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The Case for Refocusing on Domestic Competition in the Launch Sector

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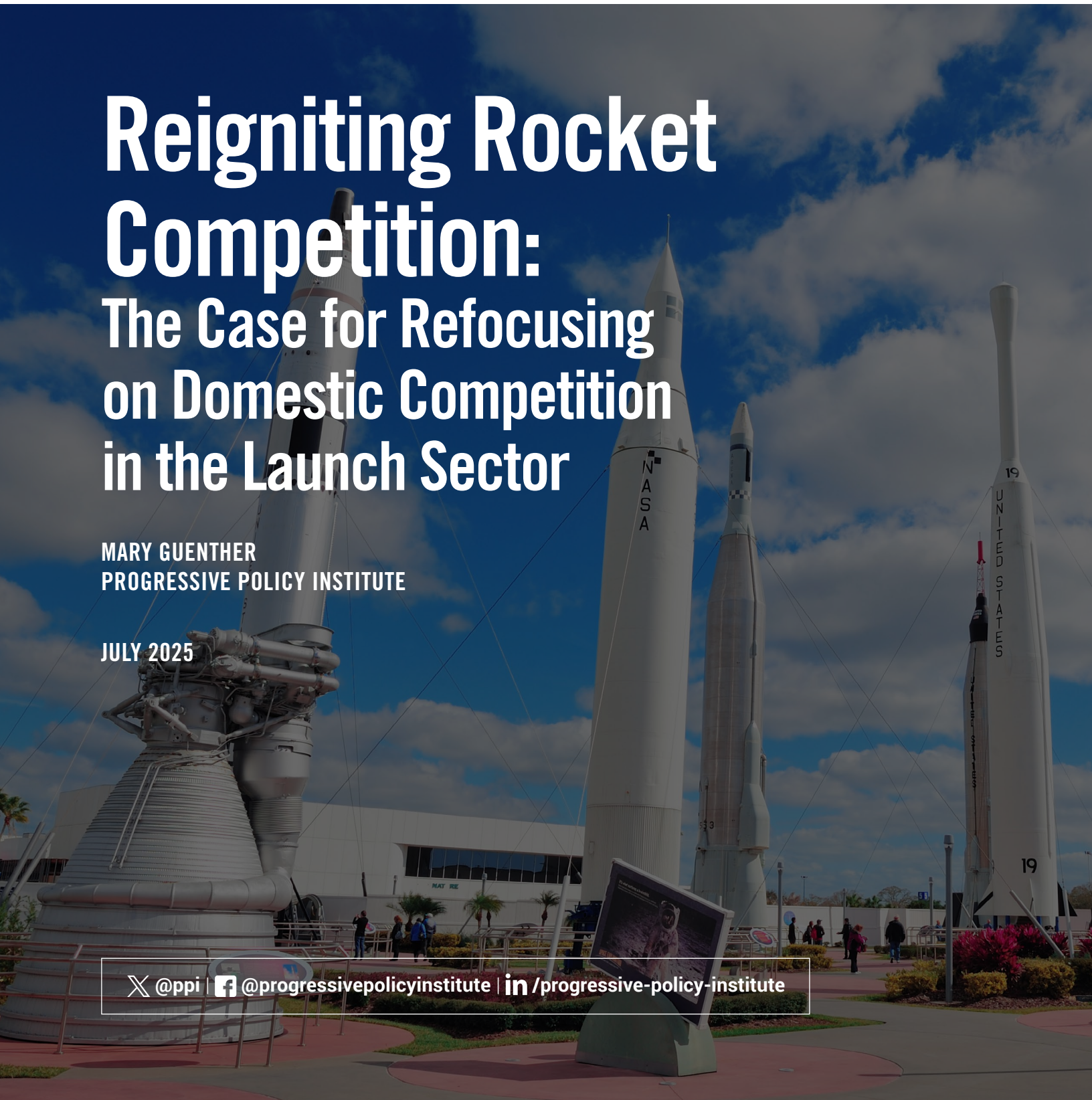

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INTRODUCTION

Launch underpins anything being done in space, from spy satellites and NASA science spacecraft to the GPS satellites that help civilians and the military navigate. Given this substantial national interest in secure access to space, the U.S. government has worked for decades to develop the domestic rocket launch industry and ensure it is sufficiently robust to serve the nation.

The U.S. government is a major customer for orbital launch and accordingly has substantial sway over the market — experts have estimated that Department of Defense (DoD) launch purchases alone will be 30-50% of the market for new rockets.[1] As a result, new companies are unlikely to succeed if they can't break into government contracting in a meaningful way.

U.S. government programs fostering this market have had their fair share of hiccups and shifting goals over the years. At various times, the government has expressed a strong preference for a single launch provider. At others, it sought diversity within the launch market for the exact same reasons: increasing reliability and reducing launch costs.

There is clear evidence that competition serves the nation well *so long as there is sufficient demand* to sustain multiple launch providers through a combination of government and commercial launches. Simply put, the government cannot sustain multiple launch providers through government business alone. Luckily, demand for launches has never been higher than today–and it's poised to continue growing so long as the Trump administration's ill-advised cuts to space agencies and the office

dedicated to promoting space at home and abroad are avoided.

Beyond those disastrous proposed cuts, the government has not offered enough support for continued competition and dissimilar redundancy in the launch market. Without a change of course, the U.S. government could wind up supporting the emergence of a monopoly company — the opposite outcome of stated policy. Federal agencies that buy launches — the DoD and NASA — need to act quickly in order to continue harnessing the benefits of competition in launch, including favorable pricing, assured access to space, and continued innovation.

This includes:

- Continuing to bring new providers into DoD launch procurements and ensuring newer operators are able to secure a meaningful number of launches
- Changing NASA's procurement policies related to launch to prioritize competition
- Expanding access to launch infrastructure for new actors
- Streamlining regulatory processes
- Increasing spending on space activities

HISTORY

The DoD used rockets initially developed for its use in the 1950s, like the Atlas and Titan, until the 1990s when they were replaced by the Evolved Expendable Launch Vehicle (EELV) program that brought two new rocket families online. Having two types of rockets available was intended to increase reliability and reduce launch costs.[2]

However, in 2005, the two companies participating in the EELV program — Boeing and Lockheed Martin — merged, forming the United Launch Alliance (ULA). DoD supported this merger — in fact, so supportive that many believe the merger was the DoD's idea. Akin to its later rationale for introducing competition, DoD believed the merger would increase efficiency and reliability. ULA vehicles have been highly reliable, so it's likely the government realized at least some benefit from that merger.[3]

Fast forward to 2014, when SpaceX successfully sued the government to compete for defense launch contracts.[4] By this point, the market had shifted, meaning DoD was no longer the only buyer. In 2006, NASA started investing in developing multiple systems, including SpaceX's Falcon rocket and Dragon spacecraft, to deliver cargo — and ultimately crew — to the International Space Station (ISS) after the Space Shuttle retired.[5] Overall demand for launch services, including non-government demand, had also increased, with the Satellite Industry Association finding that launch revenue amounted to $2.4 billion in 2014[6] — up from $1 billion in 2006[7] — putting growth far above inflation.

This growth of launch revenue, which has continued to grow substantially since 2014,[8] inspired other competitors to enter the market. However, many of these competitors have not started launching in earnest yet and have not broken into the government launch market in a meaningful way, reducing demand for those new systems in the private market. John Serafini, the CEO of a leading remote sensing company

HawkEye 360, remarked in 2023 that "either by bankruptcy or by delays, so many launch companies just haven't gotten there yet and haven't demonstrated repeatable success that will give us confidence to put our satellites on those launch options."[9]

Last year, SpaceX launches were 95% of all American launches according to Payload's analysis.[10] That includes about two-thirds of NASA missions and a hefty percentage of national security missions. To be clear, it is easy to see why SpaceX is successful. Their Falcon 9 and Falcon Heavy vehicles are reliable, cost-effective, and innovative. If it wants to recognize the substantial benefits of competition, however, it is irresponsible for the government to rely on any one company too heavily.

WHY DOES COMPETITION MATTER IN THE LAUNCH SECTOR?

Competition within the launch sector is vital to assured access to space for national security, fair pricing for services, and continued innovation.

Assured Access to Space

The lessons learned report by International Space Station (ISS) partner nations specifically called out the importance of dissimilar redundancy within transportation architecture as "critical to the preservation of the ISS."[11] It's easy to see why: the Space Shuttle was indispensable for construction of the ISS — so much so that after the Space Shuttle *Columbia* disaster, further construction of the ISS was delayed for years while the vehicle was grounded.[12]

Within national security circles today, dissimilar redundancy is lumped into the broader concept of assured access to space. As the term implies, assured access to space is how the military thinks about ensuring its payloads can get to space at any time. This typically involves maintaining a variety of launch sites and vehicles as well as resiliency in the space industrial base. Its critical importance to national security is underlined by legislation requiring the DoD to provide assured access to space to the maximum practicable extent.[13]

The United States launch enterprise currently has some degree of dissimilar redundancy,[14] but if the government remains on its current path, there is likely to be less, not more.

Pricing Impacts

Marketplace competition has significant pricing benefits for consumers and businesses. When firms have to compete for consumers, there are greater incentives to reduce prices or to offer greater value and quality.[15]

This has certainly been observed in the space launch context, where Citi has found that SpaceX's launches are priced 11 times lower than the average launch costs from 1970 to 2010, with projected further price drops in the market over time.[16]

Conversely, in markets with limited competition, firms can exercise market power to raise prices above competitive levels, harming consumers and consumer choice while stifling innovation. Competition is fundamental to ensuring prices remain fair while the market functions efficiently and economic opportunities are broadly shared.[17]

Innovation

Competition not only reduces prices, it can also help drive innovation.[18]

Existing competition for government and private launch services has led to a market with innovative launch options of varying sizes. Relativity Space, for instance, uses 3D printing to build its rocket and components, while Stoke Space is developing a completely reusable vehicle. SpinLaunch is trying to use a mass accelerator to launch payloads kinetically, which would eliminate the need for traditional launch pads.

Not all of these ideas will prove successful. However, without competition, particularly within U.S. government acquisitions, current technology and concepts will be locked in with minimal incentive for companies to innovate.

HOW ARE AGENCIES FARING WITH REGARDS TO COMPETITION?

There is substantial risk of losing the vibrant and differentiated launch vehicle market the nation currently enjoys unless the U.S. government intentionally works to maintain competition. It is vital that the government exercise caution in how it utilizes that power. Maintaining viable competition in this sector is in the public interest, but, at the same time, the government should not prop up companies without clear business models.

While there are some examples of the government successfully promoting competition, there remains more work to be done government-wide.

National Security Launch

The ongoing National Security Space Launch (NSSL) program is an example of government working to promote competition within the launch sector. NSSL is the government's mechanism for acquiring heavy- and medium-lift launches for DoD and intelligence community payloads. There is a separate program for small-lift launches called the Orbital Services Program.

There are two lanes in the NSSL program. Lane one is open to an unlimited number of providers who are able to compete for less complex missions that have higher levels of risk tolerance (e.g., launches that are less mission-critical). Lane two is currently limited to three providers — Blue Origin, SpaceX, and ULA — that can execute more complex missions with lower degrees of risk tolerance.[19] Notably, two of the three vehicles in this lane received development funds from DoD in 2018 to "ensure it has multiple competitors for future launch contracts,"[20] and SpaceX received similar funds for its Raptor engine system designed for its Starship vehicle in 2016.[21]

The program continues to nurture up-and-coming new launch providers by offering a small amount of certification funding to keep them in the game and the promise of future contracts through lane one. Currently, there are five providers in lane one: Rocket Lab and Stoke Space, plus the companies in lane two. Rocket Lab and Stoke Space are both new to the program and still going through the certification process.

NSSL prices have continued to drop over the last decade.[22] The leading launch provider, SpaceX, secured 60% of launches in this latest round,[23] which may seem high until you consider that there are two main providers who have participated in this contract previously and three new providers being onboarded to take on larger roles. There are also small launches occurring, meaning SpaceX's share of national security launches is actually lower than 60%.

So long as the program continues to meaningfully onboard new providers to serve a healthy percentage of future missions, NSSL will be a model of a program promoting launch competition that should be emulated by other agencies. If the program continues primarily purchasing from the current leading two providers, SpaceX and ULA, despite eventual advances and maturity in new providers, however, it will not fully reap the benefits of competition in the future.

There is also caution warranted around the theoretically "unlimited" number of providers who can participate in lane one. While competition is good, there is a limit to the number of launch providers who will be able to survive in the market, as there is limited demand for launch services. The government is presently an anchor customer for most space activities and must be thoughtful about how many launch providers the market can bear.[24] Accordingly, NSSL must balance the need for competition with an understanding of current and future launch needs to avoid spreading its ability to keep competitors in the market too thin.

NASA

NASA is a mixed bag when it comes to launch competition.

There are bright spots where NASA has promoted launch competition, like commercial cargo missions to the ISS. There are currently two operational providers offering this service and, as expected, costs have dropped about two percent annually since 2012.[25]

However, there are also indications that NASA is not doing enough to promote competition in the awarding of other launches. One piece of evidence is a recent article analyzing NASA launch costs dating back to 1996. Costs were expected to decrease for NASA launches once the agency started using multiple commercial providers, as competition typically reduces prices.[26] However, that did not materialize — in fact, controlling for inflation, launch costs actually continued to rise roughly three percent per year on average.[27] This seems to indicate there is not real competition for launch services at NASA. Now, this is a limited analysis of a single agency's missions with a number of potential reasons for costs continuing to rise. But there is additional evidence that there is not sufficient competition.

In 2024, for instance, the agency used four different providers for 15 orbital launches. Of those four providers, SpaceX secured 66%, Rocket Lab and ULA each respectively flew about 13%, and Firefly flew about 7%.[28] While the mix of other vehicles differed slightly in 2023, SpaceX still launched roughly 65% of NASA missions.

NASA should be commended for utilizing a range of vehicles, but it's clear that SpaceX consistently launches the majority of them. There are likely a number of reasons for this, ranging from the company's low prices and history of successful launches to the capabilities they offer to the launch cadence they are able to deliver. However, it is also a sign that there is not sufficient competition for SpaceX for the types of launches NASA needs and that the agency needs to reassess its acquisition policies to avoid a relationship of convenience with SpaceX.

NASA tried to address this problem when it created the Venture-Class Acquisition of Dedicated and Rideshare (VADR) program,

intended to give the agency more launch vehicle options and facilitate continued growth of the launch industry. However, as of 2024, SpaceX has secured 70% of VADR missions — even higher than the roughly 66% of overall NASA missions SpaceX flew in 2024.[29]

NON-ACQUISITION POLICY CHALLENGES

While federal acquisition policy is a major driver of which rockets stay in the market, there are challenges for up-and-coming operators in the launch sector beyond agency acquisition policy–in particular, launch infrastructure and regulatory barriers.

Launch Infrastructure

Most launches are conducted from either government-operated ranges or launch sites that companies own and operate themselves for their exclusive use. The primary government-operated ranges are Cape Canaveral Space Force Base and Kennedy Space Center in Florida and Vandenberg Space Force Base in California. Some launches are also conducted at smaller spaceports like the Mid-Atlantic Regional Spaceport or the Pacific Spaceport Complex, which are typically run by state governments or a private company rather than the federal government. SpaceX's Boca Chica launch site and Blue Origin's at Corn Ranch, both in Texas, are also home to a healthy number of launches, though these sites are exclusively for use by SpaceX and Blue Origin.

Government-run ranges are popular sites with multiple launch pads that are each designed to support one or more companies. However, when they were established, these sites weren't designed for the rapid launch cadence seen today, much less the volume projected in the future. Industry has been warning for years that the ranges are reaching maximum capacity[30] and the Space Force is investing to improve capacity, but the concern remains.[31]

Because companies need to compete for both launch pads at those sites as well as launch windows, launch infrastructure is a bottleneck for industry competition. The Space Force is working to address this with the considerations they keep in mind when allocating a given launch pad. These include maximizing the number of providers and launch capability while minimizing the amount of impact a launch pad holder will create on other providers.[32] These are bolstered by the recently released USSF Principles for Space Access Resourcing Decisions, which includes two guidelines promoting resilience based on diversity and a competitive industry.[33]

The last time the Space Force offered launch pads to companies was in 2023.[34] These launch pads are typically allocated for five-year periods to disincentive companies from bidding on facilities they will leave idle for years.[35]

As an early market entrant and leader, SpaceX currently holds five U.S. launch pads: two in Florida, two in California, and one exclusive-use site in Texas.[36] Most space companies only have one, and SpaceX's leading competitors (Blue Origin and ULA) have two apiece. This makes sense at the moment given that SpaceX launches far more often than its competitors. However, as competition increases in this sector, it may be challenging for new entrants to acquire sufficient launch infrastructure to support their growth and fit into launch schedules given the limited number of launch pads in the United States.

This is not a new problem. In 1992, the National Academies of Sciences highlighted the role limited launch infrastructure plays in scheduling

restrictions for launches and limiting launch rate.[37] The Space Force has made considerable progress since that time and continues to work to accommodate increasing launch cadence as well as new operators, though there is more to be done.

Regulatory Hurdles

The current regulatory regime for launch and reentry, called Part 450, is overly burdensome and complex. Current providers cite a multi-year process for obtaining launch licenses, which requires specialized knowledge and a team of engineers working towards ambiguous goalposts.[38] This is challenging for the industry writ large, but particularly challenging for newer operators who can least afford the regulatory army required to obtain a license.

In response to this, the Federal Aviation Administration's Office of Commercial Space Transportation (AST) has formed an advisory group that is working to revise the regulations. However, it is worth noting that industry identified many of the challenges with the regulatory regime when it was originally released in draft form in 2019 and had proposed solutions at that time.[39, 40] It is unclear why those solutions were not implemented before starting a new advisory group on the same subject.

Adding to the challenge, given AST's lack of sufficient technical staff, licensing staff must triage applications, resulting in a focus on launches that are coming up soonest or where companies are loudest in complaining about licensing timelines. In practice, in either circumstance, the company that wins is usually SpaceX. In private conversations, multiple launch and reentry operators have shared that AST has pulled resources away from reviewing their license application to address SpaceX's more frequent licensing needs.

RECOMMENDATIONS

Both the national security and civil space enterprises have an active role to play in supporting launch competition. While the DoD is on a path that will lead to competition if it stays focused on that goal, NASA needs to take active steps to change course. Beyond agency-specific policies, it will be vital to ensure sufficient launch infrastructure and continued support for the growth of the broader space industry.

National Security Launch

The NSSL program is a step in the right direction, but there's no guarantee DoD will realize the benefits of competition. The program must demonstrate the ability to bring new providers into the mix and give new companies a meaningful number of missions. This ramp-up period may take a few years as new vehicles come online and their production begins to scale, but it must be a lodestar for the program. Otherwise, bringing new providers into the program will not actually foster competition.

Additionally, NSSL should continue to engage economists and other relevant experts to forecast demand for heavy- and medium-lift launch now and in the near future, similar to the report conducted in 2020 by the RAND Corporation and updated in 2023.[41] As it considers adding lane one participants, economic projections will be helpful in determining whether a maximum number of participants is warranted. With five providers currently in the program, this is not a near-term problem. But it's important to remember that overcorrection when it comes to supporting launch competition could create its own set of problems.

NASA

NASA should put new policies in place that actively promote competition in launch. This could be as simple as setting a maximum percentage of launches awarded to a single company each year or ensuring there are at least two orbital launch providers that receive a minimum percentage of NASA launches.

Beyond these prescriptive solutions, there is also merit in adding industrial base resilience or competition as an evaluation criteria. Currently, the primary criteria are "technical capability/risk, reasonableness of proposed price, and past performance."[42] These are important criteria, but may bias acquisitions towards market leaders while making it challenging for new systems to gain traction.

Given the evolving nature of the launch sector, it is important that any policy be regularly revisited to ensure it is yielding the intended results and has flexibility for extenuating circumstances.

Launch Infrastructure

As noted above, launch infrastructure can be challenging for new providers. The new Cape Canaveral Launch Pad Allocation Strategy calls for consideration of maximizing the number of providers who can operate at government-operated ranges. This is a step in the right direction, though it's unclear if Vandenberg Space Force Base's strategy includes a similar consideration.[43] If not, its strategy should be revised to incorporate a provision to ensure government resources are used to promote competition and resiliency.

Funding dedicated to spaceport capacity improvement to host more launches per year is positive as well. However, it is unclear what the ultimate capacity of government-run ranges will be.[44] Ultimately, the Space Force needs to evaluate their ability to either expand existing launch sites or utilize additional launch sites, as proposed by the House Armed Services Committee FY25 National Defense Authorization Act.[45] This could include enabling inland launch in certain circumstances, though it will be vital to take into account how to protect the uninvolved public if the nation moves forward with inland launch.

Broader Industry Support and Regulatory Regime

As important as acquisition policies and infrastructure are, at the end of the day, launch vehicles need payloads to launch. The vehicles are a means to an end.

Trump's proposed cuts to agencies that promote space and acquire launches are a step in the wrong direction. NASA, the Office of Space Commerce, and the Space Force need more funding, not less.

In addition to supporting the broader space ecosystem, the Part 450 regulatory regime is in dire need of an update. Rather than waiting for the recommendations of an advisory group, AST should refer back to the comments filed in 2019 to the draft rule, anticipating the challenges seen today, and consider rapidly implementing the proposed solutions. Many of the fixes proposed can be implemented under existing authorities, meaning they can be implemented relatively quickly and without additional direction from Congress. AST licensing staff and associated funding should also be increased to help the office keep up with increasing demand for its services.

CONCLUSION

The United States space launch enterprise is vital to the American way of life. To continue reaping the rewards of commercial launch, competition in this sector must be nurtured and maintained. As a key customer for most current space activities, the U.S. government has a significant role to play in this endeavor. Though there are bright spots within the government, there is more work to be done in both the civil and national security enterprises, as well as launch infrastructure and broader industry support.

ABOUT THE AUTHOR

Mary Guenther is the Head of Space Policy at the Progressive Policy Institute. In this role, Mary focuses on evaluating and developing policy solutions that address how the United States government's relationship with space actors should evolve and how to best harness the benefits of space for people here on Earth.

Prior to joining PPI, Mary served as the Vice President of Space Policy at the Commercial Space Federation (CSF). In that role, Mary drove consensus on space policy issues amongst roughly 90 member companies representing various facets of the commercial space economy and engaged with lawmakers, executive agencies, and the public to get those policy solutions implemented.

Prior to CSF, Mary served as a Professional Staff Member at the United States Senate Committee on Commerce, Science, and Transportation focusing on space, science, emerging technology, cybersecurity, and manufacturing policy. In that role, she worked with colleagues to author and pass through the Senate the CHIPS and Science Act as well as a variety of smaller pieces of legislation.

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