Request for Proposal (RFP)

NEOFIX Drone Sensors and Equipment Procurement

# Background

Funding drawn from Cuyahoga County’s American Rescue Plan Act (ARPA) of 2021 allocation and the Ohio One Time Strategic Community Investment Fund (OTSCIF) was awarded to the Baldwin Wallace University to build drone-friendly infrastructure attractive to business development in Northeastern Ohio. The initiative is called the Northeast Ohio Flight Information Exchange (NEOFIX).

NEOFIX is designed to enhance airspace safety and efficiency. It enables local government and public safety agencies to share vital information with drone operators, ensuring the airspace remains open, secure, and safe. NEOFIX provides updates on ground rules, public safety incidents, hazards, and sensitive infrastructure, serving as a cornerstone of Northeast Ohio’s drone ecosystem and fostering innovation, manufacturing, and job development in the industry.

NEOFIX Website: https://bw-centers-tech-partnerships.org/neofix/

# NEOFIX Sensor Equipment Procurement Process

This is a best-value procurement that involves the following process:

1. Vendors complete the vendor questionnaire consisting of Technical, Data Rights, and Total Cost of Ownership and Support.
2. The NEOFIX team will score responses.
3. The top two ranked vendors in each sensor category (Passive Participating, Passive Non-Participating, Active Participating, Active Non-Participating) will be requested to submit a formal quote; however, the NEOFIX team reserves the right to request additional quotes.
4. Purchase orders will be issued against these final quotes.

**Purpose:** This Request for Proposal (RFP) is issued to qualified vendors capable of providing airspace awareness sensors to the NEOFIX project at Baldwin Wallace University.

**Requirements:** High-level project requirements are provided as Enclosure 1 to this RFP.

**Timeline:** Vendors interested in submitting a response to the RFP are required to adhere to Table 1: Submission Requirements. Table 1 is available on the following page.

|  |  |  |
| --- | --- | --- |
| **Table 1: Submission Requirements** | | |
| **Title** | **Due Date** | **Complete Submission** |
| Question Submission | January 31, 2025 at 5:00 PM (EST) | Email the Primary RFP POC, Chelsea Treboniak, at [chelsea@criticalops.com](mailto:chelsea@criticalops.com) with Subject Line: NEOFIX RFP Question. All questions regarding this solicitation shall be submitted to the RFP POC via email. |
| Questionnaires and Submissions Due | February 7, 2025 at 5:00 PM (EST) | Email completed questionnaires to the Primary RFP POC, Chelsea Treboniak, at [chelsea@criticalops.com](mailto:chelsea@criticalops.com) with Subject Line: NEOFIX Vendor Questionnaire |
| Quotes Requested | February 28, 2025 at 5:00 PM (EST) | The NEOFIX team will follow up with a request for final quotes from finalists and notify-non finalists. |
| Final Selection | March 7, 2025 | The NEOFIX team will issue purchase orders to final awardees. |

**Proposal Format:** Proposal questionnaires are included as Enclosure 2 to this RFP. There are four sections: Vendor Information, Technical, Data Rights, and Total Cost of Ownership and Support. Scoring will be conducted based on completeness of responses to questions. Questionnaires will be provided in Word format for vendors to use for responses using a minimum of 11-point size font with at least 1” margins on 8.5”x11” paper. Completed questionnaires must not exceed 10 pages and the questions/structure must not be altered. The NEOFIX team reserves the right to disqualify non-compliant proposals.

Please submit a separate questionnaire for each proposed sensor. If the sensor includes more than one detection modality, please note the detection modalities on the questionnaire. If you are bidding more than one physical unit, please submit a separate questionnaire for each unit / make-model you are bidding.

In addition to the questionnaire, vendors may submit up to two pages of supporting narrative as well as supporting test data. If you would like data to remain restricted, please mark such data as “Confidential and Proprietary.”

**RFP POC:** All contact concerning this solicitation shall be made through Chelsea Treboniak, [chelsea@criticalops.com](mailto:chelsea@criticalops.com), (443) 404-1879. Proposers **shall not** contact NEOFIX with questions or any other concerns about this RFP. Questions, clarifications, and concerns shall be submitted in writing to the identified RFP POC. Failure to comply with these guidelines may disqualify the vendor’s proposal.

**Evaluation Criteria:** Proposals will be evaluated and selected based on best-value considerations for NEOFIX. Best-value includes the demonstrated ability, competence, experience, knowledge, and qualifications submitted in the proposal by the vendor. Table 2 categorizes the evaluation criteria and possible point allocation. Table 2 is available on the following page.

|  |  |
| --- | --- |
| **Table 2: Evaluation Criteria** | |
| **Criteria** | **Maximum Possible Points** |
| Technical Merit | 120 |
| Data Rights | 30 |
| Total Cost of Ownership | Ranking in Category |

Technical Merit (Technical Questionnaire) allows vendors to score up to 120 possible points, with 1 point per question answered with substantive data (e.g., not “N/A”) up to a total of 90 points. The NEOFIX team recognizes that not all of these questions may be answerable at the current stage of development, which is why we are using a points ranking to focus on the most mature sensors while also recognizing that certain aspects are still in development. A test data section in the questionnaire allows vendors to score up to an additional 30 points by answering questions on testing, and may, at vendor discretion, submit supporting test data which will influence actual rankings for the test data section. Test data points will be awarded as follows: 0 points for failing to answer, 10 points for answers that do not include submitted technical data, 20 points for supporting technical data that shows some level of testing, 30 points for supporting substantive testing.

Data Rights allows vendors to score up to 30 possible points for supporting the NEOFIX public data mission with points awarded as follows: 0 points for data that can't be shared publicly, 10 points for having the ability to share some data with a limited set of recipients, 20 points for public dissemination of a limited data set, and 30 points for unlimited public sharing.

Total Cost of Ownership will rank each vendor submission in its respective category (Passive Participating, Passive Non-Participating, Active Participating, Active Non-Participating) based on a five-year total cost of ownership and proposed level of support.

Final overall rankings will be considered in the context of how a given sensor performs in the context of county operational requirements in the context of overall technical and data rights points relative to total cost of ownership.

**Solicitation:** This solicitation does not commit NEOFIX to award any contract or pay any cost incurred related to proposal submission, oral presentation, or subsequent negotiations.

**Confidential or Proprietary Information:** Vendors authorize NEOFIX to analyze all proposals that contain confidential or proprietary information to NEOFIX. NEOFIX will not share information that is marked as confidential and proprietary.

We look forward to reviewing your proposal and exploring how your solution can help NEOFIX achieve goals.

# Enclosure 1: Requirements

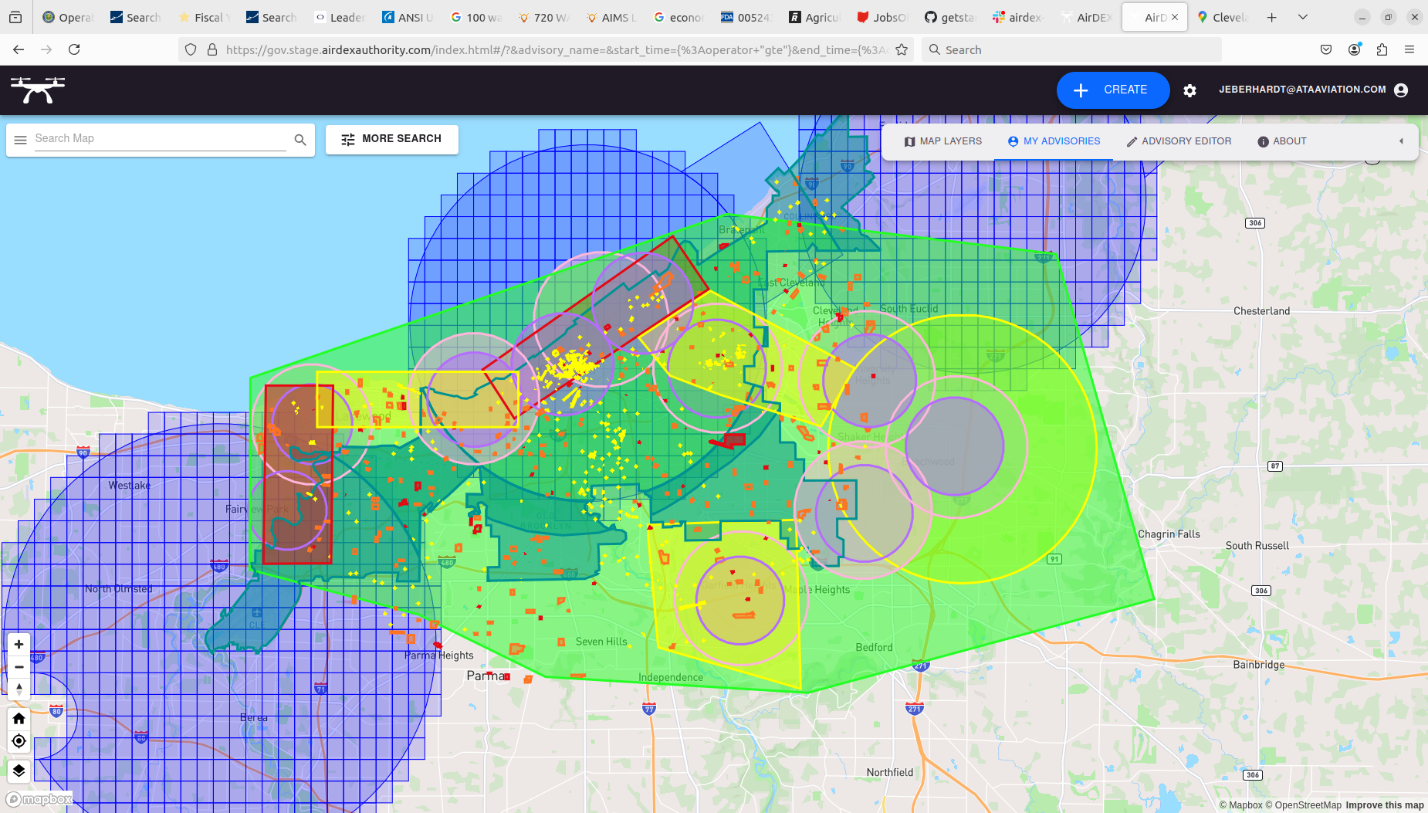
The project focus is on deploying cost-effective solutions enabling near-term services and return on investment through “Flight Information Exchange” (FIX) and “Minimum Viable Infrastructure” (MVI). FIX-MVI creates Public Digital Services that support industry needs today and into the future. FIX is focused on cost-effective, secure mechanisms for data sharing to support Federal Aviation Administration (FAA) requirements for safe AAM integration as Public Digital Services. MVI is a risk-based approach to infrastructure resulting in cost-effective deployment of infrastructure enabling immediate next steps in AAM. This project specifically focuses on the Northeast Ohio Flight Information Exchange (NEOFIX) initial service area and the associated minimum viable infrastructure (MVI) for the NEOFIX Enhanced Aviation Safety Service Enablement (EASSE) Area (NEOFIX EASSE).

NEOFIX has identified specific operating areas and assessed risk levels to determine the level of fidelity of surveillance and groundspace description necessary to address operation-specific risk mitigations. Operation types are based upon specific UAV mission objectives. They include:

* Public Safety Drone as a First Responder (DFR) for incident response types such as search and rescue and crisis situations;
* Medical Delivery (small package), emergency and non-emergency;
* Detection of UAS incursions for both public safety and protection of airport operations and KCLE and KBKL in support of Metroparks policy, critical infrastructure protection, and general public safety; and
* Part 107 Commercial Survey / Videography.

Additional operational types will be included as the NEOFIX EASSE MVI progresses through sensor deployment, gathering of operational data, and evidence-based awareness of needs identified through primary implementation. The efforts will commence with Extended visual line of sight (EVLOS) operations, defined as operations monitored visually by an external observer other than the pilot and exploring larger (Group 3 and above) UAS operations under a waiver that will allow us to collect the operating data to file for an FAA waiver, COA, or exemption for Beyond Visual Line of Sight (BVLOS) operations for sUAS under either the Public Safety or NTAP programs.

NEOFIX has identified lower risk (Tier 1), medium risk (Tier 2), and high risk (Tier 3) service volumes, as described in Figure 1 below. Red represents Tier 3 high risk volumes, while yellow represents medium risk, and green represents the overall service area. Figure 1 also has notional deployment sites planned, these continue to be refined based upon community input and will be further refined based upon vendor-stated sensor performance profiles and coverage costs. These notional deployment sites are represented in pink/purple.



*Figure 1: Proposed NEOFIX EASSE*

As described in Figure 1, the NEOFIX EASSE contains seven planned service volumes, each with specific risk characteristics:

* Service Volume 1: The Tier 3 service volume servicing the Cleveland Lakefront, including Burke Lakefront Airport, Lakefront Access, Browns Stadium, the Port of Cleveland, the Rock and Roll Hall of Fame, and multiple high density / high structures and obstructions. The service volume consists of a 5 x 2 mile area of approximately 10 square miles, encompassing high population density, a towered reliever airport, complex weather patterns, multiple tall structures, and critical infrastructure.
* Service Volume 2: The Tier 3 area encompassing the Rocky River Reservation, including the Metropark reservation, Metroparks police headquarters, Lakefront access at the Cuyahoga River, critical infrastructure at the Lakewood Sewage plant, and adjacent to Cleveland Hopkins airspace. Service Volume 2 is a 4 x 2 mile area of approximately 8 square miles, encompassing medium population density, adjacency to a towered primary airport, complex weather patterns, tall bridges and medium height structures, a deep ravine in the Metropark, and critical infrastructure.
* Service Volume 3: A Tier 2 area covering the Cleveland Clinic administrative campus in the City of Beachwood and the planned service area for the Cleveland Clinic – Zipline medical delivery service area, including Cleveland Clinic South Pointe. Service Volume 3 is a circular Service Volume of approximately 30 square miles, encompassing medium population density, complex weather patterns, low height structures, and medium air traffic density.
* Service Volume 4: A Tier 2 area adjacent to Service Volume 3 that covers portions of the city of Garfield Heights, including the Garfield Heights Police Department. Service Volume 4 is approximately 3 x 3 miles for an approximate 9 square mile Service Volume encompassing medium population density, low height structures, and medium air traffic density.
* Service Volume 5: A Tier 2 area encompassing the Cleveland Clinic main campus and Case Western Reserve in the University Circle district. Service Volume 5 is approximately 3 x 3 miles for an approximate 9 square mile Service Volume encompassing medium-high population density, complex weather patterns, low-medium height structures, cultural institutions and venues, and medium air traffic density.
* Service Volume 6: A Tier 2 area that bridges from the Lakefront Service Volume 1 to the Rocky River Service Volume 2 encompassing Lakewood and several Metroparks. Service Volume 6 is a 4 x 2 mile area of approximately 8 square miles, encompassing medium population density, complex weather patterns, medium height structures, and Lakefront access.
* Service Volume 7: A Tier 1 area comprising the background areas encompassing the other six Service Volumes, reserved for low-risk operations.

As the NEOFIX team plans the next round of deployment, we intend to pursue a “multi-modal” sensing approach to managing detection and airspace awareness within a given service volume. This approach involves progressively layering additional sensors to detect additional “non-participating” aircraft or increase accuracy of detection. Table 1 below provides an example of how this might work.

| **Tier** | **Example Sensors** | **Example Coverage Area Type(s)** |
| --- | --- | --- |
| Tier 1 (Green) | Procedural deconfliction +   * RemoteID * ADS-B * Weather * GNSS RTK beacons | Low Density Rural sUAS operations at low weight / altitudes / Part 107 Procedurally deconflicted AAM at higher altitudes |
| Tier 2 (Yellow) | Tier 1+   * Audio * Optical * RF / RDF | Low Density Rural Cargo Suburban Metro sUAS package delivery Group 2 long distance / Group 3 UAS conducting survey activities |
| Tier 3 (Red) | Tier 2+   * Radar/LIDAR | Major Urban Area, Airports UAM Vehicle Vertiport Areas sUAS package delivery at high weight |

*Table 1: Examples of Tiered Sensor Infrastructure*

# Enclosure 2: Vendor Questionnaire

# Vendor Information

**Vendor Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Submitted Sensor Information (check all modes covered by proposed unit)**

**Sensor Make and Model: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |
| --- | --- |
| Category | Detection Mode(s) |
| Passive Participating | \_\_\_ ADS-B \_\_\_ RemoteID \_\_\_ Other (describe below) |
| Passive Non-Participating | \_\_\_ Audio \_\_\_ Electro-optical/Infrared \_\_\_ RF Signal Demodulation \_\_\_ Other (describe below) |
| Active Participating | \_\_\_ Secondary Radar \_\_\_ Other (describe below) |
| Active Non-Participating | \_\_\_ Primary Radar \_\_\_ Other (describe below) |

Describe Other(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Technical

## System Detection Performance

This section collects data on sensor coverage, including range and detection percentile for a given cross-section, field of view, and potential limitations in sensor detection and operating environment.

For the table below, please fill in the detection **range** in meters by the closest cross-section at or above each detection percentile. If you do not have data or the particular aircraft type is not applicable, leave the cell blank or write “N/A.” (28 Points)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cross Section x Percentile (Range) | Cessna 208 / Caravan | Cessna 172 | DJI Matrice M30 | DJI Mavic 3 |
| 99% |  |  |  |  |
| 97% |  |  |  |  |
| 95% |  |  |  |  |
| 90% |  |  |  |  |
| 85% |  |  |  |  |
| 80% |  |  |  |  |
| 75% |  |  |  |  |
|  |  |  |  |  |

Additional technical coverage questions. Where definition of terms require clarification, please refer to ASTM F3623 – 23: (15 Points)

|  |  |
| --- | --- |
| Estimated Positional Uncertainty (EPU) | \_\_\_\_ meters |
| Estimated Vertical Accuracy (EVA) | \_\_\_\_ meters |
| Are detection range and percentile data and EPU/EVA based on actual test data? | \_\_\_\_ Yes / \_\_\_\_ No |
| If based on test data, how many detections / events are in your test set? | \_\_\_\_\_\_\_\_ |
| Are you submitting test data? | \_\_\_\_ Yes / \_\_\_\_ No |
| If not based on test data, how are you estimating range and percentile? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Can the sensor detect all aircraft types concurrently (if applicable)? | \_\_\_\_ Yes / \_\_\_\_ No |
| Is nighttime detection performance different from daytime detection performance? | \_\_\_\_ Yes / \_\_\_\_ No (If yes, discuss below) |
| Is detection performance impacted by rain? | \_\_\_\_ Yes / \_\_\_\_ No (If yes, discuss below) |
| Is detection performance impacted by snow? | \_\_\_\_ Yes / \_\_\_\_ No (If yes, discuss below) |
| Is detection performance impacted by particulates (e.g., smoke or haze)? | \_\_\_\_ Yes / \_\_\_\_ No (If yes, discuss below) |
| Is detection performance impacted by RF interference? | \_\_\_\_ Yes / \_\_\_\_ No (If yes, discuss below) |
| What is lateral/horizontal field of view? | \_\_\_\_\_ degrees |
| What is azimuth/vertical field of view? | \_\_\_\_\_ degrees |
| Does the sensor design create any “gaps” or “holes” in coverage? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Does the sensor include any target classification capabilities? If yes, please describe below. | \_\_\_\_ Yes / \_\_\_\_ No |

Discussion of Degradation:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe Classification Capabilities:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## System Uptime and Services Performance (SLA)

This section collects data on sensor availability, reliability, and data generation performance. Where definition of terms require clarification, please refer to ASTM F3623 – 23. (18 Points)

|  |  |
| --- | --- |
| Does the sensor generate a heartbeat message? If yes, how frequently is the message generated? | \_\_\_\_ Yes / \_\_\_\_ No -Frequency: \_\_\_\_\_\_\_\_\_\_\_ |
| Update rate (how frequently is track updated)? |  |
| Does the sensor batch? If so, how frequently? | \_\_\_\_ Yes / \_\_\_\_ No -Frequency: \_\_\_\_\_\_\_\_\_\_\_ |
| Are all messages locally time stamped? |  |
| If so, how is reference time derived? |  |
| What is the estimated local latency from track detection to message transmission? | \_\_\_\_ milliseconds |
| What is the Probability of Update? | \_\_\_ % |
| Is track interpolation or extrapolation used? |  |
| If so, what is the actual measurement interval? | \_\_\_\_ seconds |
| How long before a coasted track is terminated? | \_\_\_\_ seconds |
| Estimated Mean Time Between Failure (MTBF)? | \_\_\_\_ minutes |
| Is recovery automatic or manual? | \_\_\_\_ Automatic \_\_\_\_ Manual |
| Estimated Mean Time to Recovery? | \_\_\_\_ minutes |
| Does the system self report degradation or outages? | \_\_\_\_ Yes / \_\_\_\_ No |
| Does the vendor have a quality assurance system or process (e.g., ISO, CMMI)? If so, describe | \_\_\_\_ Yes / \_\_\_\_ No / Standard: \_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Is the unit produced to any given information security standard? If so, please reference standard (e.g., NIST, ISO) and level (e.g., Low, Moderate, High) | \_\_\_\_ Yes / \_\_\_\_ No / Standard: \_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Is the sensor FAA certified / approved? | \_\_\_\_ Yes / \_\_\_\_ No |
| Is the sensor FCC approved / listed? | \_\_\_\_ Yes / \_\_\_\_ No |

## Test Data

This section collects data on testing and / or accreditation of sensors. (Assessment 0, 15, or 30 points)

|  |  |
| --- | --- |
| Do you have field test data? |  |
| Over what period of time? |  |
| Total Number of Observations? |  |
| If you do not have test data, is performance estimated? |  |
| If estimated, describe method. |  |
| Any third-party testing accreditation? |  |

Vendor may choose to submit test data to accompany this section, submission of test data is required to receive greater than 10 points.

## Mounting, Installation and Integration Components and Requirements

The section collects information on additional components and requirements related to placement and installation of the sensor, allowing us to understand the level of effort and costs associated with installation. (18 Points)

|  |  |
| --- | --- |
| Has your sensor been installed previously at an airport? Is it still installed? | Yes \_\_\_ / No \_\_\_ Still Installed? \_\_\_\_\_\_ Where? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| If you have been previously installed at an airport, did you review or file a FAA Form 7460? | Yes \_\_\_ / No \_\_\_ |
| Does the unit require custom brackets? Are they included? | Yes \_\_\_ / No \_\_\_ Included? \_\_\_\_\_ |
| Does the unit require Custom Cables? Are they included? | Yes \_\_\_ / No \_\_\_ Included? \_\_\_\_\_ |
| Does the unit require additional control Software not embedded in the unit? Is it included? | Yes \_\_\_ / No \_\_\_ Included? \_\_\_\_\_ |
| Does the unit require an edge computing device or controller? Is it included? | Yes \_\_\_ / No \_\_\_ Included? \_\_\_\_\_ |
| Does the sensor have an internal or external antenna? Is it included? | Yes \_\_\_ / No \_\_\_ Included? \_\_\_\_\_ |
| Does the unit have an external power source? | Yes \_\_\_ / No \_\_\_ Included? \_\_\_\_\_ |
| Does the unit require an external cabinet? Is it included? | Yes \_\_\_ / No \_\_\_ Included? \_\_\_\_\_ |
| What are the dimensions of the sensor? (Height, Width, Depth, Weight) | Ht \_\_\_\_ x Wth \_\_\_ x Lth \_\_\_ (In) Weight \_\_\_\_ Lbs |
| What are the dimensions of the external cabinet, if applicable? (Height, Width, Depth, Weight) | Ht \_\_\_\_ x Wth \_\_\_ x Lth \_\_\_ (In) Weight \_\_\_\_ Lbs |
| Does the sensor require calibration on installation? If so, please discuss. | Yes \_\_ / No \_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| How does the sensor obtain its reference location? Known potential issues? | Yes \_\_ / No \_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Does the unit require a temperature-controlled environment? If so, what ambient operating temperature ranges are appropriate? | Yes \_\_ / No \_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| What RF interference is anticipated? What RF interference should be considered in placement? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| How high does the sensor need to be mounted relative to average terrain? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| What FAA filing and placement requirements apply for an airport installation? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| What FCC requirements apply? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

## System Resource Consumption, Data and Networking Requirements

This system collects information on power and data requirements, allowing for proper siting and connectivity. (11 Points)

|  |  |
| --- | --- |
| Wattage Consumption per Sensor | \_\_\_\_\_ Watts |
| What is sensor operating voltage? | \_\_\_\_\_ Volts |
| How is power connected? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Data Bandwidth Requirements (Mb up) | \_\_\_\_\_ Mb Up |
| Data Bandwidth Requirements (Mb down) | \_\_\_\_\_ Mb Down |
| How is data networking achieved? (all that apply) | \_\_\_ Ethernet \_\_\_ WiFi \_\_\_ LoRaWan \_\_\_ Cellular \_\_\_ Other |
| How is data provided to third party consumers? (all that apply) | \_\_\_ Port Forwarding \_\_\_ Local API \_\_\_ Cloud API \_\_\_ Other |
| How is data forwarded to its downstream destination (all that apply) | \_\_\_ VPN, \_\_\_ IP Whitelisting, \_\_\_ URI and Authentication: Type \_\_\_ |
| Does the sensor provide track data and/or raw data? | \_\_\_ Track \_\_\_ Raw |
| What format(s) are data provided in (list all)? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Can sensor be remotely configured? | Yes \_\_ / No \_\_\_ |

# Data Rights

NEOFIX is a Public Digital Services program. As such, all sensors acquired will be used to support public data feeds available to the public and to USSes and Operators taking advantage of the service. Therefore, the ability for NEOFIX to redistribute data is essential to the nature of the program. These distributions are unlimited. (Up to 25 points)

Do the data produced by the sensor have any data rights restrictions? Yes \_\_ / No \_\_\_, If Yes, describe:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Do the data produced by the sensor have any data use restrictions? Yes \_\_ / No \_\_\_, If Yes, describe:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Does the vendor claim rights in the data generated by the sensor? Yes \_\_ / No \_\_\_, If Yes, describe:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If the vendor claims rights, do these rights in any way restrict the ability of the NEOFIX to redistribute data? Yes \_\_ / No \_\_\_, If Yes, describe:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If the data have restrictions, does the vendor have the ability to provide a “public” tier of data?  
Yes \_\_ / No \_\_\_, If Yes, describe: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Total Cost of Ownership and Support

NEOFIX is responsible for the operation and maintenance of NEOFIX sensors, therefore the total cost of ownership is critical to the financial stability of the program. The table below is intended to provide the NEOFIX program with a relatively complete view of the total cost of ownership of the sensors, given volume of purchase. We also provide the table three times, at the vendor’s option, they may offer more than one pricing scheme for the sensor.

**Option 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 Unit only | 3 Units only | 5 Units only | 10+ Units |
| Purchase or Lease? | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease |
| Year 1 Cost |  |  |  |  |
| If purchase, is maintenance offered? | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ |
| Year 2+ Annual Cost, Lease |  |  |  |  |
| Year 2+ Annual Cost, Maintenance |  |  |  |  |
| Are support costs separate from maintenance? | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ |
| Year 2+ Annual Cost, Support |  |  |  |  |
| Additional Year 1 hardware or software costs to install sensor |  |  |  |  |

**Option 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 Unit only | 3 Units only | 5 Units only | 10+ Units |
| Purchase or Lease? | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease |
| Year 1 Cost |  |  |  |  |
| If purchase, is maintenance offered? | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ |
| Year 2+ Annual Cost, Lease |  |  |  |  |
| Year 2+ Annual Cost, Maintenance |  |  |  |  |
| Are support costs separate from maintenance? | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ |
| Year 2+ Annual Cost, Support |  |  |  |  |
| Additional Year 1 hardware or software costs to install sensor |  |  |  |  |

**Option 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 Unit only | 3 Units only | 5 Units only | 10+ Units |
| Purchase or Lease? | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease | \_\_\_ Purchase \_\_\_ Lease |
| Year 1 Cost |  |  |  |  |
| If purchase, is maintenance offered? | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ |
| Year 2+ Annual Cost, Lease |  |  |  |  |
| Year 2+ Annual Cost, Maintenance |  |  |  |  |
| Are support costs separate from maintenance? | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ | Yes \_\_ / No \_\_\_ |
| Year 2+ Annual Cost, Support |  |  |  |  |
| Additional Year 1 hardware or software costs to install sensor |  |  |  |  |

**Maintenance and Support**

|  |  |
| --- | --- |
| Does the vendor provide technical support? | Yes \_\_ / No \_\_\_ |
| During what hours? |  |
| Does the vendor have detailed technical documentation? | Yes \_\_ / No \_\_\_ |
| Does access to technical documentation require a non-disclosure agreement? | Yes \_\_ / No \_\_\_ |
| Does the vendor support open access to the sensor, either directly or through an API? | Yes \_\_ / No \_\_\_ |
| If maintenance is available, how often is firmware/software updated? | \_\_\_\_ Months |
| If sensor is leased, how often is sensor upgraded for a newer unit? | \_\_\_\_ Years |

What procedures are in place to address a non- or under-performing sensor?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_