sense as part of a larger professional shift toward logistics, reconstitution, commercial integration, mobility, infrastructure command, and sustained operations across an environment that no longer resembles the satellite enterprise Space Force inherited in 2019.

None of this requires knowing when a permanent lunar settlement will exist, whether orbital computing becomes economical, or whether lunar resources eventually support a major commercial industry. Infrastructure decisions usually precede certainty about every enterprise they enable, and the United States already knows enough to act: launch cadence is rising rapidly, federal planning assumes much higher operating tempo, military architectures increasingly depend on large networks that have to be replenished, and China is working to remove the launch constraint that has kept its own deployment scale far below America's.

For decades, the rocket was the hard part, and America has become exceptionally good at rockets. The next advantage will come from everything around them: the factories and payload bays, the roads and ranges, the spectrum and ground systems, the people who keep the network operating, the logistics architecture that extends beyond launch, and the military institutions that can keep the whole system functioning under pressure. If the United States intends to become a spacefaring nation, it should build the infrastructure and institutions of a spacefaring state.