ENCINO ENVIRONMENTAL SERVICES

REQUEST FOR INFORMATION

2023CARB_SMMI-RFI001

For Statewide Mobile Monitoring Initiative (SMMI)

ATTACHMENT B – VENDOR QUESTIONS

November 16th, 2023

Section I – General Questions

1. **What scale of operation would be required to bid on a future RFP of the concept described here? Are there any minimum requirements necessary at which below you would not be interested in bidding on a proposal of this nature?**

Currently we do not have a minimum scale of operation.

2. **What types of monitoring objectives have you explored using your company's mobile monitoring approaches?**

To understand emissions performance from any source whether it be stationary, mobile, combustion, biogenic, and/or (not limited to) process-related upsets and releases. This is achieved through vertical integration of sampling systems and methodologies (FTIR-based combustion laboratories, ambient air quality monitoring "nodes" or networks, field-personnel, and/or satellite-based detections). By ingesting critical (and temporally relevant) environmental performance data combined with social and operational contextualization, it is Encino's vision to create an "ecosystem" of measurement practices and technologies to both inform and promote actionable change.

3. **What are the advantages and limitations of your company's mobile monitoring services?**

Each mobile emissions monitoring platform is comprised of a system which utilizes edge computing tethered to a cloud-based application, which allows for remote access to real-time measurement data. This "ecosystem" can be configured with controls and alert functions which provides for near real-time incident response.

Secondly, the FTIR unit is capable of positively identifying and speciating up to 60,000 individual compounds (limitation being oxygen (O_2)) to a lower minimum detectable limit (MDL) of sub 1 ppm for all compounds. If an O_2 value is required, the sample system can be easily configured with a standard paramagnetic oxygen analyzer.

These systems can be deployed via three (3) paths:

a) Batch scenario; a technician is dispatched to a location to sample a source/area to perform analysis at a specific point in time.

   Advantages – provides a high-resolution analysis of source performance.

   Disadvantages – low temporal resolution (point in time) with geospatial limitations.

b) Near-continuous operation – a technician collects emissions measurements while in-transit which provides superior geo-spatial analysis of local/regional emissions performance.

   Advantages – high resolution analysis, temporal resolution, and geo-spatial coverage.

Disadvantages – measurements can be impacted by inclement weather (requires additional sample conditioning for moisture, etc.). Requires a technician to continuously monitor laboratory performance and measurement activities.

c) Continuous operation – a mobile emissions platform is "dropped and deployed" to a specific area/site to continuously evaluate emissions performance at the source.

Advantages – high resolution analysis, temporal resolution, and allows for rapid incident response (alert functionality); does not require technical supervision.

Disadvantages – geospatial limitations only.

Section II – Engagement and Coordination

1. **Describe your interpretation of what community engagement should look like throughout the process of conducting mobile air monitoring in communities.**

Community engagement throughout the process of conducting mobile air monitoring in communities is essential for fostering trust, transparency, and collaboration between stakeholders and the affected residents. An effective community engagement approach should prioritize the following key elements, facilitated by Geographic Information Systems (GIS) and social media. To achieve this, the following areas must be included:

a) **Inclusive Participation:** Encouraging inclusive participation by involving community members, local organizations, and stakeholders in the planning, implementation, and evaluation stages of the mobile air monitoring process. GIS can support the development of interactive platforms that facilitate open communication, allowing community members to voice their concerns, provide feedback, and actively participate in the decision-making processes. For example, ArcGIS Survey123 or web-based surveys can be utilized to instantly report air conditions in real-time. Similarly, these tools can be employed to gather geospatial information from community stakeholders, with the goal of collecting pertinent geospatial data and generating comprehensive reports on current air conditions.

b) **Education and Awareness:** Providing comprehensive education and raising awareness about the significance of air quality monitoring, the potential health implications of pollutants, and the importance of community involvement in mitigating environmental risks. GIS can aid in the creation of educational materials, interactive maps, and multimedia content that effectively convey complex environmental data in a user-friendly format, fostering greater understanding and awareness among community members.

c) **Accessible Information:** Ensuring that relevant air quality data, monitoring activities, and project updates are readily accessible to the public through online platforms and mobile applications. GIS can facilitate the development of interactive mapping tools, real-time data visualizations, and geospatial dashboards that enable community members to access timely and accurate information, empowering them to make informed decisions and take proactive measures to safeguard their health and well-being.

d) **Empowerment and Collaboration:** Empowering community members to actively participate in decision-making processes by providing them with the necessary tools, resources, and knowledge to interpret and utilize air quality data effectively. GIS can facilitate capacity-building initiatives, training workshops, and collaborative learning sessions that equip community members with the skills and expertise to engage in meaningful discussions, advocate for environmental justice, and collaborate with relevant stakeholders to develop and implement targeted pollution mitigation strategies.

e) **Sustainability and Long-Term Impact:** Establishing a sustainable framework for continued community engagement and involvement beyond the initial phases of the mobile air monitoring project. GIS can support the development of long-term engagement strategies, community-led monitoring programs, and ongoing dialogue platforms that foster a culture of environmental stewardship, resilience, and collective action, ensuring that community voices remain central to the decision-making processes concerning air quality and environmental management.

2. What experience do you have with community and public engagement? Is any of this experience directly related to air monitoring activity and data dissemination?

Encino Environmental Services (Encino) has been working in the measurement of gases and pollutants since its inception in 2010. Encino offers a comprehensive lineup of solutions for emissions performance testing, detection, quantification, and mitigation.

While AerialZeus may not possess specific experience in air monitoring activities, the company has a strong track record of community and public engagement, particularly in the context of data dissemination and reporting for environmental initiatives. AerialZeus' notable involvement in the wildfire mitigation project with San Diego Gas & Electric (SDGE) underscores the proficiency in engaging with diverse stakeholders and disseminating critical information related to infrastructure safety. Throughout the project, we have regularly communicated findings and progress updates to the Office of Energy and Infrastructure Safety (OEIS) via online dashboards and mobile applications, demonstrating the company's ability to effectively convey complex data and insights to relevant authorities.

3. What is your experience coordinating with community members, CBOs, regulated industry, academia, and governmental agencies when planning monitoring objectives and data analysis and communication?

Since its inception and throughout the years, Encino Environmental Services has serviced the oil and gas regulated industry and its participants by assisting with emissions testing, permitting, compliance, and intelligence. In turn, Encino has collaborated with academia and research institutions in projects around assessment of environmental emissions. Encino has been an active participant in the recent federal regulatory efforts to address methane emissions by providing comments.

In the State of California, AerialZeus LLC garnered extensive experience in effectively coordinating with various stakeholders for governmental agencies in the past for the California Department of Transportation (CALTRANS), the Sacramento Municipal District (SMUD) and OEIS, particularly in the context of planning monitoring objectives, data analysis, and communication strategies.

Notably, AerialZeus' more recent experience and role as an independent evaluator for the wildfire mitigation initiatives led by OEIS in California required conducting comprehensive audit processes to assess compliance with (San Diego Gas & Electric) SDG&E's wildfire mitigation plan. Throughout this project, AerialZeus actively engaged with the public agency to gather valuable insights and feedback, fostering collaborative partnerships and promoting inclusive decision-making processes. Moreover, the effective communication strategies and transparent data dissemination practices enabled maintaining productive relationships with regulatory agencies, ensuring timely and accurate reporting of audit findings and compliance assessments.
It is essential to mention that AerialZeus has performed extensive pro-bono and research work for UC-Davis and the USDA. Moreover, our team has worked closely with UC-San Diego in furthering the use of Remote Sensing from Satellites, Aircraft, and Drones for Wildfire Mitigation and pollution derived from Wildfires.

Last, Encino and AerialZeus strive for a well-balanced governance. Both companies possess Engineers and Scientists with strong academic and industrial backgrounds. AerialZeus' team mainly comprises Native Spanish-speaking Engineers and Scientists, adding an important bilingual component that is resourceful when conveying any findings and information.

4. Please provide the number and size ($) of technical projects previously managed for coordination and communication with both community and technical contractors.

In the State of California, AerialZeus has worked closely with various public agencies, including the California Department of Transportation (CALTRANS), the Sacramento Municipal District (SMUD), and the Office of Energy and Infrastructure Safety (OEIS). In collaboration with these agencies, AerialZeus have successfully managed significant technical projects, demonstrating ability to coordinate and communicate effectively with both community stakeholders and technical contractors. The project portfolio includes diverse initiatives such as infrastructure safety assessments, environmental impact evaluations, and community engagement programs, with project sizes ranging from small to large-scale initiatives. Additionally, AerialZeus' extensive experience in overseeing complex technical projects has enabled developing robust coordination and communication strategies tailored to the specific needs of each project, promoting collaboration among multidisciplinary teams and ensuring seamless information dissemination to both technical contractors and community stakeholders. The following is a list of the recent and relevant projects in the State of California:

- California Department of Transportation (CALTRANS)
  - Project name: *Multispectral classification Aerial detection of Baker's Meadowfoam,* 3-year contract
  - Project Size ($): 13,000,000.00

- Sacramento Municipal District (SMUD)
  - Project name: *Geographic Information Systems (GIS) deployment*, 3-year contract
  - Project Size ($): $3,000,000.00

- Office of Energy and Infrastructure Safety (OEIS)
  - Project name: *Independent Evaluator of the SDGE's Wildfire Mitigation Plan in 2021 and 2022,* one-year contract
  - Project Size ($): 2,000.000.00

5. How would you apply your engagement and coordination model on a statewide scale?

In scaling the engagement and coordination model to a statewide level, a multifaceted approach can be implemented that prioritizes inclusive participation, transparency, and effective communication across diverse communities and regions within California.

Encino and AerialZeus believe that building complex stakeholder relationships and fostering collaborative partnerships is critical, hence, the aim is to establish a robust framework that facilitates comprehensive engagement with community members, local organizations, regulatory bodies, and governmental agencies throughout the State. The approach encompasses the development of interactive online platforms and geospatial tools that enable real-time access to critical environmental data, fostering greater public awareness and active participation in environmental initiatives.

Additionally, we intend to leverage both companies' expertise in utilizing GIS technologies to create dynamic mapping applications, interactive dashboards, and informative data visualizations that provide stakeholders with valuable insights into air quality monitoring and environmental management practices on a statewide scale. By leveraging transparent communication channels, promoting knowledge-sharing endeavors, and facilitating collaborative decision-making processes. The engagement and coordination model will seek to empower communities and stakeholders across the State to actively contribute to the collective efforts aimed at promoting environmental sustainability and public health.

Section III – Mobile Monitoring Technologies and Capabilities

1. How many mobile monitoring platforms do you currently own and operate? How long have these platforms been in operation?

Encino currently owns and operates the following emission monitoring assets:

a) 15 mobile emissions testing laboratories for combustion sources;
b) Five (5) FTIR units capable of operating through vehicles; and
c) 35 mobile optical gas imagining equipped trailers.

a. What areas/sources/locations do you have experience conducting mobile monitoring?

Encino has primarily operated the above assets for upstream and midstream oil and gas operations throughout the Permian, Bakken, and Eagle Ford basins. Additionally, Encino has performed services in populated Houston, Dallas, and other equivalent metropolitan areas.

b. Has collected data been used to support community emission reduction, enforcement, or other actions? Please provide examples.

Encino's goal with emissions monitoring is to provide its customers with the knowledge and capabilities to understand what and where emissions reduction investments should be. While not directly reducing emissions, Encino prides itself in giving its customers the ability to pinpoint areas of concern and assist in recommending and monitoring the effect of third-party emission reduction methodologies.

2. Please provide operational information on your company's current mobile monitoring capabilities. This should answer the following questions:

Encino currently operates in over 15 states in the lower 48 (including work in California) utilizing the equipment listed above. Additional information can be provided upon request.

a. What frequency can platforms be deployed?

All mobile laboratories and testing platforms can be deployed on either a batch or continuous basis; downtime related to calibration activities and general maintenance. However, Encino strives to achieve >95% uptime of all equipment during deployments.

b. What days/hours are the platforms generally in use?

All mobile laboratories/platforms can operate on a 24 hours a day 7 days a week basis; however, this is ultimately subject to Federal, State, and Local labor laws and standards and health, safety, and environmental (HSE) policies notwithstanding.

c. What pollutants can be monitored and with what frequency?

The system can effectively measure the majority of the compounds/pollutants listed in the attached scope of work; with the exception of Particulate Matter (would require aerosol retrofit), metals, and hydrogen sulfide.

d. What types of instrumentation do you use? Describe all relevant methodologies.

- FTIR
- OGI
- QOGI
- Hyperspectral Systems
- Multi-Spectral and Single Bandpass
- Paramagnetic Oxygen Analyzers
- Chemiluminescence Analyzers
- Electrochemical Cells
- Photoionization Detection (PID)
- Flame-Ionization Detection (FID)
- Catalytic Oxidation (VOC Detection)
- Non-dispersive Infrared Detection (NDIR)

e. What level of coverage or scale of monitoring can be accomplished within a community? (For example, how would you approach characterizing emissions from a source or identifying a leak? How long would that take?)

Encino believes the most effective strategy for this project involves the use of mobile platforms (trucks) equipped with FTIR instrumentation; with a probe that commingles samples at 16.7%, 50.0%, and 83.3% of a long line (e.g., 14' mast). This provides for accurate quantification and characterization of target gas species within the pedestrian breathing zone (0 – 14' above grade).

This methodology provides for continuous sampling of target pollutants which can be presented geospatially with heat maps to indicate pollutant "hot spots".

Once the hot spot has been properly analyzed and speciated – based upon the pollutant registration, a more refined monitoring/measurement technique may be employed.

For example, if the mobile emissions monitoring system identifies an area of concern for common combustibles, then Encino would recommend gaining access to the source (or in the vicinity of) and utilize FTIR for further contextual gas classification. If an area or source is determined to have a higher rate of air toxics (i.e., hazardous air pollutants), then the response might include dispatching a team of leak detection and repair (LDAR) specialist to further identify individual sources.

If a "hot spot" is observed for methane or select heavier hydrocarbons (e.g., propane, butane, hexane, etc.), then Encino might recommend deploying a mobile emissions platform equipped with a continuous QOGI System to further investigate the nature of the leak/release.

f. How do you determine that you've adequately characterized a given area?

Adequate area characterization will be determined via Encino's standard operating procedures and data validation measures.

g. What workflow processes or software do you have for managing mobile monitoring?

Encino utilizes EmCollect™ which is a proprietary data acquisition system (DAS) which includes a scheduling and business-process model. This system is capable of ingesting measurements/data from combustion laboratories, mobile systems, and handheld instruments with the ability to display data layers with geospatial analysis.

3. Describe your usual approach or strategy to mobile monitoring. Include, if possible:

a. Drive plan and operational logistics

Drive plan and logistics plan would be provided once a detailed SOW is provided.

b. Staffing

Deployment is performed by an Encino's field technicians. Depending on the technology commissioning of the technology is performed by either the field technician or one of Encino's Application Engineers.

c. Power requirements (e.g. battery powered, requires generator, etc.)

Batch scenario testing is performed utilizing a combination of generator and truck battery power.

Near continuous monitoring power is provided in full by Encino Environmental Services.

Continuous monitoring power must be provided onsite. Varying technologies require different power and there are multiple avenues to supply. Facility power is the first and most efficient option but if that is not available, Encino has utilized solar trailers and, as a last resort, diesel generators to supply operational power.

d. Consumables

Required consumables for Encino equipment is included in Encino pricing.

- Filters;
- Calibration gases;
- Personal Protective Equipment specific to each task.

e. Quality control procedures

Encino has a QMS system with standard operating procedures which are in conformance with ISO 9001: 2015. QAPPs are project specific and would be developed upon defining project scope.

f. Performance and acceptance criteria (e.g. precision, bias, limit of detection)

Performance and acceptance criteria is generally determined by the method(s) employed. Encino rigorously follows:

1. ASTM D6348-03;
2. EPA Method 205;
3. EPA Method 3A;
4. EPA Method 2 (and variants);
5. EPA Method 4;
6. EPA Method 19;
7. EPA Method 21;
8. Optical Gas Imaging (OGI) (Appendix K);
9. EPA Method 325a and 325b;
10. Performance Specification 2 and 8;
11. Optical Remote Monitoring Handbook (EPA Publications); and
12. ASTM D7036-16.

g. Data logging and storage

All data is processed at the edge and securely transferred to Encino's EmCollect System.

h. Notifications and communication

Data reports are primarily provided to the customer withing 30 days of batch scenario test.

Near continuous and continuous monitoring can be reported at whichever frequency the customer would prefer. The standard for these monitoring protocols is every 30 days.

Additionally, permanent installation of continuous monitoring equipment allow for the ability to integrate data outputs into a facility's own monitoring infrastructure (i.e. SCADA).

4. Please provide an estimated cost to operate all applicable mobile monitoring platforms as a function of time (e.g. 1 week of monitoring) deployed and/or measurements taken.

a. These cost estimates should include all costs associated with mobile monitoring operation. This includes but is not limited to:

See below.

i. Direct costs – instrumentation consumables and repairs, vehicle operation costs, staff cost to operate platforms, recharging requirements.

See below.

ii. Indirect costs – support staff costs, associated insurance for operation, administrative overhead, any required permits.

See below.

iii. Data Management – costs to move data from raw data collected by instrumentation to the final data products requested by CARB.

All costs for Encino's estimate included in attachment C include the above direct, indirect and data managements costs listed above.

b. How often are invoices and payments typically required?

Net 30 days after issuance date.

5. If an RFP is developed based on the information provided here, how much preparation time is required to deploy the platforms and begin monitoring?

Batch scenario monitoring can be deployed within 2-3 weeks of finalizing project details. This is subject to availability.

a. Do you have recommendations for a minimum timeline to achieve potential monitoring objectives described here?

For batch monitoring procedures, Encino recommends three thirty-minute tests for understanding performance of a system or three one-hour tests to align with regulatory requirements. This is based on EPA and TCEQ guidelines and may differ with CalEPA requirements.

Near-continuous monitoring is structured.

For continuous monitoring scenarios, Encino recommends a permanent installation to best understand the performance of a facility or grouping of equipment. If that is not possible, Encino will work with CARB to determine an amount of time that would provide an appropriate idea of the environmental and operational footprint each facility or equipment has. In previous projects, Encino recommended a six-month deployment at a minimum.

b. What is the maximum number of platforms that you could deploy by early 2025?

If the award was provided in Q2 2024 Encino estimates, we could have the following mobile equipment available for this scope of work.

- Truck based emissions testing laboratory for ambient air quality testing – 10-12 units.
- Trailer based emissions testing laboratory for direct source testing – 1-2 units.
- Trailer based OGI camera system for direct source monitoring – 6-8 units.

6. Do you have experience developing Community Air Monitoring Plans (CAMPs) as defined by the CARB Community Air Protection Program Blueprint[5] or similar? Please provide examples of community-focused monitoring plans or similar

While Encino and AerialZeus LLC do not have direct experience in developing Community Air Monitoring Plans (CAMPs) as outlined by the CARB Community Air Protection Program Blueprint, AerialZeus' team possesses extensive expertise in engaging and collaborating with diverse

stakeholders in California, including government agencies, industry representatives, and community groups.

AerialZeus' notable experience lies in developing and implementing comprehensive approaches for assessing Wildfire Mitigation Plans (WMP). AerialZeus has been entrusted by the Office of Energy and Infrastructure and Safety (OEIS) for consecutive years (2021-2022) to monitor work performance quality and ensure compliance with Public Utility Codes, regulations, and standards by integrating advanced geospatial technologies.

AerialZeus successfully executed projects in San Diego County for San Diego Gas and Electric (SDG&E). The team conducted thorough background data reviews and utilized geospatial analysis with satellite imagery to assess vegetation conditions and identify areas at high risk of wildfire. AerialZeus also formulated detailed plans for collecting and storing data through web-based applications and geodatabases. Additionally, AerialZeus employed geoprocessing software to pinpoint infrastructure issues and created online dashboards for effective communication with government stakeholders.

Building on this experience, Encino and AerialZeus are confident in developing methodologies aligned with the principles outlined in Appendix E of CARB's Statewide Air Monitoring Plan. The approach will incorporate the key 89 elements of the air monitoring program, including reviewing existing community air monitoring systems, integrating advanced sensing monitoring technologies for air quality assessment, deploying geospatial tools for meaningful analysis, and using web-based solutions for data broadcasting. Encino and AerialZeus believe this approach facilitate communication, ensuring all stakeholders are well-informed and actively engaged in collective efforts to improve overall air quality.

The following information describes a general approach to where geospatial tools can be used to address air monitoring plans:

- Deploying dynamic mapping capabilities to characterize and locate air pollution.
- Helping identify the scope of actions that data will support based on the pollution type and its distribution.
- Mapping the existing information to define and improve the air monitoring objectives.
- Support planning strategies regarding the monitoring method and equipment selection.
- Conducting GIS analysis to assist in determining monitoring areas and routes to deploy mobile air monitoring units.
- Supporting work plans and developing GIS solutions for data collection, database creation, and storage.
- Assisting in creating online dashboards to track progress and effectiveness evaluation. Online dashboards will also engage stakeholders and communicate results.
- Integrating air monitoring sensor datasets with geoprocessing to analyze and interpret information.

7. Do you have existing standard operating procedures (SOPs) or quality assurance project plans (QAPPs) for your mobile monitoring approach?

Encino has a QMS system with standard operating procedures which are in conformance with ISO 9001: 2015. QAPPs are project specific and would be developed upon defining project scope.

Section IV – Data Collection, Storage, Reporting

1. In what format do you generally provide data to your clients? What is your final data product?

Utilizing advanced geographic information system (GIS) techniques, Encino and AerialZeus suggest creating dynamic and interactive data visualizations, incorporating heat maps, time-series analyses, and thematic maps, to present cohesive and easily understandable representations of complex environmental/pollution data.

GIS information is typically provided in standardized GIS formats, such as shapefiles, geodatabases, database file format (.dbf), or geoJSON files, to ensure compatibility with various GIS software, systems, or web-based geoportals. Moreover, the final data product may include comprehensive spatial datasets, maps, and visualizations that depict pollutant concentrations, hotspots, and other relevant geospatial information for informed decision-making. Regarding some application programming interfaces (APIs), we can also provide Web Map Service (WMS), which serves geospatial data as images (e.g., PNG, JPEG), as well as Web Feature Service (WFS), serving geospatial data as vector features (e.g., points, lines, polygons). These standards align with the Open Geospatial Consortium (OGC). The format of the request and response data also varies between the different web service APIs.

2. Do you have off-the-shelf, or modifiable-off-the-shelf, data management products compatible with mobile monitoring data?

In the context of data collection, storage, and reporting, the GIS personnel can offer a range of specialized data management solutions tailored to accommodate mobile monitoring data seamlessly. These solutions include utilizing sophisticated Geographic Information System software such as ArcGIS Online and ArcGIS Enterprise, which can effectively handle, and store large volumes of spatial data collected from diverse monitoring platforms. Moreover, the implementation of ArcGIS Collector and Survey123 enables the seamless collection of field data through mobile devices, facilitating real-time data capture and integration. These tools provide a user-friendly interface for data collection in the field, ensuring the compatibility of the collected data with the existing data management infrastructure. Additionally, the integration of ArcGIS Insights facilitates data analysis and visualization by developing dynamic dashboards and reports that provide valuable insights into the spatial distribution of pollutants and their potential impacts. This comprehensive approach ensures the efficient management, integration, and reporting of mobile monitoring data, enabling informed decision-making and effective mitigation strategies to address air quality concerns across various communities in California.

3. What is your experience in mobile monitoring data analysis and visualization? Specifically, do you have any experience using ESRI products to manage and visualize data?

Encino Environmental Services has experience in mobile monitoring data analysis. AerialZeus has significant capabilities in monitoring and broadcasting GIS data utilizing advanced GIS software, including ESRI products such as ArcGIS enterprise, ArcGIS Pro, mobile-based

applications (Survey123 or FieldMaps), Geoportals or online dashboards, for effective data management, analysis, and visualization.

One of the most recent experiences developed by the AerialZeus' GIS team was using ESRI products to monitor quality compliance for wildfire mitigation initiatives in California. The AerialZeus' GIS team has served San Diego Gas & Electric (SDG&E) as an Independent Evaluator of wildfire mitigation efforts for multiple years in conducting aerial and field inspections of roughly 120 categories of wildfire prevention initiatives. The GIS team developed sampling plans to assess compliance throughout the High Fire Threat Districts of SDGE service territory using utility data to develop sampling selection, implemented multispectral imagery, conducted spatial analysis in ArcGIS pro, created online dashboards for broadcasting field inspection results and developed mobile applications to conduct field inspections using ArcGIS FieldMaps to provide navigation capabilities to the field team & Survey123 to collect infrastructure data.

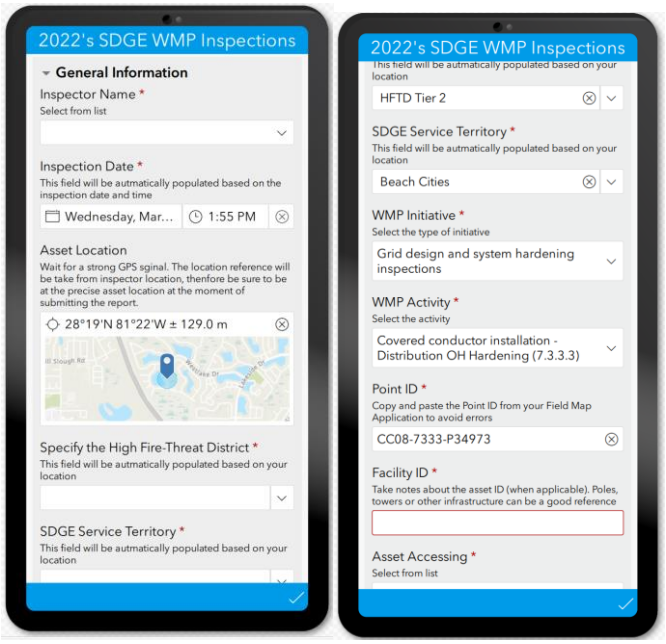
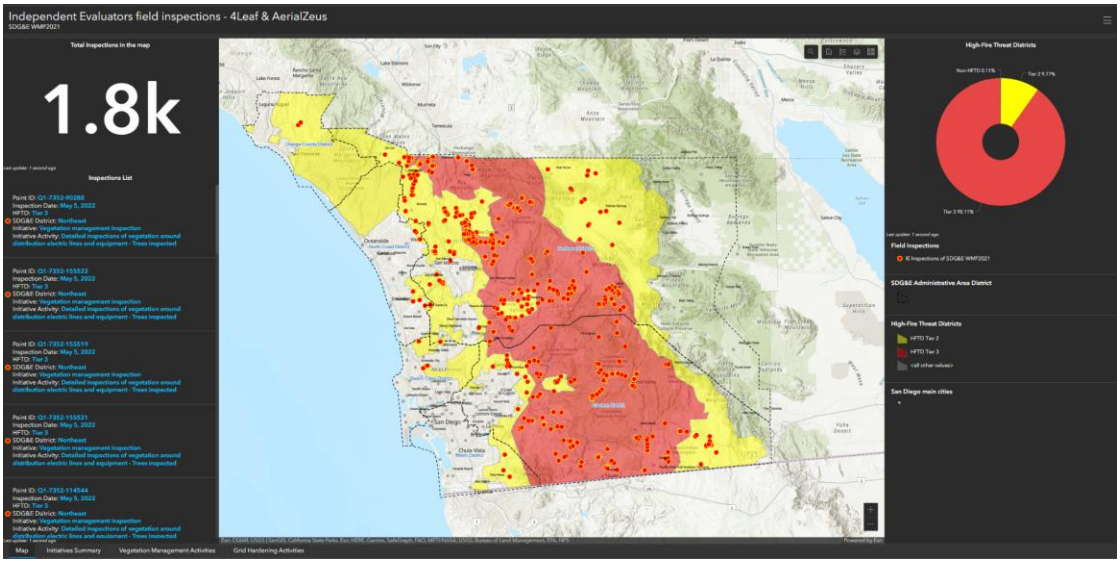


Figure. Field Inspections form in ArcGIS Survey123



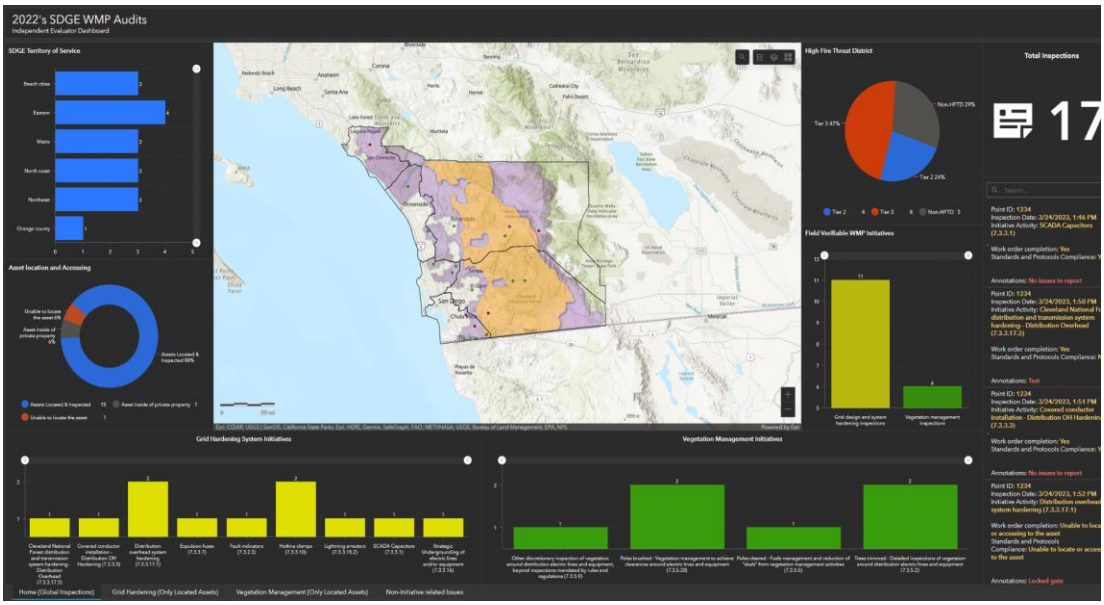


Figure. Online Dashboard from the IE's project from 2022

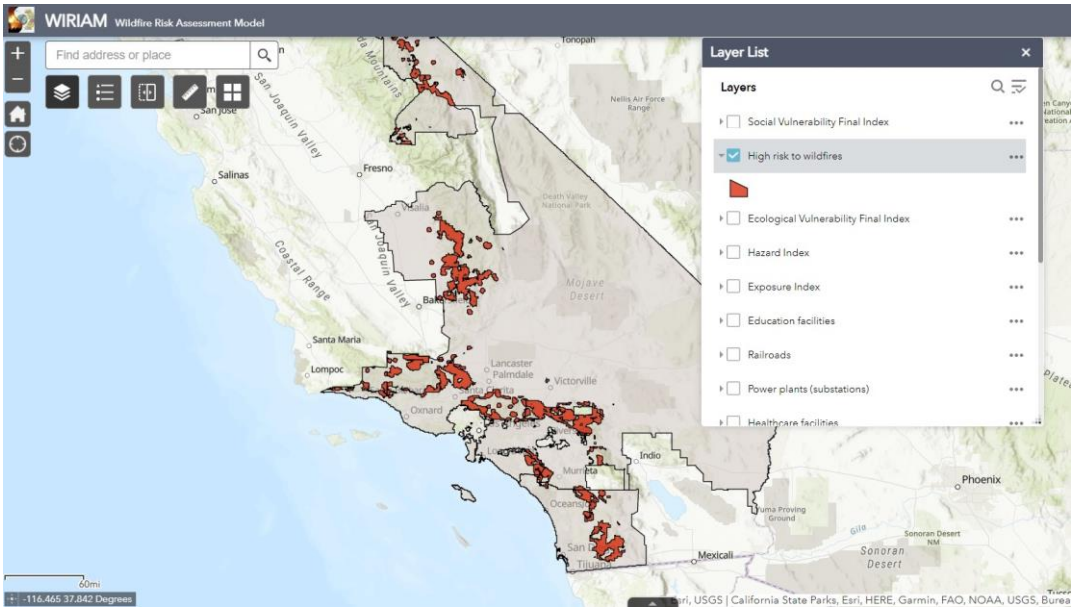


Figure. Geoportal developed to visualize spatial data

The comprehensive approach utilized in monitoring quality compliance for wildfire mitigation initiatives, as demonstrated by our recent experience with ESRI products, can be seamlessly tailored to effectively monitor spatial data for the scope of work outlined in this RFI by the CARB. By leveraging ESRI's robust GIS tools, including ArcGIS Pro, ArcGIS FieldMaps, and Survey123, it can facilitate the seamless collection, analysis, and visualization of complex environmental data related to pollution monitoring. This tailored approach will enable the efficient assessment of various pollutants across different regions, allowing for the identification of hotspots, spatial patterns, and potential sources of contamination.

Additionally, integrating online dashboards and spatial analysis capabilities will ensure that stakeholders and the public have access to visualizations, promoting transparency and facilitating informed decision-making processes to mitigate the adverse impacts of pollution on communities across California.

4. What is your experience in public dissemination of complex information? To what extent have you generated data visualization for the public?

In the State of California, AerialZeus' extensive experience in the public dissemination of complex information using ESRI tools involves the proficient use of various platforms to enhance public entities' engagement and understanding of environmental issues. Leveraging ESRI's ArcGIS Online platform, AerialZeus has created dynamic and interactive web-based mapping applications, which provide users with real-time access to comprehensive spatial data visualizations about field infrastructure inspections. An example could be an ESRI Story Map that AerialZeus created for some utilities in California: https://arcg.is/19Tb4q. It's a narrative with a stronger sense of place that illustrates spatial relationships, including different maps and formats.

Additionally, using ArcGIS dashboards has allowed to effectively present information, enabling stakeholders to grasp the intricacies of environmental data related to the regulation compliance and quality assessment on infrastructure management in the wildfire mitigation project with SDGE.

In addition, AerialZeus' team members have experience with creating Web Mapping and Geoportal platforms like the one of the National Geographic Institute from Argentina, related to risk from natural hazards (including risk from chemical products) https://riesgo.ign.gob.ar/

5. What suggestions do you have for handling large amounts of data from a variety of sources (e.g. multiple mobile monitoring platforms) into cohesive data visualizations?

Here are some relevant suggestions:

- Cloud-Based Data Integration and Storage Solutions: Leveraging robust cloud-based platforms, such as AWS or Azure, can facilitate the efficient integration of data from various monitoring platforms into a centralized repository. This approach will ensure data accessibility, scalability, and security while enabling data synchronization and collaboration among multiple stakeholders.
- Data Standardization and Interoperability: Establishing standardized data formats and protocols across all mobile monitoring platforms is essential to streamline the integration process. Adopting industry-standard formats such as GeoJSON/Shapefile/WMS/WFS can enable seamless data interoperability, facilitating the smooth aggregation and visualization of diverse datasets within the GIS environment.
- Utilization of Data Processing Pipelines: Implementing data processing pipelines using advanced ETL (Extract, Transform, Load) tools can enable the automated processing, transformation, and cleansing of large datasets from various sources. By incorporating automated workflows and data quality checks, inconsistencies and errors within the data will be identified and rectified, ensuring the integrity and reliability of the integrated data for cohesive visualizations.
- Scalable Data Visualization Techniques: Employing scalable data visualization techniques, such as dynamic heat maps, time-series analysis, and interactive geospatial dashboards, can facilitate the effective representation of complex spatial data. This approach allows for identifying trends, patterns, and anomalies within the data, enabling stakeholders to make informed decisions and derive actionable insights for targeted pollution mitigation strategies.

As mentioned, AerialZeus' team members have experience creating Web Mapping and Geoportal platforms like the one of the National Geographic Institute from Argentina, related to risk from natural hazards (including risk from chemical products) https://riesgo.ign.gob.ar/

Section V – Feedback

1. Provide input on the requirements or areas listed in this RFI. Specifically, CARB is looking for:

a. Availability of existing systems that perform all or a portion of the requirements in Section II – C. New systems cannot be built using funds in a potential RFP

To understand emissions performance from any source whether it be stationary, mobile, combustion, biogenic, and/or (not limited to) process-related upsets and releases. This is achieved through vertical integration of sampling systems and methodologies (FTIR-based combustion laboratories, ambient air quality monitoring "nodes" or networks, field-personnel, and/or satellite-based detections). By ingesting critical (and temporally relevant) environmental performance data combined with social and operational contextualization, it is Encino's vision to create an "ecosystem" of measurement practices and technologies to both inform and promote actionable change.

b. Questions, suggested modifications, or additions to the proposed environment that would allow or encourage potential bidders. Please include justifications for any suggested changes and concept modifications

Since Encino operates mobile systems (combustion labs, handheld instruments, and mobile GHG platforms (US Patent No.: 11,474,090)) we are constantly in a state of operational readiness. Any additional equipment needed to complete this project can be procured within our normal supply chain environment (would not require additional equipment or expertise).