



LSIC Newsletter

The Lunar Surface Innovation Consortium is administered by the Johns Hopkins Applied Physics Laboratory and operates in collaboration with the NASA Space Technology Mission Directorate under the Lunar Surface Innovation Initiative. Its purpose is to harness the creativity, energy and resources of the nation to help NASA keep the United States at the forefront of lunar exploration. To find out more, sign up to participate or access past additions of this newsletter, please visit lsic.jhuapl.edu.

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Director's Corner

Dear LSIC Community,

It's hard to believe how much has happened since I first spoke to the group at our kickoff in early 2020. The amount of engagement between the community and NASA has exceeded my wildest dreams, and I am so excited to see how NASA's strategy has developed to include entry points for people throughout the country and the world to be a part of the return to the Moon. It has been an honor to be with everyone on this journey.

As LSIC Director, my top goal has been to take everything we learned through our meetings with the community and learn how we could help provide value that was distinct from what other forums provided. I felt very strongly that we didn't need another academic conference, but rather we needed to build the community to work as much like a team as possible. Moving into the next phase of helping NASA engage academia, industry, and others to support the Moon to Mars architecture and goals, we need to focus on helping that team work towards technical solutions to the challenges. While I could speak for days on how cool and exciting the Moon is scientifically, functionally, LSIC now really needs the expertise of an engineer at the helm. I am thrilled that Dr. Jamie Porter has agreed to step into the role of LSIC Director and am incredibly excited to see where the team will go under her leadership. Jamie brings a deep understanding of how to solve the challenges of bringing hardware to space, and knows how to ask the tough questions needed to identify the key gaps and blind spots that we need to address to make a sustained lunar presence successful. As for me, I am committed to remaining an active and engaged member of the fantastic LSIC team, and look forward to being able to help advance and grow the initiatives that our community has brought to the table.

Thank you all, again, for everything you have done to make LSIC a thriving community.

To the Moon!



Rachel Klima

Director Emeritus, Lunar Surface Innovation Consortium

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Focus Areas

Monthly Telecon Schedule

Dust Mitigation

Third Thursdays at 12PM Eastern

Excavation & Construction

Last Wednesdays at 2PM Eastern

Extreme Access

Second Thursdays at 3PM Eastern

Extreme Environments

Second Tuesdays at 3PM Eastern

In Situ Resource Utilization

Third Wednesdays at 3PM Eastern

Interoperability

First Wednesdays at 1PM Eastern

Surface Power

Fourth Thursdays at 11AM Eastern

LSIC General Updates

Save the Date: Lunar Proving Grounds Definition Workshop, July 12–13

The [Lunar Surface Innovation Consortium \(LSIC\)](#) will host a hybrid [Lunar Proving Grounds Definition Workshop](#) on July 12–13 at the Johns Hopkins Applied Physics Laboratory (APL) in Laurel, Maryland. The topics of test facilities and Earth-based Lunar Proving Grounds (LPG) have come up across all six Focus Areas of LSIC, and component- and instrument-level testing have been developed extensively at various facilities across the U.S. However, an integrated testing facility (or network of testing locations) where technology developers can verify and validate their technologies in conjunction with other dependent technologies at the larger system level, specifically to ensure system readiness for flight and operation on the lunar surface, still requires development. Over the course of this two-day workshop, we will dive into these topics and explore the requirements and characteristics that will be necessary for a unified LPG.

While the LSIC Lunar Proving Grounds Definition Workshop will be offered in hybrid format, we strongly encourage in-person participation, if possible, to maximize discussion and collaboration opportunities. A tentative agenda and a link to register will be disseminated shortly. Registration is free but required for participation, and a catered lunch may be purchased during the workshop registration process if desired.

Additional Upcoming Meetings

- [Power System Reliability Workshop](#), July 26–27 (virtual)
- [Joint Excavation & Construction/Extreme Access Autonomy Workshop](#), August 21 (virtual)
- [2023 LSIC Fall Meeting](#), October 10–11 (hybrid)
Hosted by Community College of Allegheny County, Pittsburgh, PA
- [Transition to Industry Workshop](#), October 12 (hybrid)
Hosted by Community College of Allegheny County, Pittsburgh, PA
- 2024 LSIC Spring Meeting, Week of April 22, 2024 (hybrid)
Johns Hopkins Applied Physics Laboratory, Kossiakoff Center, Laurel, MD

LSIC harnesses the creativity, energy, and resources of the nation to help NASA keep the United States at the forefront of lunar exploration. LSIC operates in collaboration with the NASA Space Technology Mission Directorate under the Lunar Surface Innovation Initiative, fostering communications and collaboration among academia, industry, non-profits, and government. Visit <http://lsic.jhuapl.edu> for more information.

Focus and Working Group Updates

Dust Mitigation

The Dust Mitigation (DM) Focus Group held its monthly meeting on June 15. The meeting featured Dr. Karen Stockstill-Cahill (APL) discussing the [2022 LSIC Simulants Assessment Report](#). After an informative Q&A session, there was a brief overview of LSIC updates and upcoming opportunities. You can view the recording, slides, and notes from June's DM Focus Group meeting (and previous meetings) on the [LSIC Dust Mitigation Focus Group page](#).

Update on the Second LSIC Dust Mitigation Workshop: This two-day workshop has been moved to early November 2023. The workshop is a follow-on to the successful LSIC Dust Mitigation Workshop held in 2021, and will feature a combination of invited presentations from NASA and the

lunar technology community, contributed talks, panel discussions, and breakout sessions. Dates and registration information coming soon!

Our next focus group meeting will be held on Thursday, July 20, at 12:00 p.m. EST. The meeting will include a talk about the [UCF Exolith Lab](#) and their [work](#) by UCF's Parks Easter, followed by a discussion and Q&A session. Looking further ahead, our August meeting will feature a talk by Micah Schaible (Georgia Tech). We look forward to seeing you then!

Excavation & Construction

In June, the Excavation and Construction (E&C) Focus Group hosted a meeting highlighting three talks: Dr. Pooneh Maghoul, an Engineer and Associate Professor of Civil Engineering at Polytechnique Montréal, presented on the topic of “Geotechnical Seismic Design on the Moon.” Ian Jehn, a Graduate Researcher at Colorado School of Mines, presented an analysis of lunar landing pads. We were also joined by Randy Covington (US Army Corps of Engineers), who presented on lunar basing acquisition strategy.

This meeting was followed by two breakout sessions for our four subgroup communities—one breakout room for [Autonomy & Site Planning](#) and [Additive Manufacturing & Raw Materials](#), and a second for [Site Prep, Horizontal & Vertical Construction](#) and [Outfitting & Maintenance](#).

Extreme Access

It has been a very busy month for the Extreme Access (EA) Focus Group, with a lot of informative speakers. Our main telecon meeting featured EA's very own Sarah Withee (APL) with a presentation on “What You Need to Know About Lunar Comms.” Our Mobility Technology subgroup hosted Peter Visscher discussing lunar mobile technology developments at Canadensys Aerospace Corporation. And finally, our PNT subgroup featured a riveting talk from Mark Hartigan (Georgia Institute of Technology) in his presentation entitled “Low-Infrastructure PNT Service Architectures for the Lunar South Pole.” The launch of our newest subgroup, the Autonomy Subgroup, is being led by APL's Dr. Alhassan Yasin. This subgroup will meet on the fourth Wednesday of the month, at 1:00 p.m. EST! The EA Focus Group will co-host an Autonomy Workshop with the E&C Focus in a virtual setting on August 21–22. The goal of this workshop is to gather the Lunar community to exchange ideas on autonomy, as well as identify technology gaps and use cases for establishing a sustainable presence on the Moon and Mars. Day 1 will feature autonomous systems, situational and self-awareness, reasoning and acting, and collaborative systems. Day 2 will feature discussions surrounding the applications and challenges in autonomy on the lunar surface. Registration information for the workshop will be forthcoming!

Extreme Environments

The Extreme Environments (EE) Focus Group is ready for a packed agenda in July! Our monthly meeting (Tuesday, July 11, at 3:00 p.m. EST) will focus on the illumination environment, a critical driver for lunar hardware design and operation requirements. Dr. Benjamin Greenhagen (APL) will offer an overview on this subject, followed by Dr. Michael Zimmerman (APL), who will speak on surface charging effects due to illumination on the lunar surface. Please join us in the discussion of this important subject, and bring some questions for our speakers and community! With the exception of External Hazards, all Extreme Environments subgroups will hold their July monthly meetings. We are still looking for an External Hazards subgroup lead. If interested, please email us at Facilitator_ExtremeEnvironments@jhuapl.edu. For more information on all EE monthly meetings, feel free to access the [LSIC Extreme Environments Confluence page](#). We look forward to your attendance and participation!

In Situ Resource Utilization

During the month of June, the In Situ Resource Utilization (ISRU) Focus Group's facilitators spent much of their efforts participating in the Space Resources Roundtable and helping to plan the LSIC Lunar Proving Grounds Definition Workshop; we're excited to see many of you there on July 12–13!

The ISRU Focus Group also held its monthly telecon, which featured two fantastic talks. The first, by Süleyman Salihler (Polimak), was titled, "Reliable Regolith Handling: A Modular, Low-Power Conveying System for Handling Abrasive Materials in Space and Lunar Environments." During his talk, he focused on the modular drum conveyor that Polimak is developing, designed with inner helical flights that allow regolith to tumble along in the desired direction as the drum conveyor rotates. This was followed by Sarah Withee (APL), who spoke on, "What You Need to Know About Lunar Communications." This talk explored how communication is going to work logistically on the Moon, and how exactly that differs from its use and operation on Earth. It served as an easily-digestible "Lunar Comms 101" that all lunar technology developers should understand when looking toward operating on the lunar surface.

Afterwards, we held an informal "Coffee & Donuts Discussion" to hear your thoughts on what we should ensure is covered at the upcoming Lunar Proving Grounds Definition Workshop. The July monthly telecon for ISRU will be canceled, to make room for the [Lunar Proving Grounds Definition Workshop](#) on July 12–13. See you all there!

Surface Power

In June, the Surface Power (SP) Focus Group hosted three speakers for a telecon focused on the topic of power requirements for lunar surface habitats. Paul Kessler (NASA Surface Habitat Lead Architect) provided an overview of the Artemis Habitat's specifications and additional details on a number of ongoing trade studies related to different plausible power architectures. Next, Professor Ali Bazzi (UConn) described the Resilient ExtraTerrestrial Habitats Institute (RETHi). The institute supports two testbeds: one virtual, and one full-power hardware-in-the-loop testbed that couples an actual structure with a communications/sensing suite and a robotic arm. Dr. Bazzi's talk also touched on the topic of reliability, and highlighted a number of results from a series of grid reliability experiments performed by the collaboration. Finally, Professor Marshall Porterfield (Purdue) presented bioregenerative approaches and advanced ecological solutions for lunar habitats. All three talks discussed tangible end use cases for surface power technologies that the focus group should consider while designing technologies and evaluating architectures. If you are interested in presenting at a future telecon, or coordinating a meeting with the SP Focus Group, please don't hesitate to reach out.

The SP Focus Group's next monthly telecon, on August 24 at 11:00 a.m. EST, will feature Alex Miller (ThermAvant Technologies). ThermAvant has been working under a NASA Phase II SBIR to develop an intermediate-temperature, high-capacity oscillating heat pipe embedded radiator panel that will significantly improve the size and power density of a future kW-class fission surface power system.

Additionally, registration and abstract submission are open for the Power System Reliability Workshop that will take place virtually July 26–27 from 11:00 a.m. to 3:30 p.m. EST. Registration closes July 17. While the LSIC Lunar Proving Grounds Definition Workshop will be offered in hybrid format, we strongly encourage in-person participation, if possible, to maximize discussion and collaboration opportunities. A tentative agenda and a link to register will be disseminated shortly. Registration is free but required for participation, and a catered lunch may be purchased during the workshop registration process if desired. You can find additional details for the event on the [Workshop page](#).

Power System Reliability Workshop Agenda, Day 1

11:00	Welcome/Establish Goals (Matt Clement, APL)
11:10	Reliability 101 (Clay Smith, APL)
11:35	Blueprint Objectives (John Scott, NASA)
12:00	Artemis and Safety and Mission Assurance Perspective (Roger Boyer, NASA)
12:25	EHP Perspective (Blanca Lara, NASA)
12:50	NASA Heritage and ISS Panel <ul style="list-style-type: none"> • <i>Jim Soeder (NASA, retired)</i> • <i>Tim Lawrence (Lockheed Martin)</i> • <i>Mike Way (NASA, former ISS Power Specialist)</i> • <i>Clay Smith (APL)</i>
1:30	Coffee Break
1:55	Tangential Approaches to Power Panel (TAPP) <ul style="list-style-type: none"> • <i>David McGlone (NAVSEA07 Submarine Safety Program Director)</i> • <i>Bill Anderson (Naval Expeditionary Warfare Center Director, Utilities Engineering & Management)</i> • <i>Joe Miller (Antarctica Facilities & Utilities Program Manager)</i> • <i>Martin Narendorf (AMN Engineering, former Power Utility Executive, Centerpoint Energy)</i>
2:45	Breakout Sessions
3:30	Conclude Day 1

Interoperability Working Group

The Interoperability Working Group will not hold a telecon in July. Instead, we hope that you will attend the [Power System Reliability Workshop](#), July 26–27. If you missed our June telecon with David LaBranch, a Geospatial Information Officer from USG, please watch the replay on the [LSIC site](#). Mr. LaBranch presented on the DOD’s Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) and its applicability to the lunar environment.

Lunar Simulants Working Group

In June, we heard from our first presenter for the [Lunar Simulants \(LS\) Working Group](#) Speaker Series! Dr. Doug Rickman (Jacobs/MSFC) gave a talk entitled, “The Art of Simplification: Making the Choices that Allow Simulants to be Made, Chosen, and Used.” He shared many lessons learned from decades of working with and developing regolith simulants, and our audience had many questions.

If you are interested in being invited to our Speaker Series, please join our LS Working Group email listserv by emailing our team at LSIC-Simulants@jhuapl.edu. We are also interested in hearing about your simulant-related research and are accepting topic suggestions that you’d like to hear more about. If you would like to volunteer to be a speaker or have an idea of a topic that you’d like covered, please email us!

Finally, we continue to monitor the [LSIC Lunar Simulant User Needs Survey](#), which helps us to advise NASA on current and upcoming simulants needs.

Feature Article

Changing of the Guard: Welcome Dr. Jamie Porter

Hello LSIC Community!

I'm beyond excited to be the new LSIC Director! Dr. Rachel Klima has done an amazing job over the past three years at getting the Community to where it is today. As I soak up knowledge and learn from Rachel, I want to share a little about myself and my background. For over two years, I've served as the Assistant Group Supervisor in the Space Environmental Effects Group at APL. My specialty lies in radiation effects, specifically transport modeling. I have the privilege to be part of the Europa Clipper Mission spacecraft and Dragonfly Mission teams. I also serve on multiple instrument teams, including the Europa Imaging System and the Plasma Instrument for Magnetic Sounding on NASA's Europa Clipper, and the Particle Environment Package (PEP)-Hi instrument for ESA's JUpiter ICy moons Explorer (JUICE) mission. I arrived at APL after completing postdoctoral work at the University of Tennessee (GO VOLS!!), where I earned my Ph.D. and was the first Black woman to earn a doctorate from its Department of Nuclear Engineering.



Through my career and time serving as the APL Space Sector's Diversity Advisory Team Lead and co-leading the Onboarding Team, I discovered that my passion is people! The LSIC Community is filled with qualified and eager folks who are determined to make a sustained lunar presence possible. In my new role I hope to leverage my engineering background in the development of current and future technologies. Our Community is growing outside of the space industry, and we are attracting talented professionals who never thought they had a spot in this field. I hope that, together, we can make true advancement in our objective to successfully occupy our Moon. As we get to know each other, you will hear me say "Teamwork makes the dream work." So let's keep going and see what "impossibles" we can prove wrong!

Member Spotlight: Keystone Space Collaborative

By: Michael Buckley

If you've never thought of Western Pennsylvania as a hub for the space industry, the team hosting the LSIC Fall Meeting this October looks forward to educating you.

The Keystone Space Collaborative, Astrobotic Technology Inc., the Community College of Allegheny County, and Moonshot Museum all extol the qualities of a region that covers Pennsylvania, West Virginia, and Ohio, and, they say, has the right combination of innovation, logistics, education, tech development, manufacturing, and vision to make a serious contribution to the growing lunar economy.

In fact, that's the mission of the [Keystone Space Collaborative](#), launched in 2021 to promote the tri-state space industry and attract the next wave of space firms and talent to the region, said Keystone founder and board chair, Justine Kasznica.

"Our members have an important role to play in lunar science and exploration," she said. "Their contributions range from technology and materials development, to manufacturing and distribution, to early and higher education, even to life and agricultural sciences critical for sustenance in a space environment. We have a unique blend of capabilities in our region that is absolutely critical for a sustainable human settlement on the Moon to become a reality."

At its second annual conference in June, the collaborative unveiled plans for an innovation center in Pittsburgh's North Side. The Keystone Space and Defense Innovation District, anchored by Astrobotic, Keystone Space, and the [AFWERX/SpaceWERX](#) Pittsburgh Innovation Hub, will be a space and defense industry cluster that serves as a regional economic development enabler connecting educational, entertainment, and retail assets with local communities.

This comes as Keystone collaborators shore up connections with federal facilities, such as NASA Glenn Research Center, and universities with renowned aerospace and technology programs, like Pitt, Carnegie Mellon, Penn State, and Ohio State. "We're opening doors and creating opportunities for partnerships to be made," said Zoë Karabinus, Keystone's program director.

[Astrobotic Technology, Inc.](#), is central to the collaborative's industry push. With 217 employees, the lunar logistics company provides end-to-end delivery services for payloads to the Moon. One of its highest profile endeavors so far is [Griffin Mission One](#), a large autonomous lunar lander set to deliver NASA's Volatiles Investigating Polar Exploration Rover ([VIPER](#)) to the Moon's South Pole in late 2024.

"There was a lot of consideration put toward our location," said Alivia Chapla, Astrobotic's director of marketing and communications. "We had offers to relocate to Texas and Florida, to be where you'd think the space hubs are located. But we chose this space for good reasons, including that it's in a predominantly diverse, high-tech, urban area, and it presented an opportunity to bring jobs here, contribute to the economy, and be a cornerstone of the space industry in Pittsburgh. It was a very intentional choice."

"We have a unique blend of capabilities in our region that is absolutely critical for a sustainable human settlement on the Moon to become a reality."

***—Justine Kasznica,
Founder and Board Chair,
Keystone Space Collaborative***

[The Community College of Allegheny County \(CCAC\)](#) is focused on equipping that next generation of hires at Astrobotic and other firms. The space education program is strategically hands-on: for example, CCAC students will soon send an experiment to the International Space Station—a look at growth of cancer cells in microgravity environments that could have serious implications for long-term stays on the Moon. The college is also making significant investments in technology development, opening a new center for education, innovation, and training in October.

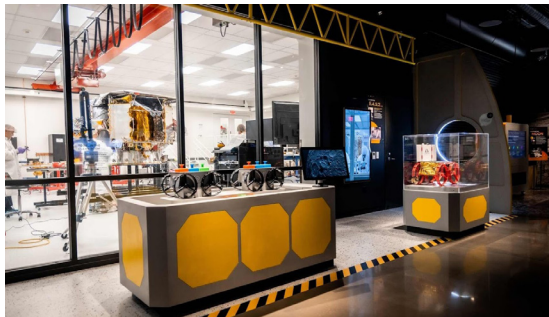
An equally exciting element of CCAC’s programs is their accessibility to all students with initiative and ideas, says Dr. Justin Starr, a professor of advanced technologies.

“If any student wants to participate in our student space learning program, they don’t need a science or chemistry or technical background,” he said. “Anyone who has a vision to do something with space can participate. And that’s how we get some innovative ideas—from construction, trades, and other programs that wouldn’t traditionally be part of the space community.”

[Moonshot Museum](#) aims to spark that inspiration long before students head for college. Opened last October, Moonshot is, according to interim executive director Cathleen Richards, the only museum in the world to focus on career and community readiness for the 21st century space industry. Its co-location with Astrobotic allows it to offer a literal window into the construction of lunar spacecraft—a peek into the cleanroom where landers with names like Griffin and [Peregrine](#) come together.



Astrobotic Technologies staff work to configure the Peregrine lunar lander.



Visitors to Moonshot Museum—co-located at Astrobotic’s Pittsburgh headquarters—can watch Astrobotic’s landers come together through a window into the clean room.

Richards said more than 6,200 K-12 students have participated in Moonshot’s museum field trips and off-site programs so far, which include lunar science demonstrations and experiences to design and operate a simulated lunar mission. “Our purpose is to be embedded in the community, and make space accessible to students from a very early age,” she said. “Space is not a one-time career day in high school; it’s something they engage with more frequently. We are building the ground game, to help kids begin to see how they could fit themselves in the space industry. They can literally meet the people working on these programs and get a very real sense of what’s possible.”

It’s a collective impression the team hopes to make on Fall Meeting attendees.

“We’re really looking forward to bringing the lunar community together and giving them an up-close and personal look at development in lunar science, and what it means to work and contribute to the space economy,” Chapla said. “We’re excited to show what is being developed here in the region to enrich humanity’s presence in the lunar landscape.”

The 2023 LSIC Fall Meeting and the Transition to Industry Workshop will be held October 10–12, both online and in-person, at the Community College of Allegheny County in Pittsburgh. Watch the [LSIC website](#) for details!

NASA and Community News

Four Teams Win Prizes to Advance Energy Technology for Moon Missions

06/27/2023 \\ NASA \\ Jonathan Deal

https://www.nasa.gov/directorates/spacetech/centennial_challenges/four-teams-win-prizes-to-advance-energy-technology-for-moon-missions

Cargo Accommodation System for Blue Origin Lander Coming from Astrobotic

06/26/2023 \\ The Journal of Space Commerce \\ Tom Patton

<https://exterrajsc.com/cargo-accommodation-system-for-blue-origin-lander-coming-from-astrobotic/2023/05/26/>

NASA Welcomes India as 27th Artemis Accords Signatory

06/23/2023 \\ NASA \\ Jackie McGuinness \\ Claire O'Shea

<https://www.nasa.gov/press-release/nasa-welcomes-india-as-27th-artemis-accords-signatory>

Firefly to buy remaining Virgin Orbit assets

06/16/2023 \\ SpaceNews \\ Jeff Foust

<https://spacenews.com/firefly-to-buy-remaining-virgin-orbit-assets/>

Seven US Companies Collaborate with NASA to Advance Space Capabilities

06/15/2023 \\ NASA \\ Joshua Finch \\ Gary Jordan

<https://www.nasa.gov/press-release/seven-us-companies-collaborate-with-nasa-to-advance-space-capabilities>

NASA laser communications terminal delivered for Artemis II Moon mission

06/14/2023 \\ NASA \\ Kendall Murphy

<https://phys.org/news/2023-06-nasa-laser-communications-terminal-artemis.html>

GITAI USA Completes Manufacturing Preparation for Lunar Manipulator and Rover Flight Models

06/14/2023 \\ GITAI \\ Sho Nakanose

<https://gitai.tech/2023/06/14/gitai-usa-completes-manufacturing-preparation-for-lunar-manipulator-and-rover-flight-models/>

NASA Selects Small Business, Research Teams for Tech Development

06/05/2023 \\ NASA \\ Sarah Frazier \\ Tiffany Blake

<https://www.nasa.gov/press-release/nasa-selects-small-business-research-teams-for-tech-development>

NASA awards millions to boost technology innovations created by small businesses

06/05/2023 \\ GeekWire \\ Alan Boyle

<https://www.geekwire.com/2023/nasa-technology-innovation-small-business/>

NASA program aims to grow El Paso's aerospace workforce amid new space race

06/04/2023 \\ elpasoinc.com \\ Luis Rios

https://www.elpasoinc.com/news/local_news/nasa-program-aims-to-grow-el-pasos-aerospace-workforce-amid-new-space-race/article_176691ac-02f2-11ee-bd2f-ab64d2449b04.html

Scientists Successfully Transmit Space-Based Solar Power to Earth for the First Time

06/02/2023 \\ Gizmodo \\ Kevin Hurler

<https://gizmodo.com/scientists-beam-space-based-solar-power-earth-first-tim-1850500731>

Funding Opportunities

Tech Development Opportunities

- [NSF SBIR and STTR](#)
NSF recommends treating the submission window like a deadline, but you can submit anytime within a year of receiving an official invitation from NSF. (NSF uses submission windows to help gather and review proposals, but sometimes proposals are reviewed as they are received.)
Remaining window: July 6 – November 1, 2023.
- [Lunar Terrain Vehicle \(LTV\) Services \(LTVS\) Request for Proposal](#)
Proposal Deadline: July 10, 2023, 1:30 p.m. CDT.
- [University Smallsat Technology Partnership \(USTP\) Appendix – 2023](#)
Full Proposal (by invitation only): July 18, 2023, 5:00 p.m. EST.
- [NASA Innovation Corps Pilot](#)
Proposals may be submitted at any time through July 22, 2022, but applications will be reviewed at intervals on the following dates: September 16, 2022; November 17, 2022; and January 20, 2023.
- [Technology Advancement Utilizing Suborbital and Orbital Flight Opportunities “TechFlights”](#)
Full Proposals Due: October 4, 2023.
- [“Fission Surface Power Advanced Closed Brayton Converter \(FSP-ACBC\) system” as an Appendix to the “Space Technology Research, Development, Demonstration, and Infusion”](#)
Anticipated Release of Solicitation on or about July 7, 2023

Student Tech Opportunities/Competitions

- [NASA’s 2024 BIG Idea Challenge: Inflatable Systems for Lunar Operations \(Theme Preview\)](#)
The Breakthrough, Innovative, & Game-changing (BIG) Idea Challenge is a collegiate-level design competition sponsored by NASA and managed in partnership by the National Institute of Aerospace (NIA) and APL. To participate, teams of ~5-25 students will submit proposals on concepts for a wide range of solutions for inflatable technologies, structures, and systems for lunar operations. Selected teams will receive up to \$180,000 to build and test their proposed inflatable solutions, then will present their test results to a panel of NASA and industry experts at the BIG Idea Forum in November 2024.
Notice of Intent Deadline: September 30, 2023
Proposal Deadline: January 23, 2024

Future Solicitations and Opportunities

- [NASA Innovative Advanced Concepts \(NIAC\) 2024 Phase I Call for Proposals](#)
The NIAC program supports visionary research ideas through multiple progressive phases of study. Phase I studies are nine-month efforts to explore the overall viability and advance the technology readiness level (TRL). Eligible recipients of Phase I awards can propose for a follow-on Phase II study.