SPACEPORT GOVERNANCE

Building the Framework for the Future of Space Operations

EXECUTIVE BRIEF

REDEFINING THE AMERICAN SPACEPORT

Governance, Regulation, and Architecture for the Next Phase of Growth

Executive Brief

Susan D. Mangus
Chief Executive Officer, PMG Consulting

This Executive Brief summarizes the principal findings and recommendations presented in *Redefining the American Spaceport: Governance, Regulation, and Architecture for the Next Phase of Growth*, a PMG Consulting study examining the governance, regulatory structure, developmental sequencing, economic considerations, and national infrastructure architecture surrounding American spaceport development. The full study provides the underlying analysis, supporting discussion, and detailed recommendations summarized here.

The analysis, observations, and conclusions presented herein are those of the author and PMG Consulting and are intended to inform discussion and policy consideration concerning the future development of American space infrastructure. Nothing in this publication constitutes legal, financial, investment, engineering, or regulatory advice. References to governmental entities, companies, spaceports, projects, regulatory proceedings, or other organizations are included solely for analytical and informational purposes and should not be interpreted as endorsement, criticism, or representation of any particular entity or position.

Information contained in this Executive Brief reflects information reasonably available as of August 2026. Projects, forecasts, tariffs, regulatory proceedings, laws, policies, infrastructure plans, and market conditions are subject to change. Readers should consult current primary sources when relying upon information concerning specific projects, proceedings, requirements, or regulatory actions.

PMG Consulting
United States of America
August 2026, First Edition

REDEFINING THE AMERICAN SPACEPORT
Governance, Regulation, and Architecture for the Next Phase of Growth
Executive Brief | PMG Consulting

EXECUTIVE OVERVIEW

The United States is entering a fundamentally different phase of commercial, civil, and national-security space activity. Launch cadence is increasing. Reentry operations are expanding. Proliferated satellite constellations are changing the scale and frequency of access to space. Hypersonic testing, reusable aerospace vehicles, on-orbit logistics, distributed manufacturing, and increasingly responsive defense requirements are challenging assumptions formed during an era when space operations were comparatively infrequent, geographically concentrated, and dominated by a limited number of federal facilities and major launch providers.

States have recognized the opportunity. Across the country, state governments, airport authorities, economic-development organizations, universities, and private developers are pursuing space-related infrastructure as a source of investment, high-technology employment, research activity, industrial growth, and strategic relevance. Some seek research and development facilities. Others envision horizontal launch and recovery. Still others pursue vertical launch capability or aspire eventually to support the largest classes of launch vehicles.

This expansion is both necessary and potentially valuable. But it also exposes a fundamental weakness in how the United States currently thinks about spaceport development. The problem is not that the federal commercial-space safety system is fundamentally broken. The statutory foundation governing launch and reentry remains sound. The Federal Aviation Administration's Office of Commercial Space Transportation operates under an established public-safety mandate, and the existing regulatory structure provides the federal government with mechanisms for launch-site licensing, reentry-site licensing, vehicle licensing, public-risk management, and integration with the National Airspace System.

The problem is one of architecture and sequencing.

Facilities called "spaceports" differ enormously in mission, operating complexity, public-risk exposure, infrastructure, institutional maturity, airspace requirements, economic purpose, and strategic consequence. A university-centered research complex is not operationally equivalent to a facility supporting experimental aerospace vehicles. A horizontal launch and recovery facility is not equivalent to a vertical orbital launch complex. A light-launch site is not equivalent to a facility capable of supporting heavy or super-heavy vehicles.

Yet the American developmental construct does not adequately distinguish among these fundamentally different institutions before advanced licensing ambitions begin. The

result can be a mismatch between ambition and institutional readiness. State and local sponsors may approach spaceport development primarily through economic development, infrastructure construction, branding, or the pursuit of a federal license. Federal regulators, by necessity, approach the same project through public safety, operational accountability, hazard management, airspace integration, compliance, and institutional continuity. Both perspectives are legitimate. But when they meet too late—or when they are not connected through a disciplined developmental pathway—friction is almost inevitable.

PMG Consulting proposes a different model: a maturity-based national spaceport architecture in which operational ambition, governance maturity, regulatory involvement, infrastructure, and public risk increase together. The central principle is straightforward: Governance maturity must precede operational expansion.

Under this model, the objective is not to make federal oversight weaker. It is to make federal involvement more proportional, predictable, and effective by ensuring that institutions mature before assuming greater operational responsibility. The United States does not need simply to create more licensed spaceports. It needs to create credible, sustainable, operational institutions capable of supporting the next generation of American space activity.

THE AMERICAN SPACEPORT PROBLEM

For much of the public discussion surrounding commercial space infrastructure, obtaining a spaceport license is treated as the objective. A state announces its intention to become a space state. A location is selected. Economic-impact projections are developed. Infrastructure concepts are prepared. Political support is assembled. The federal licensing process then becomes the visible milestone against which progress is measured. That sequence can misunderstand what licensure actually represents.

A launch-site or reentry-site license is not a ceremonial designation. It establishes an ongoing regulated operating environment requiring safety governance, qualified personnel, documentation, environmental and financial accountability, hazard controls, emergency integration, and continuing coordination with federal regulators and airspace authorities. Those responsibilities exist whether a vehicle is flying or not and must survive changes in political leadership, personnel, operators, and economic conditions. The burden of licensure is institutional, not episodic.

Where professional governance, compliance leadership, authority chains, sustainment funding, emergency integration, and regulatory interfaces have not matured before licensing, a jurisdiction risks obtaining symbolic licensure rather than operational transformation. A credential may exist. A functioning spaceport may not. Operators need predictability; investors need institutional continuity; federal agencies need accountable interfaces; communities need credible public-safety assurances; and defense

organizations require confidence that governance and infrastructure will remain available when required.

This distinction also helps explain some friction during federal pre-application activities. Prospective applicants may approach early consultation expecting an exploratory discussion about becoming a spaceport while regulators necessarily begin determining whether the applicant understands the responsibilities it proposes to assume. What appears to be regulatory resistance may instead reflect the distance between aspirational intent and demonstrable capability.

The solution is not weaker public-safety standards or simply accelerating every applicant toward licensure. It is a developmental architecture that establishes what institutional capability should exist at each stage and what should mature before the next stage begins. The United States needs to stop treating "spaceport" as though it describes a single type of facility.

REDEFINING THE SPACEPORT

A spaceport should not be defined primarily by a runway, launch pad, property boundary, marketing designation, or even possession of a license. PMG's research instead defines it through the combination of regulatory authority, professional safety governance, hazard-area control, formal federal interface responsibility, environmental and financial accountability, and institutional continuity. A spaceport is an operating institution—not simply a physical location from which a vehicle may depart.

Once that distinction is accepted, a one-size-fits-all developmental model makes little sense. Research and propulsion-development facilities do not require the same regulatory posture as experimental flight facilities. Experimental operations differ from sustained horizontal launch and reentry. Horizontal operations differ substantially from vertical orbital launch, where hazard areas, propellants, trajectory constraints, environmental effects, infrastructure requirements, and public-risk exposure can increase dramatically.

PMG therefore proposes a four-tier maturity architecture. Tier I consists of state-led research and development complexes supporting aerospace research, testing, systems integration, academic partnerships, workforce development, and related activities without requiring sustained launch operations. Tier II consists of advanced prototype and limited experimental-operations facilities, introducing controlled developmental flight, stronger emergency response, defined operating areas, increased security, and more structured federal interaction. Tier III represents federally licensed horizontal launch and reentry facilities capable of sustained operations, requiring mature governance, compliance, National Airspace System integration, emergency-response architecture, security, and institutional continuity. Tier IV encompasses federally licensed vertical launch and recovery facilities and can be further differentiated as Tier IV-A, IV-B, and IV-

C as capability progresses from light through light-to-medium and ultimately heavy or super-heavy launch environments.

The model is deliberately not a ladder of prestige. A Tier IV-C facility is not inherently better than a Tier II facility; it performs a different mission and assumes different responsibilities. Geography, population density, airspace, hazard areas, transportation infrastructure, workforce, environmental conditions, vehicle demand, operator commitment, and economic sustainability should determine what a facility can realistically become. Some locations may create enormous economic and technological value at Tier I or Tier II. Others may support Tier III. Far fewer will possess the characteristics necessary for complex Tier IV missions. Tier progression represents increasing operational capability, public exposure, governance responsibility, and regulatory interface—not a branding upgrade.

BUILDING A DEVELOPMENTAL PATHWAY

The principal advantage of a tiered architecture is not classification. It is sequencing. Tier I allows governance, workforce, infrastructure, industry relationships, safety culture, emergency coordination, and federal familiarity to mature before flight operations. Tier II introduces controlled developmental activity and increasingly formal regulatory engagement. Tier III and Tier IV become operational destinations reached because mission demand, institutional maturity, economics, and public-risk requirements justify them—not because a jurisdiction wants the title of "spaceport."

The resulting continuum is straightforward: Research → Development → Experimental Operations → Sustained Operations → Increasing Mission Complexity. Such sequencing can reduce regulatory friction by creating clearer expectations concerning what institutional readiness should look like before more advanced operations are proposed.

There remains, however, a potential gap between ground experimentation and mature commercial operations. Reusable aerospace vehicles, suborbital systems, hypersonic demonstrators, and other developmental platforms may require controlled flight testing before they are ready for sustained operations. PMG therefore recommends serious consideration of a narrowly constrained experimental spaceflight authorization, analogous in concept—not necessarily regulatory detail—to experimental authorization in aviation. Such authority could potentially support carefully defined, limited-cadence, non-orbital developmental operations within established public-risk, geographic, vehicle, altitude, and operational limits.

This would not eliminate federal public-safety authority, constitute broad deregulation, or provide an alternative route around Part 450 for mature commercial operations. Its purpose would be to create a controlled developmental bridge between ground experimentation and full commercial launch licensing. Establishing such an authorization would require careful integration with existing law and regulation and may require

congressional action. The central principle is more important than the eventual mechanism: regulation should scale with actual operational risk while preserving the federal government's public-safety mandate.

ECONOMIC DEVELOPMENT, RESILIENCE, AND NATIONAL SECURITY

A modern spaceport policy cannot be built around launch counts alone. Research laboratories, advanced manufacturing, propulsion development, materials science, avionics, cybersecurity, payload integration, engineering services, specialized construction, workforce training, academic partnerships, and supplier networks can create substantial economic value without heavy orbital launch capability. Properly designed Tier I and Tier II facilities can anchor aerospace clusters, support defense and commercial research, attract technology companies, and establish the institutional foundation from which more advanced capabilities may eventually grow.

The economic-development question should therefore change from "How quickly can we obtain a spaceport license?" to "What aerospace capability can this location credibly build, operate, sustain, and grow?" The second question is harder, but far more likely to produce durable value.

The same principle applies nationally. Much of America's highest-cadence vertical launch capability is geographically concentrated. Coastal locations offer significant trajectory and public-safety advantages, but concentration also creates vulnerability to severe weather, infrastructure disruption, workforce displacement, power interruption, environmental events, and other regional emergencies. As national dependence on space-based communications, navigation, sensing, weather, commercial services, and defense systems increases, terrestrial launch and reentry infrastructure becomes part of the nation's broader resilience problem. Distributed capability is therefore not redundancy for convenience. It can become an element of national operational continuity.

Distributed capability does not mean indiscriminately replicating heavy-launch infrastructure. It means a diversified architecture in which locations contribute according to their strengths: research, experimentation, horizontal operations, responsive operations, light launch, specialized recovery, and—where geography and mission requirements support it—larger vertical launch capability.

National-security considerations reinforce the same conclusion. PMG identifies four characteristics as particularly important to defense compatibility: Resilience. Responsiveness. Security. Institutional Predictability. Defense compatibility does not mean turning every commercial facility into a military installation or using potential defense missions to justify unrealistic infrastructure. It means considering security, communications, infrastructure resilience, governance, emergency response, airspace, and mission compatibility early enough to influence sound decisions. Defense alignment should inform tier ambition—not inflate it.

A COOPERATIVE FEDERAL-STATE MODEL

The maturity architecture requires a corresponding division of responsibility. The federal government and states perform different but complementary functions in American space infrastructure. The federal government should retain responsibility for inherently national matters including public-risk thresholds, flight safety, National Airspace System integration, launch and reentry licensing, and enforcement of federal commercial-space safety requirements. Nothing in the PMG framework proposes weakening that authority.

The states are positioned to assume greater responsibility for the institutional environment surrounding federally regulated operations: land governance, infrastructure sustainment, organizational continuity, local and regional emergency integration, workforce development, economic ecosystem creation, and the durability of institutions operating or supporting the facility. Put simply: the federal government determines whether a regulated operation can be conducted within federal safety requirements; the state must ensure the institution surrounding that operation remains capable of supporting it.

That distinction matters because spaceports are long-duration institutions. They cannot depend upon one governor, economic-development administration, airport director, corporate tenant, or political initiative. Governance must survive leadership turnover, budget cycles, changing markets, operator transitions, and evolving federal requirements. Institutional continuity is an operational requirement.

A cooperative architecture strengthens rather than diminishes federal oversight because better-prepared applicants enter federal processes with clearer authority, mature governance, stronger safety cultures, realistic operating concepts, and a better understanding of the responsibilities they seek to assume. It also gives states something frequently missing today: a roadmap. A state can build a Tier I ecosystem, progress to Tier II when mission and market demand support experimental activity, and pursue Tier III or Tier IV only when vehicle demand, geography, infrastructure, institutional maturity, and economics justify the transition. It can also remain at the appropriate tier without having failed.

THE WAY FORWARD

The United States does not suffer from a shortage of ambition in commercial space. The challenge is translating ambition into durable institutions. Growing launch and reentry cadence, reusable systems, responsive operations, hypersonic development, proliferated constellations, on-orbit servicing, manufacturing, defense requirements, and technologies not yet mature enough to predict confidently will place increasing demands on terrestrial space infrastructure.

The answer cannot simply be more infrastructure. It must be better architecture.

The Tier I–IV maturity model provides a framework for distinguishing research from operational launch, experimentation from recurring commercial activity, horizontal from vertical operations, and light-launch infrastructure from facilities carrying much greater public-risk and strategic consequence. Much of this need not wait for wholesale statutory or regulatory reform. Federal agencies can improve developmental guidance and pre-application expectations; states can strengthen governance, compliance structures, workforce pipelines, infrastructure planning, and institutional continuity; and existing licensed facilities can be incorporated without disrupting current authority. The proposed experimental authorization deserves separate federal and congressional examination where additional authority may be necessary.

Most importantly, federal, state, commercial, academic, and defense stakeholders should begin treating spaceports as components of a national infrastructure architecture rather than isolated development projects. A launch license alone does not create resilience. A runway does not create operational capability. A launch pad does not create an aerospace economy. Geography does not create strategic value. Political enthusiasm does not create institutional maturity. Institutional architecture does.

The next generation of American spaceports should therefore be measured less by licenses issued, ribbon cuttings held, or facilities placed on a map than by durable institutions capable of safely and sustainably supporting the missions America requires. Tier I and Tier II facilities can expand research, workforce, technology development, and regional aerospace ecosystems. Tier III can expand horizontal launch, recovery, experimentation, and reusable operations. Appropriately located Tier IV facilities can diversify vertical launch capacity and support commercial and national-security requirements. Together, they can create a more distributed, resilient, economically sustainable, and strategically useful national space infrastructure.

The United States already possesses a strong federal public-safety foundation. What it requires is a developmental architecture connecting that foundation to state ambition, commercial innovation, economic reality, institutional maturity, and national need. The objective should not be to make it easier for every community to call itself a spaceport. It should be to make it possible for the right facilities to become the right kind of spaceport—and to remain credible institutions after they do.

That requires discipline before ambition, governance before expansion, and institutional maturity before operational complexity.

The architecture is available. The sequencing is achievable. The conversation must begin.