



## Virtual Industry Forum

**Utilizing Public-Private Partnerships to  
Advance Tipping Point Technologies  
NNH16ZOA001N-16STMD-001**



# Tipping Point 2016 Virtual Industry Forum - Agenda



## Agenda:

- **Introduction of Presenters**
  - Jim Reuter, STMD, Deputy Associate Administrator for Programs
  - Bonnie James, STMD, Senior Investment Strategist
- **Introduction: NASA Space Technology Mission Directorate (STMD)**
- **Ground Rules**
- **Objectives**
- **Background**
- **Solicitation Overview**
- **Questions**
  - Review of submitted written Frequently Asked Questions (FAQs)
  - Review of anticipated updates to the Tipping Point Draft Appendix language
  - Verbal questions during the Q&A period of the Forum

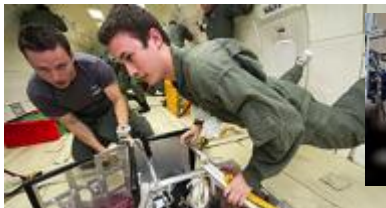
**NOTE:** Questions should be submitted to the email address listed in the solicitation:  
[HQ-STMD-TippingPointAppendix@nasaprs.com](mailto:HQ-STMD-TippingPointAppendix@nasaprs.com)



# Space Technology... .... an Investment for the Future

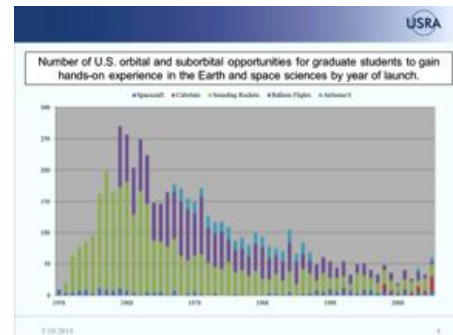


- Enables **new NASA missions** beyond low Earth Orbit.
- **Delivers innovative solutions** that dramatically improve technological capabilities for NASA and the Nation.
- Develops technologies and capabilities that make NASA's missions **more affordable and more reliable**.
- **Engages the brightest minds** from academia and industry, including small businesses, in solving NASA's tough technological challenges.
- Invests in the economy by **creating markets and spurring innovation** for traditional and emerging aerospace business.



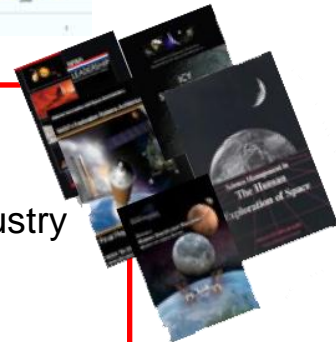
## Addresses National Needs

A generation of studies and reports (40+ since 1980) document the need for regular investment in new, transformative space technologies.



## Who:

- ✓ The NASA Workforce
- ✓ Commercial Space / Industry
- ✓ Academia
- ✓ Small Businesses
- ✓ Other Government Agency partners







# Space Technology Pipeline



## Early Stage

- NASA Innovative Advanced Concepts
- Space Tech Research Grants
- Center Innovation Fund

Low TRL

Mid TRL

Game Changing Development

Small Spacecraft Technologies

## Commercial Partnerships

- SBIR /STTR
- Flight Opportunities
- Centennial Challenges
- Regional Economic Development

High TRL

Technology Demonstration Missions

TECHNOLOGY PIPELINE



# Tipping Point 2016

## Virtual Industry Forum - Ground Rules



### Ground Rules:

- Questions and comments about anything pertaining to this solicitation, including the Virtual Industry Forum, should be submitted via email to:  
[HQ-STMD-TippingPointAppendix@nasaprs.com](mailto:HQ-STMD-TippingPointAppendix@nasaprs.com)
- NASA will make every attempt to address questions during this teleconference to clarify the content of the solicitation.
- Questions that require further assessment will be resolved as soon as possible after the Forum, and the answers will be posted to the Frequently Asked Questions (FAQ) page on NSPIRES.
- The Q&As outlined in the FAQs on NSPIRES take precedence over all verbal discussions. Please refer to the FAQs for official NASA responses.
- NASA will not provide evaluations, opinions, or recommendations regarding potential space technology development proposals.

**NOTE:** Charts presented today will be available on the website listed in the solicitation: <http://www.nasa.gov/feature/opportunities-to-foster-commercial-space-technologies>



# Tipping Point 2016

## Virtual Industry Forum - Objectives



### Objectives:

- Goal/Intent of this Solicitation
  - NASA continues to embrace public-private partnerships to achieve its strategic goals for expanding capabilities and opportunities in space.
  - A key aspect of NASA's strategy is to stimulate the commercial space industry while leveraging those same commercial capabilities through public-private partnerships to deliver technologies and capabilities needed for future NASA, other government agency, and commercial missions.
- Objectives of the Virtual Industry Forum
  - Provide an overview of the draft solicitation released June 28, 2016
  - Address questions from potential offerors
  - Prepare for the Final Appendix to be released in August



# Tipping Point 2016

## Virtual Industry Forum - Background



### Background:

- Definition of “Tipping Point”
  - For the purpose of this solicitation, a space technology is at a tipping point if an investment in a ground development/demonstration or a flight demonstration will result in:
    - a significant advancement of the technology’s maturation, and
    - a high likelihood for utilization of the technology in a commercial space application, and
    - a significant improvement in the offerors’ ability to successfully bring the space technology to market.
- NASA is interested in advancing these new capabilities to a point that industry would complete and qualify them for market without further government investments.
- These technologies should provide a substantial benefit to both the commercial and government sectors once the development/demonstration project completes.



## Tipping Point 2016 Virtual Industry Forum - Background



### **Background (continued):**

- Market Research
  - In selecting topics, STMD considered responses received from the Commercial Space Technology Development Request for Information (RFI), other recently released RFIs, as well as existing investments within NASA's technology portfolio for commercial space applications.
  - STMD has also developed a “sister” solicitation that embraces public-private partnerships through U.S. industry-led technology advancement efforts, the Announcement of Collaborative Opportunity (ACO). Last year the Tipping Point solicitation and the ACO solicitation were released together. This year, the Tipping Point is being released in 2016 and it is anticipated that the ACO will be released in 2017. The ACO focuses on partnership between NASA and industry through the award of non-reimbursable Space Act Agreements (SAAs) that will accelerate the availability and reduce costs for the development and infusion of emerging capabilities.
  - Results of Market Research will also be utilized to inform topic selection for the 2017 ACO solicitation.





# Tipping Point 2016

## Virtual Industry Forum - Background



### Background (continued):

- (2) Technology Topics for this solicitation:

Technology Topic	Entry TRL	Anticipated Number of Awards	Value of Each Award	Period of Performance
Topic 1: Small Launch Vehicle Technology Development	4	up to 5	up to \$2M per award	up to 24 months
Topic 2: Small Satellite Mission Technology Demonstration	5	up to 2	up to \$2.5M per award	up to 24 months

[Tipping Point Draft Appendix on NSPIRES:](https://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=521093/solicitationId=%7BBE75A742-ACD0-372F-26BF-0E955877EF6C%7D/viewSolicitationDocument=1/DRAFT%20NNH16ZOA001N-16STMD_001%206-28-2016.pdf)

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# Tipping Point 2016

## Virtual Industry Forum - Solicitation Overview



### **Solicitation Overview:**

- Proposed efforts must be led by U.S. industry defined as for-profit businesses that are incorporated in the United States.
  - However, this does not preclude U.S. for-profit companies that are incorporated and operate in the U.S. and also have an affiliation with a foreign firm.
- NASA will not consider proposals that do not include a U.S. industry business as the lead proposer.
- A lead offeror is defined as the proposing organization that will be entering into a contractual relationship with the Government.
- Offerors are encouraged to propose teaming arrangements that optimize the potential for rapid development & infusion of the space technology.
  - Teaming partners must also be U.S. domestic entities. However, this does not preclude teaming with U.S. for-profit companies that are incorporated and operate in the U.S. and also have an affiliation with a foreign entity. Also, it does not preclude teaming with non-profit U.S. domestic entities that operate in the U.S. and also have an affiliation with a foreign entity. The System for Award Management ([sam.gov](http://sam.gov)) will be reviewed to determine an offeror's country of incorporation.



# Tipping Point 2016

## Virtual Industry Forum - Solicitation Overview



### **Solicitation Overview (continued):**

- Lead offerors may act as partners on other lead proposals. However, an offeror can only be a lead on one proposal per topic. Individual proposals may NOT cross topics.
- Award Details
  - Firm-Fixed Priced contracts with milestone payments tied to technical achievement.
- Key Dates to Remember
  - Final Appendix Release: August 10, 2016 (*Target*)
  - *NOI (not required, but strongly encouraged) – due August 24, 2016*
  - *Proposals - due by 5:00pm Eastern on September 29, 2016*
- Submittal Process
  - All proposals submitted in response to this solicitation must be submitted by the Authorized Organizational Representative (AOR) at the proposing organization who is authorized to make such a submission.
  - All proposals submitted must be in electronic form. No hardcopies will be accepted.
  - Please start the NSPIRES submittal process as early as possible.



### Solicitation Overview (continued):

#### •Required Industry Contribution

- For this solicitation, **all proposals require an industry contribution of at least 25% of the total price of the project.**
- Contributions may be in the form of direct labor, travel, consumables or other in-kind contributions that directly advance the objectives of the proposed effort.
- Contributions coming from government organizations **WILL NOT** count towards the 25% requirement (U.S. Government contributions may count for contributions in excess of the 25%).
- Industry contributions must:
  - ❖ be met during the awarded period of performance
  - ❖ provide for a necessary element advancing the project objectives
  - ❖ be quantifiable and documented
  - ❖ be incurred **AFTER** the period of performance start date in the contract (i.e. “Sunk” costs are NOT allowable in calculating Industry Contribution.)





# Tipping Point 2016

## Virtual Industry Forum - Solicitation Overview



### Solicitation Overview (continued):

- Required Industry Contribution (continued)
  - Contributions of greater than 25% are strongly encouraged and will strengthen the Price evaluation criterion.
  - Non-cash contribution for the project may be counted at the time-use equivalent current fair market value, even though it may have been acquired at some point in the past.
  - Development costs for an item or a service that were incurred prior to the period of performance start date of the contract **cannot** be counted as a contribution.
  - Contributions include, but are not limited to:
    - ❖ donated equipment/property/facilities by an external source,
    - ❖ third party funded non-cash contributions,
    - ❖ funding from a third party other than a government entity.



### **Solicitation Overview (continued):**

- Proposal Content
  - Quad chart: this one page summary is required; specific details provided in solicitation; quad chart does not count against page limit.
  - Quad chart should not include restricted information (ITAR, company proprietary, sensitive).
  - Quad chart template isn't included in the solicitation, but is available at <http://www.nasa.gov/feature/opportunities-to-foster-commercial-space-technologies>
  - Technical and Management Section
    - ❖ Relevance
    - ❖ Technical and Management Approaches
  - Price Section
  - Evaluation Criteria (equally weighted)
    - Relevance
    - Technical and Management Approaches
    - Price



## Tipping Point 2016 Virtual Industry Forum - FAQs



**Question: Comments:** Are you only accepting comments from potential responders or can NASA centers also provide comments?

**Answer:** Comments are welcome from anyone.

**Question: Development Costs:** Can development costs for the vehicle bus and/or payloads that have been incurred prior to the period of performance be counted as a contribution for the purpose of the 25% industry cost share?

**Answer:** Section 4.0, subparagraph 3B states: Development costs for an item or a service that were incurred prior to the period of performance start date of the contract **cannot** be counted as a contribution.



**Question: TRL:** Both topics have an Entry TRL listed. At what point in the program does the technology need to be at that TRL? At the time of the proposal submissions? Or could a technology be considered eligible if you have a credible, funded plan for getting it to that TRL by the time of contract selection? or by the time of start of contract?

**Answer:** The table shown in Section 2.1 states the Entry TRL for each Topic. The Entry TRL is defined as the minimum TRL required at time of proposal submission. NASA anticipates making a language change to the final Tipping Point Appendix.

**Question: Contract Value:** Is “Net Price NASA Pays” (page 37) the same as “firm-fixed –price contract value” (page 19)? Are these also the same as “Value of Each Award” (page 10)?

**Answer:** “Net Price NASA Pays” (Page 37) is the same as “firm-fixed-price contract value” on page 19 and “Value of Each Award” (page 10). NASA anticipates making a language change to the final Tipping Point Appendix.





**Question: Options:** Since the total firm-fixed-price of the proposal needs to remain within the constraints of the table in Section 2.1 (Page 10), but NASA is seeking to maximize the value of its investment, is option pricing acceptable in the offer?

**Answer:** Options are not acceptable. NASA anticipates making a language change to the final Tipping Point Appendix.

**Question: Options:** Can a bidder propose base scope with options that, in total, are less than or equal to the maximum award value? The intent would be to allow NASA to select portions of the development that it is interested in for funding.

**Answer:** Options are not acceptable. The offeror should propose the full scope of the effort, but must stay within the maximum award value noted in the Appendix. NASA anticipates making a language change to the final Tipping Point Appendix.



**Question: SBIR/STTR Funding:** In Section 3.5, it is stated that “selectees under this Tipping Point solicitation that have a qualifying Phase II are encouraged to also apply ... for an SBIR/STTR Phase II-E or Phase II-X ...” Is this limited to NASA or does it include DARPA, Air Force, etc. as well?

**Answer:** Technology efforts funded through the Tipping Point solicitation may be applicable to other government agency post Phase II initiative opportunities, but they are managed by the respective agency’s SBIR program (DARPA, Air Force, etc.). Any questions on eligibility or process should be discussed directly with those agencies. NASA anticipates making a language change to the final Tipping Point Appendix.

**Question: Subcontractor Limits:** We understand there is a limitation of one proposal per company per topic. Is there also a limitation to the number of proposals for which a company can be a subcontractor to another company’s proposal?

**Answer:** As stated in Section 3.1: “Lead offerors may act as partners on other lead proposals. A lead offeror is defined as the proposing organization that will be entering into a contractual relationship with the Government. However, an offeror can only be a lead on one proposal per topic. Individual proposals may NOT cross topics.” There is no limitation to the number of proposals for which a company can act as a subcontractor. NASA anticipates making a language change to the final Tipping Point Appendix.



**Question: Topic 1:** The intended end application and platform for demonstration of our technology is focused primarily toward in-space exploration rather than a small launcher. Is there flexibility in this appendix to allow demonstrations on in-space platforms?

**Answer:** The scope of the topic is the development of small launch vehicle technologies that can significantly enable the emerging small launch vehicle market. If your technology has broad applications beyond enabling frequent launches of small spacecraft to LEO it would be considered within scope. However, the emphasis should be on addressing the use case described in the Topic. NASA anticipates making a language change to the final Tipping Point Appendix.

**Question: For Topic 1,** is there any preference to either smaller scope, component/subsystem-level projects with more focus on individual technology element demonstrations/tests versus larger scope projects focused on full-scale, integrated system development?

**Answer:** Both types of projects are welcome. As outlined in the Topic 1 descriptions, NASA is interested in a broad range of small launch vehicle technologies that can significantly enable the emerging small launch vehicle market. NASA anticipates making a language change to the final Tipping Point Appendix.



**Question: Topic 1:** At the end of the Technology Topic 1, suborbital technology demonstrations are referenced. The wording states that purchasing these services are the responsibility of the offeror. Does this mean that proposers would be precluded from proposing to the flight opportunities program for flights which may enhance the proposed development program?

**Answer:** Proposers to this solicitation would not be precluded from proposing to the STMD Flight Opportunities Program opportunities or other STMD funding opportunities. NASA anticipates making a language change to the final Tipping Point Appendix.





**Question:** The term in **Topic 2** “satellite” implies applications limited to orbiting the Earth or other bodies. Some cubesat missions could have outward bound trajectories toward the asteroid belt or even planned impacts. We suggest using the term “small spacecraft”.

**Answer:** Agreed. NASA anticipates making a language change to the final Tipping Point Appendix.

**Question: Topic 2:** While there is mention of possible mission applications for locations beyond Low Earth Orbit, there is no mention of the associated propulsion for these missions, only propulsion for proximity operations and orbital maneuvers. We suggest adding "in-space propulsion".

**Answer:** Agreed. NASA anticipates making a language change to the final Tipping Point Appendix.

**Question: Topic 2:** While there is mention of possible biological and physical sciences missions, there is no mention of enabling technologies for sample return. We suggest adding "enabling technologies for sample return" in the biological and physical sciences missions section.

**Answer:** Agreed. NASA anticipates making a language change to the final Tipping Point Appendix.



**Question: Topic 2:** Page iii and page 7 state that “a space technology is at a tipping point if an investment in a ground development/demonstration or a flight demonstration will result in a significant advancement of the technology’s maturation ...” However, in Section 1.3.2 Topic 2: Small Satellite Technology Flight Demonstration Mission, page 9, it is stated that the objective of this topic “... is to advance small spacecraft capabilities through a flight demonstration ...” Would NASA STMD consider revising the objective of this topic to include ground demos as well as flight demonstrations?

**Answer:** The objective of Topic 2 is to advance small spacecraft capabilities through a flight demonstration. A ground demonstration or non-flight demonstration only is not within the scope of this Topic. NASA anticipates making a language change.

**Question: Topic 2:** The Draft appendix seems to suggest that the opportunities for integration are primarily used for the launch vehicle but omits the specific phrasing to use the technology for deep space payload utilization. Is this considered in scope?

**Answer:** The scope of the topic is the development of small launch vehicle technologies that can significantly enable the emerging small launch vehicle market. If your technology has broad applications beyond enabling frequent launches of small spacecraft to LEO, it would be considered within scope. However, the emphasis should be on addressing the use case described in the Topic. NASA anticipates making a language change.



**Question: Topic 2:** For a tech demo, do the launch and beginning of data acquisition need to fit within the 24 month period of performance, or does the complete demo and data reduction need to fit?

**Answer:** NASA anticipates making a language change to the final Tipping Point Appendix.

**Question: Topic 2:** In reference to the 24 month period of performance-- what if the technology demonstration takes a long time? If the mission must be completed within 24 months, can an extended mission be part of our cost share?

**Answer:** The complete industry contribution requirement must be realized during the maximum awarded period of performance. NASA anticipates making a language change to the final Tipping Point Appendix.



**Question: Topic 2:** When you say on page 9 "Small satellite flight demonstrations proposed under this topic should include a complete, end-to-end mission," is a technology demonstration mission applicable? I.e., if the technologies you wanted to infuse related to cubesat propulsion, would a mission where the cubesat executed maneuvers similar to future missions be applicable? Or does it need to be wrapped into a more sophisticated mission involving some sort of scientific payload in addition to the technology you're trying to demonstrate?

**Answer:** Topic 2 pertains to a flight demonstration of a mission-capable technology system, not an operational mission. NASA anticipates making a language change to the final Tipping Point Appendix.





## Tipping Point 2016 Virtual Industry Forum - Conclusion



Please submit questions to the email listed in the solicitation:

[HQ-STMD-TippingPointAppendix@nasaprs.com](mailto:HQ-STMD-TippingPointAppendix@nasaprs.com)

Answers to questions will be posted to the FAQ page on NSPIRES:

Charts presented today will be available on the website listed in the solicitation:  
<http://www.nasa.gov/feature/opportunities-to-foster-commercial-space-technologies>

Please periodically check this website for any further updates.

The targeted release date for the final Tipping Point 2016 Appendix is August 10, 2016.

Thank you very much for your participation today.