

Lunar Terrain Vehicle (LTV) Services (LTVS)

Industry Day Questions and Answers – Batch 1

No.	Question	Answer
1.	Is it possible for NASA to share with community market research that has been done and information on the commercial approach? How has NASA evaluated growth of lunar market? As part of working through market community, industry looks into what does the growth cycle look like; when does NASA investment come down and when does commercial investment ramp up? Does NASA have that sort of data, and can NASA share that. Did NASA conduct internal assessments that can be shared?	NASA has received feedback from several different sources that has shaped the acquisition approach. This feedback was in the form of two Requests for Information (RFIs) and several one-on-one discussions with Industry. We are not able to share the information Industry has provided NASA as part of those activities; however, a NASA-funded study on the Demand Drivers of the Lunar and Cislunar Economy is publicly available at the following website: https://www.ida.org/-/media/feature/publications/d/de/demand-drivers-of-the-lunar-and-cislunar-economy/d-13219.pdf . We do intend to acquire the LTV as a service utilizing FAR Part 15 procedures, as opposed to FAR Part 12 procedures. The expectation is that NASA will have to help the development of the lunar marketplace. As the market develops, the Government's investment is expected to decrease.
2.	Describe cargo scenario for use of the vehicle or the 800 kg logistics requirement. Are these cargo expected to provide any infrastructure roles (like cable laying, etc.)?	The 800 kg requirement is for the crew, cargo/payloads immediately supporting the extravehicular activity (EVA), and the base NASA science payloads on LTV. Some of the cargo use cases are moving cargo from delivery to basecamp or transporting alongside the pressurized rover. LTV is not expected to offload, just transport. Future Artemis infrastructure demands are still in development and the LTV requirements are written to envelope the current Artemis needs while remaining flexible for future mission requirements.

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		The LTV System Requirement Document and associated Interface Requirement Documents will provide enveloping requirements.
3.	How much launch/lander definition will be brought forward during the Refined phase?	NASA expects the proposal should include details about launch vehicle and lander and how the LTV will be offloaded from the lander. Initial vehicle selection is important, and it is understood that as the LTV design matures, some of the information may change. During the initial project phase, it is expected that specific attention will be devoted to understanding all aspects of delivery with reviews devoted to focusing on this technical area.
4.	Is August 2028 when the crew shows up for utilization, or is that the start of the second phase?	August 2028 is the date for certification/checkout/validation and initial demonstration for surface. We expect LTV to be pre-positioned before crew arrival.
5.	Additional functional checkout would be required for things that only the crew could do, such as crew interfaces, steering controllers, etc. Does any initial checkout requiring crew handling/presence count against the crew time allocation? (Maintenance times of 1 hr, 4 hr.)	NASA will consider improving the definition within the Draft Request for Proposal (DRFP) and Final RFP of what is included in the maintenance time, in terms of crew time, and whether functional checkout is included (first time as well as on-going).
6.	This question relates to lighting, recharge capability in long shadows, and pathways. Once vertical solar arrays are available, is there a plan to pre-position along exploration routes and have vehicle charge stations?	The architecture strategy, including power consumption, is still in the process of being formalized and is not expected to be understood to the fidelity being requested by this question in advance of the Draft RFP and Final RFP. NASA will include requirements within the Draft RFP and Final RFP for power exchange, loads, etc. These requirements will be written to envelope the current Artemis needs while remaining flexible for future mission requirements. NASA is targeting November 2022 for issuance of the Draft RFP and February 2023 for issuance of the Final RFP.
7.	Is LTV open to different ideas on risk management approach, for example considering cost-plus as opposed to firm-fixed-price?	NASA's current strategy based on market research performed to-date is to pursue a multi-award Indefinite-Delivery, Indefinite-Quantity (IDIQ) contract with firm-fixed-price

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		(FFP) task orders. Industry may provide feedback to the contract type and risk management approach in its response to the Industry Day presentation or Draft RFP for the Government's consideration.
8.	What is the anticipated scope of the representative task order to be issued at IDIQ contract award for the "Refine the Service" phase of the contract?	The "Refine the Service" phase is anticipated to consist of the initial task order for the LTV Services Feasibility Special Task. The scope of the LTV Services Feasibility Special Task is anticipated to include maturation of the detailed approach to end-to-end LTV Services, including architecture and commercialization, as well as LTV mockup Human-in-the-Loop (HITL) evaluation at NASA Johnson Space Center. Please see page 48 of the LTV Industry Day Presentation for further details.
9.	Is LTV anticipated to have multiple providers and task orders?	NASA intends to award multiple IDIQ contracts to create a pool of pre-qualified contractors capable of providing end-to-end LTV Services when issued competitive FFP task orders. NASA also intends to have the capability to on-ramp additional vendors throughout the period of performance of the contract. While NASA anticipates awarding IDIQ contracts along with initial LTV Services Feasibility task orders ("Refine the Service") to multiple contractors, NASA anticipates the task order for the LTV Demonstration phase ("Enable the Service") may only be issued to one vendor based on budgetary restrictions. However, the ultimate number of offerors to be awarded an IDIQ contract, issued a LTV Demonstration task order, and/or to be on-ramped during contract performance will be dependent on the quality and price of proposals received as well as NASA's available budget.
10.	When will crew interface / EVA Suit information be provided?	NASA intends to draft an EVA to LTV Interface Requirements Document (IRD), but it is not yet complete. The details on the interfaces are still under development in the xEVAS contracts. At the start of the LTVS contract, NASA

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		anticipates that the xEVAS and LTV vendors will work together under the required Associate Contractor Agreement (ACA) to develop interface details. For LTVS work, NASA anticipates flexibility for suit constraints because the xEVAS the suits will be required to interface with multiple systems across NASA Programs.
11.	Regarding payments for the LTV contract, is NASA contemplating an incremental payment approach during the task order period of performance?	NASA intends to provide performance-based payments upon successful completion of milestones defined at the task order level.
12.	How many task orders does NASA plan to issue during the utilization phase?	The number of task orders to be issued during the utilization phase has not yet been determined and will depend on NASA's mission needs during the utilization phase.
13.	The Lunar Economy is an emerging market with the commercial business case being highly speculative. Does NASA plan to mitigate risk with guaranteed utilization phase buys?	NASA intends to include terms and conditions within the DRFP and Final RFP to address the anticipated approach to providing a guaranteed minimum for the IDIQ contract(s) resulting from this procurement. Industry may provide feedback relative to the guaranteed minimum for the Government's consideration.
14.	During the Refine and Enable contract phases, does NASA expect to pay for any of the development, test, launch, and landing costs of the LTV?	NASA intends to provide performance-based payments upon successful completion of milestones defined at the task order level throughout each of the "Refine," "Enable," and "Utilize" phases. The level of corporate investment and/or commercialization that will inform the pricing proposed will be the decision of the offerors in preparing their competitive proposals.
15.	To include NASA in the LTV development, NASA must commit planned resources to the LTV schedule. The contractor then has an external dependency on NASA for cost, technical, and schedule success. What can NASA do to ensure that resources will not be redirected or to provide schedule relief to the contractor(s) if NASA cannot meet its obligation?	NASA intends to include terms and conditions within the DRFP and Final RFP to address the anticipated approach to providing a guaranteed minimum for the IDIQ contract(s) resulting from this procurement. Additionally, the Draft RFP will include terms and conditions that define the obligations of the Government relative to obligating funding to the contract(s). Industry may provide feedback relative to these

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		Draft RFP terms and conditions for the Government's consideration.
16.	Could NASA provide a copy of the H Clause referenced within the GTA Instructions titled “Use of NASA Resources”?	The Draft Request for Proposal is anticipated to include the "Use of NASA Resources" clause referenced in within the GTA Instructions.
17.	All contractors could use NASA guidance and consultation on lunar terrain and environmental considerations affecting LTV design and operations. Will NASA establish a Lunar Terrain and Environmental Working group led by NASA that all competitors and eventual winning offerors can be a part of?	NASA intends to support all contractors to the greatest extent possible to help understand the LTV operational environment. It is too early to predict the specific form that the support will take and a working group is one option.
18.	Would it be possible for vendors to scope their design? System Requirements Review (SRR) subtask to refine budget to support what is being asked for, sooner than preliminary design review (PDR)?	The DRFP is anticipated to address NASA's approach to requesting pricing from the offerors which is anticipated to request firm pricing for the initial task order as well not-to-exceed (NTE) values to address proposed pricing for the entirety of the contract scope, including mission services. Industry may provide feedback relative to this approach for NASA's consideration.
19.	Can you please confirm the task order structure? Will Refine, Enable, and Utilize be separate TOs?	Yes, separate task orders will be issued under each of the Contract Line Item Numbers (CLINs) and SubCLINs to support the "Refine," "Enable," and "Utilize" phases of contract performance. Please see page 54 of the LTV Industry Day Presentation for further details regarding the notional CLIN structure for this procurement.
20.	Is LTV looking for multiple vendors? Are you able to say how many awardees there will be for each phase? How many selected in IDIQ?	NASA intends to award multiple IDIQ contracts to create a pool of pre-qualified contractors capable of providing end-to-end LTV Services when issued competitive FFP task orders. NASA also intends to have the capability to on-ramp additional vendors throughout the period of performance of the contract. While NASA anticipates awarding IDIQ contracts along with initial LTV Services Feasibility task orders (“Refine the Service”) to multiple contractors, NASA anticipates the task order for the LTV Demonstration phase

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		<p>(“Enable the Service”) may only be issued to one vendor based on budgetary restrictions. However, the ultimate number of offerors to be awarded an IDIQ contract, issued a LTV Demonstration task order, and/or to be on-ramped during contract performance will be dependent on the quality and price of proposals received as well as NASA's available budget.</p>
21.	<p>What is LTV strategy to avoid incentivizing bad behavior from vendors to under bid initial TOs? Will the Utilize TO only be to one vendor? Recommendations: Include technical confidence assessment, financial confidence assessment (delta between cost and budget)? Award more than one at Utilization stage (NTE might help, but NASA may still get stuck paying whatever bill the vendor charges).</p>	<p>The Draft RFP is anticipated to request not-to-exceed (NTE) values from offerors to address proposed pricing for the entirety of the contract scope, including mission services. The DRFP will detail the Government's instructions and evaluation criteria to ensure the Government is able to adequately assess the reasonableness of the offerors' proposals. The Draft RFP is also anticipated to include clause(s) to address the on-ramp and off-ramp of vendors during contract performance. Additionally, the IDIQ contract type will enable the opportunity to have multiple LTVs on the lunar surface. The Government will consider the feedback provided in this question and welcomes Industry feedback to the terms and conditions to be included in the DRFP.</p>
22.	<p>Are the percentages of NASA and commercial time allocations in Standard Mission A and Standard Mission B indicative of the amount of cost sharing anticipated between NASA and industry?</p> <p>Does NASA have and assumption on what percentage commercialization is required for budget purposes?</p>	<p>The time allocation for Standard Mission A and Standard Mission B provides the split for when NASA is determining what the LTV will be doing vs. when Industry will be determining what LTV is doing. The durations are not an assumption on the amount of cost sharing between NASA and Industry.</p> <p>NASA does not plan to dictate an amount of required cost sharing. The offerors are able to propose whatever level of commercialization they see possible and achievable.</p>
23.	<p>Is there any way to restructure the nature of the logistic cargo containers? The concern is that may require a trailer</p>	<p>NASA will release the anticipated envelope for the ~400kg Logistics Containers at LTV DRFP.</p>

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	or something else to transport, in turn requiring multiple launches and a lander that doesn't exist yet.	<p>The LTV Contractors will be able to trade how the containers are moved by LTV (onboard, trailer, tow hitch, etc.)</p> <p>Industry is invited to provide suggestions in response to the LTV DRFP.</p>
24.	Will NASA intend to evaluate offerors' financial plans and commercial model to protect against underbidding?	The DRFP is anticipated to fully detail the Government's instructions and evaluation criteria and will leverage lessons learned from other NASA contracts. The Government will consider the feedback provided in this question and welcomes Industry feedback to the terms and conditions to be included in the DRFP.
25.	What type of protection and security/cybersecurity requirements are considered to mitigate concerns with leaving assets on surface for a period of time?	Additional guidance related to this is anticipated to be included in the DRFP and NASA welcomes any feedback industry is able to provide in response to the DRFP.
26.	Is delivery to surface of the moon included in the task order? Are you looking for vendors to provide multiple options for that?	NASA's intent is to request end-to-end services that include delivery from to the lunar surface and offloading. It is anticipated that Offerors will be able to include alternate options for delivery to the surface as part of the response to the RFP.
27.	How will maintenance be handled if there is a breakdown of a vehicle intending to be there long-term? Is the vendor responsible for that?	Maintenance is expected to be included in the end-to-end services for the LTV. It is anticipated that limited crew time will be available to ensure continued operation of the LTV as presented in the Industry Day charts and will be outlined in the DRFP.
28.	Will maintenance/servicing tools be required from the vendor or will there be a separate solicitation?	<p>NASA's intent is to define the list of tools that will be available for use on the lunar surface. It is anticipated that this list will be very limited. Effort should be made to minimize the need for any unique tool and tool-less part changeout would be ideal.</p> <p>If the LTV requires a tool to perform an LTV-unique task, then that tool will be considered part for the LTV system. As</p>

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		an analogy, the jack that comes with your vehicle is part of the vehicle system.
29.	Does Mass allocation include human delivery and spare parts etc.? Toolkit or toolbox as a separate TO? We can fly spare parts/tools, but we might not anticipate what will actually break/tools are needed, so sending with a crew mission would make sense. is there availability to manifest LTV spares with the EVA crew if an unplanned need arises?	NASA wants minimal maintenance tools on the surface; the goal is to have common toolkits to help inform design decisions as much as possible. Discussions have started on how to co-manifest with the crew, this is not defined yet and may not materialize. There are many issues in play; NASA may be able to allocate a portion of a cargo mission for LTV, but we would have to work through specifics on that internally on a case-by-case basis.
30.	Can you please provide information on integration with EVA Suit?	NASA expects the LTV contractors to interface directly with the xEVAS contractors. NASA anticipates providing xEVAS documents in the library of information provided during the DRFP and Final RFP. Due to the timing of the xEVAS contract, specific information is still limited on what information will be available and when.
31.	Can there be two-way communication between LTV and Suit vendors? Can this happen prior to award to help build proposal?	Yes, vendors interested in proposing to build LTV are free to engage directly with the xEVAS providers at any time. It is the offerors' responsibility to form any relationships necessary to support development of their proposals.
32.	What are assumptions about power sources in 2028?	LTV is currently required to be energy self-sufficient. LTV is the first asset in the sustained lunar surface architecture so it should be self-sufficient.
33.	Can teams bring their own communication system/relay satellite? Is it true that a use case is to drive to a landing site to film/record the crew arrival?	NASA is open to teams proposing as they see fit. Offerors should be reaching out to Space Communications and Navigation (SCaN) and other teams because any communication proposal will need to be integrated. The DRFP and RFP are anticipated to indicate what communication assets NASA thinks will be available; it will be up to offerors to decide if they need/want to provide

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		capabilities beyond that. Yes, LTV driving to a landing site to film/record the crew arrival is a usage case.
34.	Is there any chance for offloading the science requirement or flexibility to have a science version and a crew version of the rover? The way the document is written, there's flexibility on how many vehicles can be proposed. Does the science requirement have to be on the same rover or could it be on a separate vehicle? Might help with budget requirement. Make sure requirements are written to enable that flexibility. NASA is thinking of cost savings of putting everything on one rover, but this might greatly increase launch/delivery costs.	The Draft RFP and Final RFP are anticipated to be written such that the offeror has flexibility in proposing its approach to meeting NASA's requirements for LTV Services, including NASA's requirements to support both NASA crewed extravehicular activity (EVA) expeditions and NASA uncrewed science/exploration expeditions within the Standard Mission Service Task Orders. NASA's requirements are intended to be written at a level that enables flexibility in design and supports specific capabilities during different mission phases. As such, it will be up to the offerors to propose whether a single LTV will be utilized to meet the requirements for both crewed and uncrewed expeditions or if separate LTVs will be proposed.
35.	Is it anticipated that every Proposer will not be receiving same amount of money during LTV Feasibility (Refine the Service) & LTV Demonstration (Enable the Service) phase? Is there a cap on price that can be proposed for those LTV Mission Phases?	Successful awardees will be awarded an initial task order based on the initial task order pricing in their proposal and subsequent task orders would be issued based on the pricing from their proposal that is incorporated into the awarded contract's pricing tables. As such, the prices for each successful awardee would be anticipated to be different. NASA is not planning on having a cap on the price that can be proposed; however NASA, like other entities, must operate within a budget.
36.	In terms of the CLIN structure for the actual proposal what will be asked for in terms of firm fixed pricing? In the RFP, there's CLIN 1s, CLIN 2s, for actual proposal, what will be asking for in terms of FFP for this round. Will it be all parts?	The DRFP is anticipated to address NASA's approach to requesting pricing from the offerors which is anticipated to request firm pricing for the initial task order as well not-to-exceed (NTE) values to address proposed pricing for the entirety of the contract scope, including mission services. Industry may provide feedback relative to this approach for NASA's consideration.

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37.	Regarding the evaluation of proposals, how will NASA take into account the different missions in price (e.g. Standard Mission A and B mission types)?	The DRFP is planned to include details regarding instructions to offerors, which will address how pricing should be provided for the Standard Missions (types A and B). The DRFP is also planned to include evaluation criteria for how the Government will evaluate proposals, including the evaluation of pricing.
38.	For going through DDT&E on milestones payments, is there any guarantee which Missions will be awarded?	<p>NASA intends to provide performance-based payments upon successful completion of milestones defined at the task order level throughout each of the "Refine," "Enable," and "Utilize" phases. Work plans are anticipated to be utilized to define milestones at each task order level and milestone payments will be paid at the task order level.</p> <p>Regarding the guarantee of missions to be awarded, NASA intends to include terms and conditions within the DRFP and Final RFP to address the anticipated approach to providing a guaranteed minimum for the IDIQ contract(s) resulting from this procurement. Industry may provide feedback relative to the guaranteed minimum for the Government's consideration.</p>
39.	Will NASA have a guarantee mission buy of TBD Standard Mission A/B for contractors that are awarded CLIN 1A?	NASA intends to include terms and conditions within the DRFP and Final RFP to address the anticipated approach to providing a guaranteed minimum for the IDIQ contract(s) resulting from this procurement. Industry may provide feedback relative to the guaranteed minimum for the Government's consideration.
40.	What is NASA overall thinking for overall business case baseline? Over 10-year period how many Mission A vs. Mission B will there be? What is vendor ability to control that time? Will NASA have first right of refusal?	See page 53 of the Industry Day presentation for further details regarding the examples of the refined annual timeline for standard mission services. NASA intends to issue a minimum of 10 task orders during the utilization phase. Details are planned to be provided in the DRFP relative to terms and conditions regarding rights the parties during standard mission services. Industry feedback is welcome in response to the DRFP.

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41.	Will NASA force a prescribed mission, or first right of refusal on Mission A vs B.	<p>When NASA releases a Task Order for the surface mission duration, NASA plans to indicate to the contractor the following items:</p> <ul style="list-style-type: none"> 1) Duration and preliminary timing of Crewed Mission 2) Expected Long Duration Traverses that can take 3 weeks of more to perform. <p>The crewed mission will be the top priority during the surface mission duration and will likely move around some. The Contractor and NASA will have to actively work together to perform mission planning.</p> <p>NASA does intend for the crewed mission duration to be top priority, followed by expected long duration traverses.</p> <p>NASA does not intend to mandate anything like first right of refusal. NASA plans to dictate that the crew and expected long duration traverses are highest priority and then actively work with the contractor to establish day-to-day activities and objectives.</p>
42.	Will base camp be a prepared area? Will it have a 20-degree slope? If logistics would be moved around locally to basecamp, probably wouldn't have to handle 20 deg slopes with heavy cargo.	<p>NASA is still evaluating and trading the possible locations for Artemis base camp. It is unknown at this point what the slope of the terrain will be like at Artemis Base Camp.</p> <p>Logistic carriers will need to be moved from the landing locations to Artemis Base Camp, the Pressurized Rover, or other possible locations. Knowledge of the terrain that needs to be traversed between the Landing Locations and where NASA will utilize the Logistics carriers will be worked throughout the Artemis mission, so the LTV will need to be able to handle the 20 degree slopes while transporting the Large Logistics Carriers.</p>

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43.	What is the anticipated turnaround time for NASA to provide answers to all the questions received from Industry Day, the 1 on 1 sessions, and written correspondence from Industry?	The cut-off date for Industry Day responses was 9/8/2022. NASA will plan to provide responses to the questions in batches as soon as answers are available.
44.	What happens if NASA breaks something when NASA is using the LTV? Have you worked out plans for insurance? Who is responsible, who is control, etc.?	NASA is assessing potential approaches to address liability and insurance requirements and welcomes inputs from Industry for NASA's consideration on this complex topic, including specific cases or scenarios where different liability would be at play specific to the LTV requirements.
45.	Is there consideration for having multiple rovers (sending multiple assets) to buy down the risk?	NASA has been assessing its options for how to extend the extravehicular activity (EVA) range and maintain the capability to transport crew. Multiple combinations have been considered and the multi-award IDIQ approach to this contract will provide the opportunity to have multiple LTVs on the lunar surface. However, NASA anticipates the task order for the LTV Demonstration phase (“Enable the Service”) may only be issued to one vendor based on budgetary restrictions. The ultimate number of LTVs to utilized on the lunar surface will be dependent on the quality and price of proposals received as well as NASA's available budget.
46.	If the rover were to become inoperable in a location that a future crew could not access, how would that impact payment per the contract?	The LTVS contract is anticipated to include performance-based payments which will be paid based on successful completion of defined mission milestones. Therefore, to receive the applicable milestone payment(s), the LTV would need to be available for crew access. The Draft RFP and Final RFP are anticipated to include terms and conditions to address payment terms. Industry feedback regarding the payment terms is welcome in response to the Draft RFP.
47.	What are the projected power consumption requirements and profiles for the LTV payloads?	The payloads that will be integrated onto the LTV have not yet been selected, but reference payloads have been identified to provide guidance for the types of resources payloads may

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		need. These documents will be available in the library posted to the LTV procurement website.
48.	Can this be elaborated on? "EVA suits that will interface with LTV are being developed under the NASA xEVAS contract." - I.E. Power, Coms, Fluids?	NASA just recently awarded the xEVAS contract, so we do not have details about the design at this time. We do know that fluids would be considered a payload on LTV, not a core LTV capability.
49.	Does NASA anticipate settling on a procurement strategy by the time of anticipated draft RFP, around November 2022?	NASA is seeking feedback from Industry on the procurement strategy through the responses requested to the Industry Day Presentation (due September 8, 2022) and also in response to the DRFP. NASA will consider the feedback provided by Industry when developing the Final RFP.
50.	Will specifications, dimensions, etc. of the xEVA suits be provided to validate Astronaut proportions and interfaces with the LTV?	This will all be forthcoming information, once NASA receives that information from the xEVAS contractors.
51.	Could NASA provide bounding volumes for the two large, 400 kg logistics containers, or NASA Large Cargo 1 and Cargo 2, on Slide 26.	We will be providing a payloads IRD, and that will include requirements for the payloads.
52.	Do you have an anticipated funding profile for LTV?	No funding profile information will be provided.
53.	Can you share a range of program budget?	NASA has a budget for LTV that is supported by the Agency, but does not intend to share its internal budget with Industry. It is NASA's expectation that offerors will propose competitive pricing that is reasonable and realistic for the scope of the contract and the Government will be responsible for determining what it can afford within its available budget.
54.	Regarding the two NASA science payloads to be included on LTV at launch, as mentioned on Slide 26, could NASA provide contractors with a total NTE payload mass for these?	NASA will be providing a payloads IRD which will include requirements for the payloads.
55.	Does NASA intend to utilize commercial procurement contracts (FAR Part 12) for each phase of the LTV program?	NASA is not currently considering a FAR Part 12 procurement for this effort based on the results of market research.
56.	Can you give examples of uncertified non-NASA activities that would require NASA approval during NASA ride-	NASA anticipates Rules-of-Operation to be developed that govern how the LTV can be utilized by both NASA and

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	along (besides entry into keep-out zones and configuration changes already mentioned)?	Industry. The definition of uncertified activities is anticipated to be a joint activity by NASA and the provider. Evaluation criteria will be provided in the DRFP and Final RFP.
57.	How will NASA evaluate the lunar landing service part of the proposal? Will a lander dedicated to landing the LTV be more favorably viewed than a lander that may have another mission?	Instructions and evaluation factors for award will be included in the DRFP in sections L and M.
58.	For the 2m mast mentioned, is that height 2m above the lunar surface, or 2m above the platform of the LTV?	The 2 m is measured above the lunar surface.
59.	Besides the landing accuracy, will NASA levy other requirements or standards on the lander? Will the lander be required to be certified?	Any requirements that will be levied on the contractors will be provided as part of the DRFP and Final RFP.
60.	Will LTV offerors need to line up launch and landing services in the "Refining" phase or just in the "Enabling" phase?	NASA does not expect offerors to line up launch and landing services during the Refining phase and does not expect commitments to launch and landing services at the initial stage.
61.	Can you elaborate on the Scope of the "Assess Feasibility" Task order. What is the anticipated funding level and length of the task? Anticipated deliverables?	The anticipated scope is to refine the architecture and service approach prior to procurement of long-lead items. NASA is working on a list of anticipated deliverables. The period of performance for this initial task order is anticipated to be approximately one year. The first task is expanding on the initial IDIQ architecture and service approach. The DRFP will include further details regarding the scope of the initial LTV Services Feasibility Special Task. NASA does not intend to provide a funding profile.
62.	What is the period of performance that NASA anticipates for the initial feasibility phase of the contract? Will there be landing service tasks in this phase, and if so, what will these be?	The anticipated duration of the initial task order is anticipated to be approximately one year, though the duration is being refined. We will have a detailed review of delivery system approach during this first task order. There are additional details of what tasks are in the different phases in the LTV Industry Day charts. The DRFP will include further details regarding the scope of the initial LTV Services Feasibility Special Task.

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63.	Does NASA anticipate a minimum number of mission TOs awarded along with the development/delivery Task order like CRS and CCP?	NASA intends to include terms and conditions within the DRFP and Final RFP to address the anticipated approach to providing a guaranteed minimum for the IDIQ contract(s) resulting from this procurement. Industry may provide feedback relative to the guaranteed minimum for the Government's consideration.
64.	When do you anticipate the "Certify" Task Order to be competed? How long do you expect that to last? Funding level?	The "Certify" task order is expected to be competed after completion of the initial task order. The initial task order is expected to last about one year. The "Certify" task order would align with an anticipated landing need by date of August 2028 and the use time after that to do post-demonstration analysis. NASA does not intend to provide a funding profile.
65.	For the initial RFP, do you anticipate requesting detailed information on the contractor LTV design, pricing, commercial strategy? Any thoughts on evaluation criteria for the first RFP?	Yes, detailed information on LTV design, pricing, and commercial strategy will be requested in the RFP supporting contract award. Instructions and evaluation factors for award will be included in the DRFP in sections L and M.
66.	Can you expand upon the "Autonomous Traverse Between Waypoints" concept-of-operations? Selection of waypoints (predetermined or ad-hoc), distance between waypoints (meters or km), etc.	The base capability NASA is looking for is to provide some semi-autonomous capabilities between defined waypoints. Any capability beyond that will be design specific.
67.	What timeline and goals does NASA anticipate for the Ground Test Unit (GTU) vehicle?	This is a NASA activity to help understand the LTV use and operation cases from NASA's perspective. It is a Ground Test Article, not a flight article, and NASA expects this to come online mid-next year. NASA will be using it for internal activities to assess designs, crew interfaces, and modes of operations.
68.	Is there a need to complete and submit OCI (Sept 6 deadline) prior to draft RFP?	If you know of any conflict of interest that could exist for LTV, NASA asks that you let us know that there is a potential OCI that we have not yet identified.
69.	How is new technology development being handled for LTV? Is Industry expected to fund/oversee that, or will	The EVA & HSM Program includes a Technology Development & Partnerships (TD&P) Office. Requirements for the LTV will be communicated explicitly through the

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	<p>there be separate NASA tech development projects being run in parallel to the rover design that would support LTV?</p>	<p>procurement activity. Technology Development that is outside of the scope of the LTV procurement will be worked through the TD&P Office. A partnerships opportunity notice has been published on the JSC Partnerships website. This partnerships opportunity notice informs industry that coordination on technology development efforts will occur in parallel to the LTV procurement activities with the objective to mature mutually beneficial technologies for Lunar surface applications.</p>
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