



EXPLORE SPACE TECH

**Industry Briefing - Request for Proposal (RFP), Solicitation No. 80AFRC23R0001
Suborbital/Hosted Orbital Flight and Payload Integration Services 4 (FO IDIQ4)**

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EXPLORE SPACE TECH

THROUGH SUBORBITAL FLIGHT

The Flight Opportunities program rapidly demonstrates promising technologies for space exploration, discovery, and the expansion of space commerce through suborbital testing with industry flight providers.



EXPLORE SPACE TECH

WITH SMALL SPACECRAFT

The Small Spacecraft Technology program expands the ability to execute unique missions through rapid development and demonstration of capabilities for small spacecraft applicable to exploration, science and the commercial space sector.



INTRODUCTION

This will be a one-way voice presentation

Please turn your camera off and mute your microphone.

Questions

- Post your questions in the Teams chat.
- All questions will be answered to the best of our ability.
- Note – This is a public meeting, and the chat feature IS NOT PRIVATE.
- Please avoid disclosing your proposal details.
- Questions submitted via the chat may be discussed during the session if time permits.
- We will not be able to respond to voice questions or raised hands.

Presentation slides from this session and answers to all submitted questions will be posted as an amendment to the solicitation on SAM.gov by October 25, 2023. Answers provided via amendment are the official Government response and will supersede any answers provided during this presentation. All questions are due by October 16, 2023.

SCOPE

- The purpose of this solicitation is to acquire space on commercial flights for space technology payloads.
- NASA's objective is to fly these payloads aboard platforms that provide access to the relevant environments required to test the technologies and advance their readiness for use in future space missions or commercial applications.
- This includes use of suborbital and orbital vehicles that can test payloads at high altitudes, in reduced gravity, in vacuum conditions, and in other challenging aspects of the space environment.
- In addition to hosting payloads, contractors may propose to provide space for Government personnel (known as Government Suborbital Research Specialists) to fly as researchers aboard suborbital platforms capable of supporting human flight.
- Flights and other services solicited will be available for NASA internal use across the agency as well as for use by other government agencies.

OVERVIEW OF QUALIFIED VEHICLES

- Note: Section 907 of the NASA Authorization Act of 2010 (Public Law 111–267) and subsequent Appropriations language direct the Flight Opportunities program to focus on the commercial spaceflight industry and reusable spacecraft.
 - As such, platforms with a propulsion system that does not operate in a vacuum (e.g., drones, helicopters, airplanes) are not included in this RFP.
 - A special exemption is made for high altitude balloons due to their ability to act as long duration surrogates for orbital satellites.
- A Qualified Vehicle Family shall be a group of closely related vehicles (similar in characteristics but with different performance or payload capacities) that fly similar flight profile(s).
 - The Government will be the sole authority for determining if a Vehicle or Vehicle Family is Qualified.
- All QV / QVF and orbital launch vehicles must be owned and operated by a U.S. commercial provider.
 - In addition, the QV / QVF or orbital launch vehicle shall be majority (51% or more by value) manufactured or assembled in the United States.

QUALIFIED VEHICLES – SUBORBITAL ROCKETS

- The category of suborbital rockets includes both crewed (i.e., vehicles with crew and/or Government Suborbital Research Specialist) and uncrewed rocket-powered vehicles capable of achieving a minimum altitude of 80 km above Mean Sea Level [MSL].
- This may include suborbital stages of orbital launch vehicles that are capable of hosting payloads.
- Crewed suborbital rockets must be licensed in accordance with 14 CFR Chapter III to operate commercial flights for compensation or hire in the U.S., or possess applicable FAA documentation to fly as part of the process of being licensed to operate commercial flights for compensation or hire in the U.S.
- Uncrewed suborbital rockets must be licensed in accordance with 14 CFR Chapter III to operate commercial flights for compensation or hire in the U.S., or the Contractor must possess applicable FAA documentation to fly from the FAA as part of the process of being licensed to operate commercial flights for compensation or hire in the U.S. or otherwise hold the appropriate waiver or written authorization from the FAA in accordance with 14 CFR § 101 Subpart C.

QUALIFIED VEHICLES – ROCKET-POWERED LANDER VEHICLES

- Rocket-powered lander vehicles shall be capable of performing a controlled descent and controlled vertical landing of a free-flying vehicle using a propulsion system of a class that can operate in a vacuum.
- Rocket-powered lander vehicles are required to meet the same licensing, waiver, or written authorization requirements as suborbital rockets.
- Tethered rocket-powered lander vehicles are also eligible, so long as they meet the definitions of a “tethered launch vehicle” specified in 14 CFR § 400.2 (c) or hold the appropriate waiver or written authorization from the FAA. Tethered service is allowable only in addition to the requirement to be a free-flying rocket powered landing vehicle.

QUALIFIED VEHICLES – HIGH-ALTITUDE BALLOONS

- High-altitude balloon vehicles must be capable of operating at a minimum altitude of 18.3km (60,000ft) and may include both crewed and uncrewed vehicles.
- Crewed high-altitude balloons must be licensed to operate commercial flights for compensation or hire in the U.S. or possess applicable FAA documentation to fly as part of the process of being licensed to operate commercial flights for compensation or hire in the U.S.
- Uncrewed high-altitude balloons must comply with 14 CFR § 101 Subpart D or must otherwise hold the appropriate waiver or written authorization from the FAA. In addition, it is recommended that all high-altitude balloons consider the inclusion of ADS-B systems to provide enhanced air traffic control situational awareness.

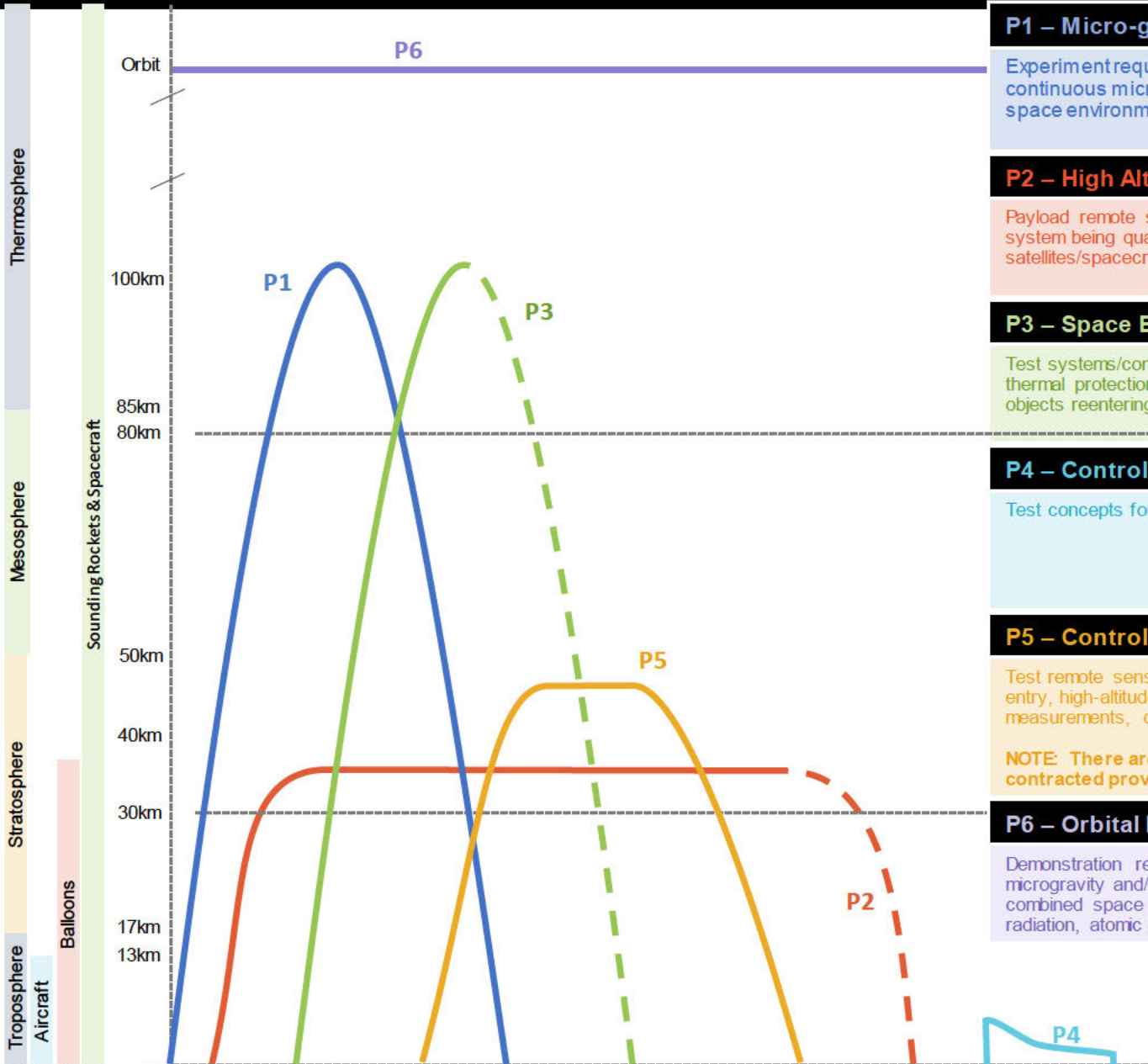
QUALIFIED VEHICLES – ORBITAL PLATFORMS

- Orbital platforms hosting payloads must be able to provide power and communications to the payload (e.g., payload telemetry, payload command and control), as well as perform at least one orbit around the Earth.
- Payloads may remain attached to the orbital stage(s) of a launch vehicle or be hosted on a satellite.
- Orbital platforms must be owned and operated by a U.S. commercial entity and must use FAA-licensed U.S. commercial launch services.
- There shall be a plan for safe end-of-mission disposal at the end of the orbital platform's operational lifetime, such as defined in NASA STD-8719.14 or equivalent documents.
- For orbital platforms with propulsive capability, a plan to protect the command uplink shall be submitted for Government approval. Plan submittal deadline will be specified in the Manifest Requirements Document (MRD).
- The orbital launch vehicle used to place the orbital platform in orbit is not considered to be a component of the QV / QVF, unless it is the exclusive U.S. commercial option for launching the particular orbital QV / QVF.

OVERVIEW OF PROFILE REQUIREMENTS

- The PWS specifies the flight profile requirements a vehicle must be able to achieve to be considered a qualified vehicle for this RFP.
- While Task Order solicitations from the Government may not require the full capabilities of a profile, a Contractor's vehicle must be able to meet the minimum requirements of a profile to be considered a qualified vehicle for that profile as part of this RFP.
- A vehicle may be qualified for more than one profile.

FLIGHT TESTING PROFILES



National Aeronautics and Space Administration

P1 – Micro-g and/or Space Environment		
Experiment requires >2 min of continuous micro-g and/or exposure to space environment	80 km minimum +/- 0.005g for > 2 min Near-vacuum/Low T – optional	Typically, a reusable sounding rocket or suborbital launch vehicle / spaceplane
P2 – High Altitude Exposure		
Payload remote sensing package or other system being qualified for satellites/spacecraft	30 km for 1 hour minimum Followed by descent to 0 AGL Descent may test parachutes/ atmospheric descent systems	Untethered balloon with parachute descent
P3 – Space Environment w/ Free-Fall Descent		
Test systems/components such as thermal protection or decelerators for objects reentering planetary atmosphere	80km min, typically ≥ 100km Payload ejection at apogee Followed by rapid free-fall descent of payload to 0 km AGL	Typically, a reusable sounding rocket with payload ejected at apogee
P4 – Controlled Descent with Controlled Vertical Landing		
Test concepts for planetary landers	500m to 0m AGL Controlled rocket-powered flight Controlled vertical landing Controlled horizontal translation up to 1 km Allow payload to actively control flight	Vertical flight tested
P5 – Controlled High Altitude Ascent and Descent		
Test remote sensing system for planetary entry, high-altitude atmospheric measurements, or similar applications	30km min Controlled trajectory ≥ 1 min above 30 km Descend to 0 AGL along controlled trajectory Access to external environment for observations Short duration reduced gravity	Typically, a suborbital spaceplane or glider dropped from balloon
NOTE: There are currently no contracted providers for the P5 profile.		
P6 – Orbital Platforms		
Demonstration requires days or weeks of microgravity and/or exposure to the combined space environment (vacuum, radiation, atomic oxygen)	Performs at least one complete orbit Altitudes typically > 160 km Capable of providing attachment, power, data services to payload	Satellites, Orbital Stages of Launch Vehicles, Commercial Orbital Facilities

PROFILE 1 (P1): REDUCED GRAVITY WITH SPACE ENVIRONMENT

- Payload is typically an experiment requiring a period of continuous microgravity and/or exposure to the space environment.
- Requirement is to ascend to a minimum of 80km above mean sea level (MSL), ($\geq 100\text{km MSL}$ desired), and expose the payload to a reduced gravity environment for at least two (2) minutes with a total gravitational vector of less than $\pm 0.05\text{g}$ (RMS) under stable gravitational conditions in all axes.
- The ability to achieve a total gravitational vector of less than $\pm 0.005\text{g}$ (RMS) under stable gravitational conditions in all axes for at least a portion of this duration is desired.
- This profile is typically accomplished by use of a sounding rocket or spacecraft.
- Some payloads may also require the simultaneous exposure of the payload to near-vacuum and external environment.
- Vehicles that can achieve the required altitude and reduced gravity but cannot expose the payload to the outside environment may also be qualified for this profile.

PROFILE 2 (P2): EXPOSURE TO HIGH-ALTITUDE AND LONG-DURATION FLIGHT

- Under this profile, vehicles shall be capable of providing payloads with external views of the Earth below as well as access to the environment for sensing.
- Payload types will vary, including remote sensing packages or other systems being tested for use on satellites or other spacecraft.
- These can be tested by use of an untethered balloon with parachute descent that could allow, for example, testing experimental parachutes or similar atmospheric descent systems.
- Other vehicles could include untethered balloons or untethered airships with guided trajectory capabilities and controlled landings.
- The aforementioned vehicles may have additional capabilities such as altitude loitering or geolocation station keeping.
- In all cases, landing characteristics should be sufficient to recover the payload, for example by means of a soft landing or a parachute recovery.
- For consideration under this profile, a QV shall meet the requirements listed in either Section 6.2.1 or 6.2.2 below:
 - *Exposure to high altitude:* Payload is typically an experiment requiring exposure to the near-space environment at a minimum of 30km MSL with a flight time of 1 hour or greater along a pre-planned guided flight trajectory, followed by a descent to 0m above ground level (AGL).
 - *Exposure to altitude and long-duration flight:* Payload is typically an experiment requiring exposure to an altitude of at least 18.3 km MSL (60,000 feet MSL) with a float time of 7 days or greater along a pre-planned flight trajectory, followed by a descent to 0 AGL.

PROFILE 3 (P3): SPACE ENVIRONMENT WITH FREE-FALL DESCENT

- Payload typically involves testing of systems and components such as thermal protection or decelerators for objects reentering a planetary atmosphere.
- Requirement is to attain a minimum of 80km MSL, typically $\geq 100\text{km MSL}$, followed by a free-fall descent of the payload to 0 km AGL.
- This profile is typically accomplished by use of a sounding rocket or spacecraft with the payload ejected after main engine cutoff.

PROFILE 4 (P4): CONTROLLED DESCENT WITH CONTROLLED VERTICAL LANDING

- Payload is typically an experiment to test concepts for planetary landers. Requirement is to descend from a minimum of 250m AGL to 0m AGL, under controlled rocket-powered flight and conduct a controlled vertical landing.
- Some payloads may require controlled horizontal translation of at least 100m.
- Some applications may require allowing the payload to actively control portions of the flight profile.
- This profile is typically accomplished by use of a spacecraft or a vertical flight testbed.

PROFILE 5 (P5): CONTROLLED HIGH-ALTITUDE ASCENT AND DESCENT

- Requirement is to ascend to a minimum of 30km MSL along a pre-planned trajectory, spend 1 or more minutes above 30km MSL, and then descend back to 0 AGL along a controlled trajectory.
- Payload is typically a remote sensing system for planetary entry, high-altitude atmospheric measurements, or similar applications.
- Payloads may require access to the external environment to make observations or obtain measurements.
- It would be desirable to have the capability of accepting pointing control and guidance commands from the payload.
- It would also be desirable to provide the payload a view of the Earth below.
- Landing should be sufficient to recover the payload intact, which may entail either a soft landing or a parachute recovery.
- In some cases, QVs may have different ascent and descent locations as part of a single flight.
- This profile is typically accomplished by use of a spacecraft or first (primary) stage of a multi-stage rocket-powered vehicle.
- Some payloads may require short durations of reduced gravity under this flight profile.

PROFILE 6 (P6): HOSTING ON ORBITAL PLATFORM

- Payloads typically are intended to operate in an orbital environment, either in a non-pressurized (exposed to the space environment) or pressurized environment.
- Qualified orbital platforms must perform a minimum of one complete orbit around the Earth, with a perigee typically > 160 km.
- The orbital platforms shall be capable of providing power and communications services to the payload. Some payloads may require pointing capabilities.
- Examples of orbital platforms include satellites or orbital stages of launch vehicles.

MISCELLANEOUS INFORMATION

- Note that balloons that fly under a CFR Part 101 exemption would not be considered QVs.
- The government does not intend for orbital payloads flown under these contracts to be deployed as free-flying elements; all will be hosted on a spacecraft for the duration of their flight test.
- This solicitation is limited to the profiles outlined in Section 6 of the PWS. Other NASA contracts are currently in place for other commercial services (e.g., testing on the lunar surface or in lunar orbit, commercial facilities on the International Space Station, orbital missions with NASA personnel.)
- For profile 6, providers are required to use FAA-licensed U.S. commercial launch services (see PWS 5.1.4). However, they are not restricted to any specific orbital launch vehicle, nor are they required to only use orbital launch vehicles that have already been used to launch their qualified vehicle.
- For any proposed approach, the spacecraft must not be Government provided, owned, or operated, and any Government service used must be unique and fully reimbursed, per PWS Section 5.2.1 – Independent Operations.
- Deployment of a Qualified Vehicle from another spacecraft in orbit
 - If free-flying Qualified Vehicle hosting a government payload is to be deployed from another spacecraft in orbit, that Qualified Vehicle must meet the requirements of section 5.1.4 of the PWS.
 - The spacecraft that is deploying the free-flying Qualified Vehicle would be considered the launch vehicle and would need to be part of an FAA-licensed U.S. commercial launch service. With few exceptions, the spacecraft that released the free-flying Qualified Vehicle is not considered part of the Qualified Vehicle.

OVERVIEW OF ORDERING (MRD/MID) PROCESS

- Each offeror awarded a contract as an outcome of this RFP will have fair opportunity to propose on Task Orders as the Government has requirements for services.
- The Task Order solicitation will include the Manifest Requirements Document (MRD), which establishes the payload operational requirements, mission performance requirements, data delivery requirements, payload access requirements, and the mission exit criteria.
- The Task Order requirements in the MRD are developed by Flight Opportunities (or other U.S. Government agency representatives using the contract).
- Based on the task requirements, qualified contractors from one or more flight profiles will have the opportunity to respond to the solicitation via a Mission Implementation Document (MID), which outlines the contractor's proposal for meeting the requirements of the MRD.
- Contractors for each task will be evaluated and selected based the criteria provided within the Task Order solicitation.

SOLICITATION OVERVIEW

- Contract Type
 - Multiple Award Indefinite Delivery/Indefinite Quantity (IDIQ)
- NAICS Code and Size Standard
 - NAICS Code: 481212 Nonscheduled Chartered Freight Air Transportation
 - Size Standard: 1,500
- Acquisition is a full and open competition
- Electronic Submission of Proposals via [NASA EFSS Box](#)

EVALUATION

- This is a competitive Price Performance Trade-off best value source selection where all evaluation factors other than price, when combined, are significantly more important than price. The evaluation factors are:
 - Technical
 - Past Performance
 - Price
- An initial review of proposals will be conducted to determine acceptability of the proposals in accordance with NFS 1815.305-70, Identification of Unacceptable Proposals. All unacceptable proposals will be eliminated from further evaluation.

NOTES ON SERVICES OFFERED AND PRICING

Definitions

- **Seat** is defined as a single seat accommodation for a human passenger. Vehicles may have one or more seats or types of seats available for purchase.
- **Slot** is defined as a single payload space. Vehicles may have one or more slots or types of slots available for purchase.
- **Standard Flight Payload Slot** is the payload space and interfaces on a QV offered as a standard commercial product by the flight services provider.

Pricing

- For Standard Services in Sections B.1 and B.2, the Offeror shall define what supplies and services are included with a "standard payload slot" and "standard seat".
- This definition shall be based on the offeror's most basic configuration with no non-standard services.
- The offeror may also propose fixed hourly labor rates for uncommon non-standard services and special projects.

CONTRACT AWARD

- The Government intends to evaluate offers and award a contract without discussions.
- The offeror must agree with all terms, conditions, and provisions included in the solicitation.
- The offeror agrees to hold the prices in its proposal firm for 180 calendar days from the date specified for receipt of proposals, unless another time period is specified in an amendment to the solicitation.

BASIS OF AWARD

- The resulting award will be a multiple award Indefinite Delivery Indefinite Quantity contract to multiple contractors.
- The Government will award contracts resulting from this solicitation using the best value continuum Price Performance Trade-Off where all evaluation factors other than price, when combined, are significantly more important than price.
- By submission of its offer, the offeror accedes to all solicitation requirements, including terms and conditions, representations and certifications, in addition to those identified as evaluation factors.

OVERVIEW OF PROVIDER QUALIFICATIONS AND ON-RAMP OPPORTUNITIES

On-Ramp

- The Government may periodically provide opportunities for additional contractors and/or Qualified Vehicles to be added to the Provider Pool (On-Ramp).
- The purpose of the On-Ramp is to create an opportunity for qualified new emerging flight service providers and for incumbent flight service providers to introduce Qualified Vehicles not available at the time of the award of the initial contract.
- The Government reserves the right to award additional contracts, i.e., to On-Ramp new contractors during the contract period of performance. This provides the Government the necessary flexibility to assess the status of the awarded contractor pool and make adjustments as necessary to ensure that an optimal mix of premier contractors is maintained in order to facilitate adequate competition on orders.
- Each anniversary date during the life of this contract or at any other time established via synopsis, the Government may issue a request for and accept proposals from new flight service providers.

Expansion of Performance Capabilities

- The Government may also consider future Expansion of Performance Capabilities covered by this contract.
- The Government reserves the right to expand the performance capabilities of the PWS requirement established under this contract, by properly soliciting proposals from all qualified sources capable of meeting the requirements in the expanded performance capabilities.

CLOSING REMARKS

- Questions are due October 16, 2023 at 12:00pm Pacific.
- Proposals are due November 1, 2023 at 12:00pm Pacific.
- Although the EFSS Box provision encourages the offeror to submit its proposal at least 24 hours prior to the due date specified in the solicitation, proposals are officially due no later than November 1, 2023 at 12:00pm Pacific.
- A revised proposal submission shall contain all information and documents as required by the solicitation and shall constitute a full replacement of any previously received proposals in its entirety.
- Briefing slides, list of attendees, and answers to questions will be posted to SAM.gov as an amendment to the solicitation.
- Any changes made to the RFP will be done through a formal amendment.
- In the event of a conflict between the solicitation and this presentation, the solicitation shall have precedence.
- Thank you for attending.

STAY ENGAGED:

[NASA.GOV/FLIGHTOPPORTUNITIES](https://www.nasa.gov/flightopportunities)

[NASA.GOV/SMALLSPACECRAFT](https://www.nasa.gov/smallcrafter)

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