**APPLICANT QUESTIONAIRRE**

By submitting this document with my typed name below, I acknowledge that it contains no confidential business information and that it will be shared with the “Project Team” consisting of members of Project Astra, such as the University of Texas, EDF, GTI, SLR International, ExxonMobil, Pioneer Natural Resources and AT&T, as well as additional industry collaborators and independent experts.

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| **Part 1: General Information** | |
| 1 | Please provide contact information of the person responsible for this project application. Name:  Position/title:  Contact number:  Email address. |
| **2** | Please provide information for a contact on the **technical/scientific development team** for your technology (if different from above).  Name:  Position/title:  Contact number  email address. |
| **3** | If selected, you will be required to transport your technology to the field site in West Texas. In that scenario, how many personnel would be involved? |
| **4** | What is the typical amount of time required for site installation? |
| **5** | If selected, are you able to mobilize your equipment and personnel to field sites in West Texas in late July 2020? |
| **6** | Are you able to provide the sensor and support for this test at no cost? (*Please note that West Texas Methane Showdown (WTMS) is anticipated to be uncompensated, but the technology selected for the 2022 roll out will be compensated*). |
| **7** | Please comment on the stage of development for your technology. Choose one: (1) research and development, (2) testing and prototype stage, or (3) available in the market. Elaborate if your technology does not strictly fall under any of these categories. |
| **8** | If technology is not commercially available, do you anticipate being on the market with your technology? Please provide an estimated time when it will be available. (e.g., Q4 2020). |
| **Part 2: Technology Specifications** | |
| **1** | Does your technology use a methane-only sensor or a multi-gas sensing system? If so, please explain what other co-emitted species are measured. |
| **2** | What is the physical footprint of your sensor? (square feet of ground space) |
| **3** | Is your equipment and sensor intrinsically safe? |
| **4** | How often do you need manual intervention? How frequently do you have to calibrate the system? Do/Can you perform calibration measurements on-site? If not, please specify how your system is calibrated. Is your system able to be calibrated via remote connectivity? |
| **5** | How is data collected/transmitted from the sensor? Does your sensor have integrated short-range capabilities such as LoRa, Wi-Fi, Bluetooth, etc.? Do your sensor have integrated cellular capabilities such as LTE, LTE-M, NBIoT, etc.? |
| **6** | Describe the temporal resolution of your data. If you collect data periodically, please specify frequency. What is the storage capacity of your device? |
| **7** | Describe briefly the physical mechanism underlying your sensor (e.g., hyperspectral infrared imaging, cavity ring-down absorption spectroscopy, etc.). Please be specific. |
| **8** | What is the sensor’s absolute minimum and maximum detection limits (concentration basis in ppm or ppb, or other suitable units). |
| **9** | What is the precision and accuracy of the sensor for all gas species it measures? Describe  how the precision and accuracy was determined. |
| **10** | What are the power requirements for the technology in the field? Please specify needs, or how you plan to supply power to your system during the field test. |
| **11** | Does your instrument normally get deployed with its own anemometer station? |
| **12** | Describe any operating limits (known or suspected) of your technology for the following  variables:  a. Air temperature:  b. Humidity:  c. Interferences:  d. wind speed:  e. Aerosols (smoke, dust):  f. Active rainfall or snowfall:  g. Other atmospheric/surface conditions: |
| **Part 3: Commercial Viability** | |
| **1** | What is the TRL level (scale?) of your sensor technology – please provide a basis for your statement. |
| **2** | Please describe any relevant testing you have participated in and the outcomes. (e.g., ARPA-E MONITOR, field trials, controlled testing) |
| **3** | Are you using commercially available sensors/sensor-parts for your system? |
| **4** | If someone were to purchase your sensors, what would it cost per sensor? (Please explain any relevant metrics or assumptions) |
| **5** | If your technology were mass-produced, what is your estimate of what it would cost to build: 100, 1000, and 10,000+ units? Please provide rationale and identify costs excluded from your estimate. (*Note: your costs should include supplying your own power, sensor support structures, installation costs, but should not include costs for anemometer stations*) |
| **6** | What is your strategy to get to scale on manufacturing – value chain, gross manufacturing, etc., and by what year? What are your constraints in reaching this scale by late 2021? |
| **7** | What expertise is required to operate your sensor? What kind of training requirements will be required of a potential operator? |
| **8** | [For academic or other non-business sector applicants]: Do you aspire to seek commercialization for your innovation? What types of path(s) to commercialization are you assessing? |
| **9** | Is your system already deployed at either pilot or commercial scale (e.g., a single site system or part of a sensor network)? If so, please describe your current commercial offering and any relevant partners. |