SACRA

EQUITY RESEARCH

UPDATED
10/10/2025

Stoke Space

TEAM

Jan-Erik Asplund
Co-Founder
jan@sacra.com

Marcelo Ballve
Head of Research
marcelo@sacra.com

DISCLAIMERS

This report is for information purposes only and is not to be used or considered as an offer or the solicitation of an offer to sell or to buy or subscribe for securities or other financial instruments. Nothing in this report constitutes investment, legal, accounting or tax advice or a representation that any investment or strategy is suitable or appropriate to your individual circumstances or otherwise constitutes a personal trade recommendation to you.

This research report has been prepared solely by Sacra and should not be considered a product of any person or entity that makes such report available, if any.

Information and opinions presented in the sections of the report were obtained or derived from sources Sacra believes are reliable, but Sacra makes no representation as to their accuracy or completeness. Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied, is made regarding future performance. Information, opinions and estimates contained in this report reflect a determination at its original date of publication by Sacra and are subject to change without notice.

Sacra accepts no liability for loss arising from the use of the material presented in this report, except that this exclusion of liability does not apply to the extent that liability arises under specific statutes or regulations applicable to Sacra. Sacra may have issued, and may in the future issue, other reports that are inconsistent with, and reach different conclusions from, the information presented in this report. Those reports reflect different assumptions, views and analytical methods of the analysts who prepared them and Sacra is under no obligation to ensure that such other reports are brought to the attention of any recipient of this report.

Stoke Space

Visit Website

Company developing fully reusable medium-lift rockets for affordable access to space

#space

FUNDING

$990,000,000

2025

Details

HEADQUARTERS

Kent, WA

CEO

Andy Lapsa

SACRA

Valuation & Funding

Stoke Space closed a $510 million Series D in September 2025 led by the US Innovative Technology Fund, which included an additional $100 million debt facility. The round brought total lifetime funding to approximately $990 million.

The company previously raised a $260 million Series C in January 2025. Earlier funding rounds included backing from Breakthrough Energy Ventures, 776, Glade Brook Capital Partners, Point72 Ventures, Toyota Ventures, and Y Combinator.

Product

Stoke Space is building Nova, a two-stage medium-lift rocket designed for complete reusability of both the first and second stages. The rocket targets 3 tons to low Earth orbit on fully reusable flights and up to 7 tons when stages are expended, with 2.5 tons to geostationary transfer orbit capability.

The first stage uses seven Zenith engines running on liquid methane and liquid oxygen in a full-flow staged combustion cycle, generating 100,000 pounds of thrust each. After separation, the first stage performs a boost-back maneuver and lands vertically using grid fins and landing legs, similar to SpaceX's approach but with steel tanks as the primary structure.

The second stage represents Stoke's key innovation. Called Andromeda 2, it features 24 ring-shaped thrusters embedded around the perimeter that use liquid hydrogen and liquid oxygen. The base of the stage doubles as a metallic heat shield cooled by circulating cryogenic hydrogen, eliminating the need for fragile ceramic tiles or ablative materials.

This design allows the upper stage to restart multiple times in orbit, perform long-duration missions, dock with other spacecraft, and return cargo to Earth. The stage can land anywhere on Earth and requires only refueling between flights, enabling aircraft-like turnaround times.

Stoke has demonstrated the technology through its Hopper 2 prototype, which completed a 15-second vertical takeoff and landing test in September 2023, reaching 9 meters altitude. The company has also conducted successful hot-fire tests of both engine systems and heat shield validation at flight conditions.

Business Model

Stoke operates a capital-intensive hardware development model typical of aerospace companies, but with two key differentiators that provide near-term revenue while building toward launch services.

The company follows a B2B go-to-market approach across both current revenue streams. Boltline generates recurring SaaS revenue from manufacturing and engineering customers who need cloud-based production management tools. This creates a steady cash flow that helps fund rocket development while building expertise in manufacturing systems that directly benefits Nova production.

Government contracts provide milestone-based revenue through development programs with the Space Force and Defense Innovation Unit. These contracts validate Stoke's technology approach while providing non-dilutive funding for specific capabilities like responsive launch and orbital maneuvering.

The core monetization strategy centers on dramatically lower launch costs through full reusability. By recovering and reusing both rocket stages, Stoke aims to reduce launch costs by 20x compared to expendable rockets while cutting environmental impact by 98%. This cost structure would enable competitive pricing against SpaceX while maintaining healthy margins on the smaller payloads that Nova targets.

The business model scales through manufacturing efficiency and flight cadence. Unlike traditional aerospace companies that build rockets as one-time products, Stoke's reusable approach transforms rockets into reusable assets that generate revenue across multiple flights. The company's vertical integration of engine development, manufacturing systems, and launch operations creates control over the entire cost structure.

Competition

Vertically integrated giants

SpaceX dominates the current medium-lift market with Falcon 9, setting reference pricing around $67 million per launch while developing Starship for even lower costs. SpaceX's advantages include proven reusability, Starlink revenue that subsidizes launch development, and control over launch sites and manufacturing.

Blue Origin's New Glenn reached orbit in January 2025 but failed its first booster recovery attempt. The rocket offers partial reusability and benefits from BE-4 engine commonality with ULA, though it still awaits national security launch certification.

United Launch Alliance operates Vulcan for high-assurance government missions but remains expendable, with engine recovery plans deferred. ULA competes on mission success rather than cost, serving customers who prioritize reliability over price.

Fast-follower new entrants

Rocket Lab is developing Neutron as a 13-ton medium-lift vehicle with first flight planned for late 2025. The company targets $50-55 million pricing and benefits from existing launch operations experience with its smaller Electron rocket. Rocket Lab was also selected for the same NSSL Phase 3 program as Stoke.

Relativity Space is building Terran R using additive manufacturing to reduce tooling costs, with first launch planned for 2026. The company's 3D printing approach could enable rapid iteration and lower fixed costs, though the technology remains unproven at scale.

Firefly Aerospace focuses on responsive launch capabilities and has demonstrated orbital success with its Alpha rocket. The company is expanding into medium-lift with Beta and emphasizes rapid mission turnaround for government customers.

Specialized competitors

Several companies target specific aspects of Stoke's value proposition. Varda Space Industries focuses on in-space manufacturing and cargo return, directly competing with Nova's upper stage capabilities. RocketLab's Photon platform provides orbital maneuvering and satellite deployment services that overlap with Stoke's planned offerings.

Traditional defense contractors like Northrop Grumman and Lockheed Martin maintain strong government relationships and high-margin contracts, though they typically rely on expendable systems with higher per-flight costs.

TAM Expansion

New products and services

Nova's reusable upper stage enables differentiated services beyond traditional launch. The stage can return cargo from orbit, perform satellite servicing missions, and conduct debris removal operations. These capabilities position Stoke to capture value in the growing in-space logistics market, which extends well beyond the $29.6 billion launch services market.

The upper stage's ability to restart multiple times and loiter in orbit makes it suitable as a space tug for last-mile satellite delivery and orbital transfers. Government responsive space programs like Victus require exactly these capabilities, creating a premium market for rapid deployment and maneuvering services.

Boltline's success as an external product suggests potential for additional software spin-outs from Stoke's internal engineering tools. Manufacturing execution systems, simulation software, and rocket design tools could generate recurring revenue streams that complement the core launch business.

Customer base expansion

Entry into the U.S. Space Force NSSL Phase 3 Lane 1 program provides access to up to $5.6 billion in government missions through 2029. National security customers value responsive launch capabilities and orbital maneuvering, both core strengths of Nova's design.

Commercial megaconstellations represent a growing market as companies deploy thousands of satellites for communications, Earth observation, and other services. Nova's 3-7 ton capacity matches typical constellation replenishment batch sizes, while its reusability enables the frequent flights these customers require.

In-orbit servicing companies need reliable, cost-effective transportation for their operations. Satellite refueling, inspection, and repair missions require the precise orbital maneuvering and cargo return capabilities that Nova provides, creating partnership opportunities in adjacent markets.

Geographic expansion

Stoke has secured exclusive access to Launch Complex 14 at Cape Canaveral, enabling up to 10 flights per year initially with potential for higher cadence later. The company's Moses Lake test facility in Washington provides West Coast capabilities, creating a bi-coastal launch network.

International markets present expansion opportunities as governments seek alternatives to SpaceX and other established providers. European, Asian, and other markets increasingly value supply chain diversity and domestic launch capabilities, though regulatory barriers may require local partnerships.

The company's manufacturing approach could support distributed production facilities closer to key customer bases, reducing transportation costs for rockets and enabling faster response times for time-sensitive missions.

Risks

Execution complexity: Developing fully reusable rockets requires solving multiple unprecedented technical challenges simultaneously, from metallic heat shields to precision landing systems. No company has successfully demonstrated complete two-stage reusability at scale, and any major technical setbacks could delay revenue generation by years while burning through the substantial funding raised.

Market timing: The medium-lift launch market is becoming increasingly crowded with well-funded competitors, while SpaceX continues to drive down costs with proven systems. If Stoke cannot achieve first flight and demonstrate reusability before competitors establish market positions, the company may struggle to capture sufficient market share to justify its valuation and development costs.

Capital intensity: Rocket development requires enormous upfront investment with long periods before revenue generation, making the company vulnerable to funding market conditions and investor sentiment. Unlike software companies that can adjust burn rates quickly, Stoke's hardware development timeline and manufacturing commitments create significant financial obligations that cannot easily be reduced if market conditions deteriorate.

DISCLAIMERS

This report is for information purposes only and is not to be used or considered as an offer or the solicitation of an offer to sell or to buy or subscribe for securities or other financial instruments. Nothing in this report constitutes investment, legal, accounting or tax advice or a representation that any investment or strategy is suitable or appropriate to your individual circumstances or otherwise constitutes a personal trade recommendation to you.

This research report has been prepared solely by Sacra and should not be considered a product of any person or entity that makes such report available, if any.

Information and opinions presented in the sections of the report were obtained or derived from sources Sacra believes are reliable, but Sacra makes no representation as to their accuracy or completeness. Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied, is made regarding future performance. Information, opinions and estimates contained in this report reflect a determination at its original date of publication by Sacra and are subject to change without notice.

Sacra accepts no liability for loss arising from the use of the material presented in this report, except that this exclusion of liability does not apply to the extent that liability arises under specific statutes or regulations applicable to Sacra. Sacra may have issued, and may in the future issue, other reports that are inconsistent with, and reach different conclusions from, the information presented in this report. Those reports reflect different assumptions, views and analytical methods of the analysts who prepared them and Sacra is under no obligation to ensure that such other reports are brought to the attention of any recipient of this report.

Published on Oct 10th, 2025