

NORTH PENN SCHOOL DISTRICT

Lansdale, PA 19446

Planetarium Hardware and Software System

Bid Summary

The North Penn School District is hereby soliciting bids to submit bids for: Planetarium Hardware and Software System

All bids shall be submitted on the enclosed district forms. The sealed bid proposal package should also include:

- A Bid Bond or Certified Check for 10% of the total bid price.
- Completed and notarized Non Collusion Affidavit.
- Completed and notarized Vendor's Qualification Statement.
- 3 Signed copies (1 original and 2 photocopy)

The North Penn School District is exempt from Pennsylvania state sales tax.

Sealed bids will be accepted for “Planetarium Hardware and Software System” until February 7, 2022 at 1:00 p.m. Sealed bids should be clearly labeled “Planetarium Hardware and Software System” and delivered to Kristin Johnson at the Educational Service Center, 401 E. Hancock St., Lansdale, PA. The bids will be publicly opened via Zoom meeting at 3:30 p.m. the same day. Directions to the Zoom meeting will be posted 60 minutes prior to the opening at www.npenn.org/bidspec.

Questions regarding this bid should be directed to:

Kristin Johnson
Assistant Director of Business Administration
401 E. Hancock St.
Lansdale, PA 19446
johnsok@npenn.org
215-853-1015

North Penn School District
Lansdale, Pennsylvania 19446

General Conditions for Bid

1. The North Penn School District Board of School Directors invites bidders to submit sealed bids for the furnishing and delivery of **Planetarium Hardware and Software System**.
2. **Bids will be accepted until 1:00 pm on Monday, February 7, 2022. The bids will be opened at 3:30 PM on February 7, 2022 via Zoom.** Please see NPSD website, www.npenn.org/bidspec, for Zoom meeting details 60 minutes prior to the bid opening
3. The bid should be submitted in a sealed envelope and clearly marked on the outside, **“Planetarium Hardware and Software System”**.
4. Bids shall be submitted on the enclosed Bid Proposal Form. Bids must be typewritten or written with ink and signed by the individual, partners, or corporate officer.
5. The successful bidder shall bid in strict accordance with the specifications as set forth.
6. A BID BOND OR CERTIFIED CHECK IN FAVOR OF THE NORTH PENN SCHOOL DISTRICT IN THE AMOUNT OF 10% OF THE TOTAL BID IS REQUIRED FROM EACH BIDDER AND MUST BE ENCLOSED WITH THE BID. THE BOND MUST BE ISSUED BY AN INSURANCE COMPANY.
Only the bid bonds or certified checks of the successful bidders will be held until all terms of the contract are completed. The bid bonds or certified checks of the unsuccessful bidders will be returned at the time of the awarding of the contract.
7. The North Penn School District reserves the right to reject or accept any or all bids or any portion thereof and to waive any informalities permitted by law. Bids must remain firm for a period of sixty (60) days from the date of bid opening.
8. When a catalog reference follows the description of an item, such catalog reference is intended as a means of more fully describing the item in the shortest possible space and is to be regarded only as a part of the description of the item, and is not intended to limit competition.
9. Bid items must be the model number specified in the bid proposal or equivalent.
10. Bidder shall insert the price per stated unit and the total cost extension against each item in the schedule hereto annexed, which the bidder has proposed to furnish and deliver. The unit price inserted must be net and must include all delivery charges – No Exceptions. In the event of a discrepancy between the unit prices and the total cost extension, the unit price will govern. The total bid is to be the sum of the quantity multiplied by the unit price for each item.
11. Bids may be awarded on an item-by-item basis.

No additional charge will be allowed for cases, boxes, carboys, bottles, etc., nor for freight expenses, expressage, or cartage. No empty packages, cases, boxes, carboys, bottles, etc., will be returned to the bidder or contractor and none will be paid for the School District. Such empty cases, boxes, etc., may be removed by the bidder or contractor at his own expense.
12. A purchase order issued by the School District covering any or all items included in this bid shall constitute a contract binding upon the bidder and the School District.
13. No charge will be allowed for federal, state, or municipal sales or excise taxes, for which the school district is exempt by law. The bid price shall be net and shall not include the amount of any such tax. Exemption certificates, if required, will be furnished on forms provided by the bidder.
14. The bidder agrees, if awarded an order, to furnish and deliver the said articles at such time, to such place, and in such quantities as specified, and that all of the articles shall be subject to the inspection and approval of the School District. All items must be shipped in original packaging. Acceptance of delivery of materials or equipment to the site shall not constitute final acceptance by the School District. In the event that any articles are rejected as damaged, or not in conformance with these specifications, such articles shall be removed immediately and other articles of proper quality as set forth in these specifications shall be furnished in place thereof, all at the expense of the successful bidder.

General Conditions for Bid

Bid Title: **Planetarium Hardware and Software System**

Due Date: **Monday, February 7, 2022**

15. The bidder agrees to provide an electronic list of serial numbers for all hardware.
16. In the event that the successful bidder should neglect or refuse to furnish or deliver any articles or any part thereof, or to replace any articles which are rejected as stated in the preceding paragraph, then the School District is authorized and empowered to purchase articles in conformity with this order from such party or parties, and in such manner as it shall select, at the expense of the successful bidder, or to cancel the contract reserving to itself, nevertheless, all rights for damages which may be incurred by the School District.
17. Items shipped DIRECT FROM THE FACTORY must show North Penn School District purchase order numbers on the cartons.
18. Invoicing: Invoices must be completely itemized and cover each shipment. They should show North Penn School District item numbers, the same as packing slips. No photocopy of a Bid or Purchase Order will be accepted in lieu of an itemized invoice.
19. **DISCRIMINATION PROHIBITED**: According to Section 755, Public School Code of Pennsylvania, 1949 as amended, the contractor agrees:
 - 19.1 That in the hiring of employees for the performance of work under this contract, or any sub-contract hereunder, no contractor, sub-contractor, nor any person acting on behalf of such contractor or sub-contractor, shall, by reason of race, creed or color, discriminate against any citizen who is qualified and available to perform the work to which the employment relates;
 - 19.2 That no contractor, sub-contractor, nor any person on his behalf, shall in any manner discriminate against or intimidate any employee hired for the performance of work under this contract on the account of race, creed or color;
 - 19.3 That there may be deducted from the amount payable to the contractor under this contract, a penalty of five dollars (\$5) for each person for each calendar day during which such person was discriminated against or intimidated, in violation of the provisions of this contract; and,
 - 19.4 That this contract may be canceled or terminated by the School District, and all money due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms and conditions of the contract.
20. **HUMAN RELATIONS ACT**: The provisions of the Pennsylvania Human Relations Act, Act 222 of October 27, 1955 (P.L. 744) (43 P.S. Section 951 et. seq.) of the Commonwealth of Pennsylvania prohibit discrimination because of race, color, religious creed, ancestry, age, sex, national origin, handicap or disability, by employers, employment agencies, labor organizations, contractors and others. The contractor shall agree to comply with the provisions of this Act as amended that are made part of this specification. Your attention is directed to the language of the Commonwealth's non-discrimination clause in 16 PA Code 349.101.
21. **COMPETENT WORKERS**: According to Section 752 of the Public School Code of 1949, no person shall be employed to do work under such contract except competent and first class workmen and mechanics. No workmen shall be regarded as competent and first class, within the meaning of this Act, except those who are duly skilled in their respective branches of labor, and who shall be paid not less than such hours by employers of organized labor in doing of similar work in the district where the work is being done.
22. **STANDARD OF QUALITY**: The various materials and products specified in the specifications by name or description are given to establish a standard of quality and of cost for bid purposes. It is not the intent to limit the acceptance to any one material or product of lesser quality would not be acceptable. Where proprietary names are used, whether or not followed by the words "or as approved equal," they shall be subject to equals only as approved by the architect, engineer and/or School District.

23. **COMPLIANCE WITH POLICY/LAW:** Contractor shall comply with all policies, procedures and regulations of the District as established and amended from time to time as well as all applicable state and federal laws and regulations, including but not limited to the provisions of the Pennsylvania Right to Know Law, 65 P.S., 67.101 et seq., regarding possession of public records by agency contractors. In the event the District receives a request for access to a public record that is in the possession of Contractor, the District shall notify Contractor of the request and Contractor shall provide the District with the requested record in a timely manner so as to enable District compliance with the Pennsylvania Right to Know Law.
24. **DEBARMENT AND SUSPENSION:** A contract award (see 2 CFR 180.220) must not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR Part 1966 Comp. p. 189) and 12689 (3 CFR Part 1989 Comp. p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. The Applicant certifies that the Applicant is not currently listed on the government-wide exclusions in SAM, is not debarred, suspended, or otherwise excluded by agencies or declared ineligible under statutory or regulatory authority other than Executive Order 12549. The Applicant further agrees to immediately notify the School District during the term of the contract if the Applicant is later listed on the government-wide exclusions in SAM, or is debarred, suspended, or otherwise excluded by agencies or declared ineligible under statutory or regulatory authority other than Executive Order 12549.
25. **PROCUREMENT OF RECOVERED MATERIALS:** For the School District's purchases utilizing Federal funds, the Applicant agrees to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act where applicable and provide such information and certifications as the School District may require to confirm estimates and otherwise comply. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery, and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.
26. **BYRD ANTI-LOBBYING ACT:** Applicants who bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 USC 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award. As applicable, Applicant agrees to file all certifications and disclosures required by, and otherwise comply with, the Byrd Anti-Lobbying Amendment (31 USC 1352).
27. **CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT:** Contracts and sub-grants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act (42 USC 7401-7671q.) and the Federal Water Pollution Control Act, as amended (33 USC 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). When required, the Applicant agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act and the Federal Water Pollution Control Act.

28. **AWARDED VENDOR VIOLATION OR BREACH OF CONTRACT TERMS:** Applicant shall promptly correct any errors, omissions or defects in any services at no cost to the School District. The School District reserves the right to reject any services reasonably determined by the School District as containing errors, omissions or defects or otherwise failing to conform to the requirements of the contract documents. If Applicant fails to correct the services within a reasonable time, the School District, in addition to any other rights or remedies available at law or in equity or pursuant to the contract documents, may correct them and offset the cost of correction against any remaining balance owed to Applicant and Applicant shall reimburse the School District for any difference that may remain. If the School District prefers to accept services which are not in accordance with the requirements of the contract documents, the School District may do so instead of requiring its removal and correction, in which case the contract sum will be reduced as appropriate and equitable. Such adjustment shall be affected whether or not final payment has been made. Duties and obligations imposed by the contract documents and the rights and remedies available thereunder shall be in addition to and not in limitation of duties, obligations, rights and remedies otherwise imposed or available by law or in equity. No action or failure to act by the School District or Applicant shall constitute a waiver of a right or duty afforded them under the contract documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.
29. **ADDENDUMS:** If the need arises for an addendum to the bid specifications the district will post the clarification to www.npenn.org/bidspec no later than January 31, 2022. It is the responsibility of bidders to ensure all addendums have been reviewed prior to submission of the bid.

North Penn School District
Lansdale, Pennsylvania 19446-3807

Non-Collusion Affidavit

Instructions:

1. This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid. According to the Pennsylvania Antibid-Rigging Act, 73 P.S. 1611 et seq., governmental agencies may require Non-Collusion Affidavits to be submitted together with bids.
2. This Non-Collusion Affidavit must be executed by the member, officer or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.
3. Bid rigging and other efforts to restrain competition, and the making of false SWORN statement in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the associated approval or submission of the bid.
4. In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.
5. The term "Complementary Bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or non-competitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.
6. Failure to file an Affidavit in compliance with these instructions may result in disqualification of the bid.

Non-Collusion Affidavit

For Bid for Planetarium Hardware and Software System

State of _____ County of _____

I state that I am _____ of _____
(Title) (Name of my Firm)

and that I am authorized to make this affidavit on behalf of my firm, and its Owners, Directors, and Officers.

I am the person responsible in my firm for price(s) and the amount of this bid.

I state that:

1. The price(s) and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder or potential bidder.
2. Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.
3. No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or non-competitive bid or other form of competitive bid.
4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other non-competitive bid.
5. _____, its affiliates, subsidiaries, officers, directors, and employees are not currently
(name of my firm)
under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal Law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

I state that _____ understands and acknowledges that the above representations
(name of my firm)

are material and important, and will be relied on by North Penn School District in awarding the contract for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from the North Penn School District of the true facts relating to the submission of bids for this contract.

(Name)

and

(Company Position)

SWORN TO AND SUBSCRIBED

BEFORE ME THIS _____ DAY

OF _____, 20 ____.

Notary Public

My Commission Expire

North Penn School District
Lansdale, PA 19446

Vendor's/Contractor's Qualification Statement

The Undersigned certified under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

Submitted by: _____	Corporation	_____
Name: _____	Partnership	_____
Address: _____	Individual	_____
Principal Office: _____	Joint Venture	_____
Phone: _____	Other	_____

1. How many years has your organization been in business as a vendor/contractor?

2. How many years has your organization been in business under its present business name?

3. If a corporation, answer the following:
 - a. Date of Incorporation: _____
 - b. State of Incorporation: _____
 - c. President's name: _____
 - d. Vice President's name(s): _____
 - e. Secretary's or Clerk's name: _____
 - f. Treasurer's name: _____
 - g. List names and address of all parties holding greater than 10% interest in the corporation.

4. Trade References:

5. Bank References:

6. Name of bonding company and name and address of agent:

7. Dated at

this _____ day of _____, 20____.

Name of Organization: _____

By: _____

Title: _____

8. _____ being duly sworn deposes and says that he/she is the
_____ of Vendor/Contractor and that answers to the foregoing questions
and all statements therein contained are true and correct.

Subscribed and sworn before me this _____ day of _____, 20____.

Notary Public:

My commission Expires:

Vendor's Contractor's Qualification State Abbrev.

North Penn School District
Lansdale, PA 19446

Bid Proposal Form

Planetarium Hardware and Software System

We, the undersigned, have reviewed the specifications herein for the supply of the above listed item(s). We propose to furnish and deliver all materials and accessories to complete the work, in accordance with the attached Bid Specifications and General Conditions. We understand that the North Penn School District reserves the right to reject any and all bids and to make awards on the basis of quality as well as price.

Company Name		Date
Company Address		
Authorized Signature	Printed Name	Title
Phone Number	Fax Number	Email Address

- All Equipment shall include manufacturer's Limited Warranty

Item	Total Cost
Planetarium Hardware and Software System	

**ANTICIPATED BID AWARD WILL BE NO LATER THAN FEBRAURY 17, 2022, WITH PURCHASE
ORDERS TO FOLLOW AFTER BOARD APPROVAL.**

DELIVERY TO: NORTH PENN HIGH SCHOOL - 1340 VALLEY FORGE ROAD, LANSDALE, PA 19446,
ATTN: JAMES BAUMAN

PLEASE BID AS SPECIFIED.

NOTICE OF INSTRUCTION TO BIDDERS

All bidders must meet the attached specifications. All exceptions shall be fully documented and listed in the space provided. Bidder shall state equipment and brand names used where applicable. All structural differences must be noted. The terms “No Structural Differences” or “We Are Equal to The Proposed Specifications” will NOT be accepted without supporting documentation. The District is the final arbiter regarding accepted equivalents. The bidder is required to provide detailed specifications at the time of this bid so that the District and its representatives can make the necessary comparisons to achieve the proper decision. Failure to comply with these requirements may render the bid invalid for material non-compliance to published specifications. Bidders’ shall not make changes to the specifications as they are published by the District. Bidders shall not make changes to the District’s specs with typewriter, electronic device, “white-out” or cross-outs. Deviations shall be indicated in the spaces provided.

Use of additional paper to fully explain differences will be accepted.

Hardware and software bids should be Digistar 7 System 30ft Dome, Gold Plus Laser 2.5K/Multivers2 Software, or Lamda Plus/Nightshade Pro Software, or equivalent.

Specifications for Planetarium Hardware and Software System

North Penn School District maintains a 30-foot dome planetarium with a 7 ½ foot spring line at our North Penn High School facility. The planetarium seats up to 57 individuals with forward facing seats to the front of the planetarium. The facility is used primarily for elementary and secondary level classes. However, the facility is also used for community programs. Instruction of over 300 programs for the elementary and secondary levels occur each year. Community programs result in over 1,000 community members experiencing the planetarium shows.

Planetarium Hardware

- Projector
 - Laser projector with fisheye lens for full dome 360-degree presentation
 - Minimum 20,000 hour life span
 - Minimum 2,400 pixel resolution across the diameter of the dome
 - Minimum 6,000 ANSI lumens
 - Minimum 167 degree projection
 - Fixed mount center projector with enclosure stand to house and protect the projector
 - Minimum of one-year warranty
- Computer
 - Dedicated computer system for controlling/rendering planetarium imagery with preview monitor
 - Minimum 2TB storage with ability to expand to at least 8TB
 - Appropriate cables to connect the computer system to the projector
 - Must include the ability to control planetarium from tablet, back-lit remote and/or game controller to allow for control anywhere in the planetarium during a planetarium program
 - Separate production computer system to allow for creation of planetarium programs outside of the planetarium, which can also be used as a backup control computer.

- Must include a separate laptop or PC computer well suited to run the same, planetarium real-time software as the full dome system, for preparing shows and visuals off-line.
- Minimum of one-year warranty

General Planetarium Software Specifications

- Simulation and visualization software for teaching and exploring Astronomy, Earth Science and other related topics.
- Software allows for all user interfaces to be hidden from the audience.
- Software contains catalogs of the solar system, constellations (including cultural constellations), and deep sky objects, as well as reference lines and visualizations.
- Software contains multimedia functionality to play third party full dome video programs as well as images and videos for any subject.
- Software containing real-time weather and geological information for the Earth.
- Software datasets contain topographical information of the Earth and other objects in the solar system
 - Include updates to datasets for a minimum of one year from installation
- Software must allow for user generated planetarium programs to be created.
 - This must allow for the planetarium operator to pre-record programs that can then be shown in the planetarium at a later time.

Detailed Planetarium Software Specifications

- **User Interface**
 - The user interface must support a dark or red mode to preserve a presenter's night vision during live astronomy presentations.
 - The system must allow the user to rewind or fast-forward a video at various speeds. The user interface must supply the ability to control the system from an iPad or other wireless mobile device.
 - The system must provide a scripting language that allows the user to write a sequence of commands for the system to execute. The scripting language must provide access and control over all system features and all modifiable attributes of the objects used in shows and presentations. There must be a means of sharing these scripts between other theaters with similar type systems.
 - Must be ability for the user to save the state of the current scene on the dome for quick restoration to the dome at a later time.
- **Software**
 - Independent of the chosen language, labels for system objects (guides, planetary bodies, named stars, deep space objects, etc.) must include the option of localization to the same language or to a different language.
 - Real-time astronomy features and video playback must be accessible from a single, integrated user interface. The pre-rendered video and real-time generated graphics must be playable simultaneously, and not be mutually exclusive
 - Users must have the ability to create real-time shows within the user interface.
 - The user interface must include a live, real-time view of the dome on the computer monitor.
 - The system must provide an extensive collection of grid and guide objects.
 - The system must allow the user to be able to load their own 3D models.
 - Users must be able to view the sky at any date or time from the surface of any solar system body, with correct local diurnal motion, where data is available. The system must also support annual motion, along with precession and proper motion. Simultaneous use

of annual and diurnal motion must be possible. It must be possible to produce a visual solar analemma from the surface of any planet.

- .
- The software must load and display various distinct data sets without having to close and restart.
- The system must include and display horizon panoramas showing the foreground objects on the horizon. Panorama files must be a standard digital photographic format and users must be able to substitute the provided panoramas for photographs or illustrations of their own choice.
- **Starfield**
 - Users must be able to adjust the limiting magnitudes of visible stars.
 - Stellar databases must include at least the Hipparcos catalog.
 - Must be a true 3D starfield with proper motion.
 - The starfield must be realistic.
 - Users must be able to fly to stars.
 - The system must also include all Messier objects.
 - The planetarium system must provide proper simulation of atmospheric refraction, reddening, extinction, and scintillation.
- **Sky Surveys**
 - The system must also support all-sky surveys which are properly aligned and layered. The system must include a variety of built-in surveys from all major wavelengths.
 - System must support realistic Rayleigh and Mie scattering, and where appropriate, seamlessly transition between surface and space views.
 - The system must show proper simulation of eclipses (planet and moon shadows), and ring shadows.
 - The system must show proper crater/relief shading for rocky bodies.
 - Users must have access to high-resolution terrain for Earth
 - Additional Planet and Moon Requirements.
 - Overlay datasets and maps on body surfaces (image, image series, or video)
 - Simulate surface lights on Earth
 - Simulate planetshine – the reflection of light from a planet onto its moon(s)
 - Proper oblate shapes and support for 3D models for non-spherical bodies
 - Astronomically correct simulation of Lunar libration
- **Artificial Satellites, Comets, and Astroids**
 - Users must be able to view the positions of artificial satellites, comets, and astroids with current orbital data.
 - Orbital elements for artificial satellites, comets, and asteroids must be updated regularly.
- **Navigation and Flight**
 - The system must allow the user to fly a camera within any specified distance of any model in the system, including user-created models and system-created celestial objects.
 - Motion of the camera, and the resulting real-time graphics imagery from the camera's point of view, must be smooth throughout the flight, regardless of the destination object's size or distance from Earth. The images of objects within the flying camera's view must not appear to jump about or scintillate on the dome.

- The system must allow the user to land the camera at any location on any solid object. Once landed, the system must allow the user to fly the camera to or take off from other locations on that object. All motion must be smooth.
- Navigation and flight actions must work correctly while the system's scene date is changing and with bodies and exoplanets rotating in relative motion.
- **Additional Astronomy and STEAM**
 - Users must be able to load point cloud datasets. Several point cloud datasets must be included.
 - The system must include other datasets.
 - All celestial objects displayed by the system must be represented at their known sizes and at their known positions in 3D space.
 - Users must be able to display a volumetric Milky Way Galaxy in real-time.
 - The system must allow the display trails for bodies in motion. It must also be possible for all visible objects to leave a trail.
 - The system must support flexible user preferences, allowing local customization.
- **Content Requirements**
 - The system must include a large selection of free fulldome content – short and long sequences, as well as complete shows.
 - The system must include pre-rendered shows with unlimited use license for at least three years.
 - The system must include built-in astronomy lessons designed to be presented as live shows, along with a guide/script.

Ongoing Support and Installation

- Customer support package giving hardware and software support on an ongoing basis into the future.
 - This must include 24/7 support for a minimum of three years, with the option to extend at the district's expense starting year four.
 - This must include essential updates to the simulation and visualization software as they are released.
- The larger of either A) 10 hours of training or B) the vendor specific onboarding training schedule for the use of the hardware and software must be included.
- Installation of all hardware and software must be included in pricing.
- Delivery and installation of the separate production computer system (that allows for creation of planetarium programs outside of the planetarium) must occur by August 11, 2022. Complete delivery and installation of planetarium equipment and software must occur by November 30, 2022.