

**MEMORANDUM OF UNDERSTANDING**

UNIVERSITY PARTNER: Cal State LA University Auxiliary Services, Inc.

Regarding: Predicting What We Breathe Project

Agreement Number: \_\_\_\_\_

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**AGREEMENT BETWEEN  
THE CITY OF LOS ANGELES  
AND  
CAL STATE LA UNIVERSITY AUXILIARY SERVICES, INC. (UAS)  
FOR PREDICTING WHAT WE BREATHE AIR QUALITY PROJECT**

**THIS AGREEMENT** is made and entered into by and between the City of Los Angeles, California, a municipal corporation (hereinafter referred as the “City”), and Cal State LA University Auxiliary Services, Inc., a non-profit corporation under the laws of the State of California (hereinafter referred as the “UAS”), located on the campus of California State University, Los Angeles (hereinafter referred as the “University”).

RECITALS

**WHEREAS**, the City proposes to gather satellite and ground level data, and use predictive analytics and machine learning to complete extensive air quality research on the effectiveness of the City’s interventions (from tree planting to policy changes).

**WHEREAS**, the UAS has provided data analytics and machine learning expertise through other grant work and as a partner in the Data Science Federation.

**WHEREAS**, the City is planning to complete this Air Quality research through a grant from NASA which will aid to inform the City’s Resilient LA and Sustainability plans on improving air quality by taking steps to reduce air pollution.

**WHEREAS**, the parties hereto wish to enter into an Agreement pursuant to which the UAS will perform the work and furnish the services as described herein for consideration and upon the terms and conditions as hereinafter provided.

**NOW THEREFORE**, in consideration of the above promises and of the terms, covenants and considerations set forth herein, the parties do agree as follows:

## **1.0 PARTIES TO THE AGREEMENT AND REPRESENTATIVES**

### **1.1 Parties to the Agreement**

The parties to this Agreement are:

- a. City – The City of Los Angeles, a municipal corporation, acting by and through the Bureau of Street Lighting, having its principal office at 1149 South Broadway, #200, Los Angeles, California 90015.
- b. UAS – Cal State LA University Auxiliary Services, Inc., a non-profit corporation and Sponsored Program Administrator for California State University, Los Angeles, with a business address at 5151 State University Drive, GE 314, Los Angeles, CA 90032.

### **1.2 Representatives to the Agreement**

The representatives of the parties who are authorized to administer this Agreement to whom formal notices, demands, and communications will be given are as follows:

- a. The City's representative is, unless otherwise stated in the Agreement:

Jeanne Holm, Senior Technology Advisor to the Mayor and Chief Data Officer  
 City of Los Angeles  
 Mayor's Office of Budget & Innovation  
 200 North Spring Street  
 Los Angeles, CA 90012

With copies to:

Bureau of Street Lighting Contract Administration  
 1149 S Broadway #200  
 Los Angeles, CA 90015  
 Attention: Megan Hackney

- b. The Contractor's representative is, unless otherwise stated in the Agreement:

Tariq Marji, Executive Director  
 Cal State LA University Auxiliary Services, Inc.  
 5151 State University Drive, GE 314  
 Los Angeles, CA 90032

### **1.3 Formal Notices**

Formal notices, demands, and communications to be given hereunder by either party must be made in writing and may be effected by personal delivery or by registered or certified mail, postage prepaid, return receipt requested and will be deemed communicated as of the date of mailing.

## 1.4 Notices of Change

If the name of the person designated to receive the notices, demands or communications or the address of such person is changed, written notice will be given in accordance with this Section, within five (5) business days of said change.

## 1.5 Conditions Precedent

- a. **Insurance Requirements.** The Contractor shall comply at all times with all of the insurance requirements set forth in the City of Los Angeles, Standard Provision for City Contracts,
- b. **Changes to Documentation.** Changes to the foregoing documents affecting the performance of the Contractor under this Agreement shall receive City approval in writing before the Contractor may affect the change.
- c. **Contract Assignment.** This contract is not to be assigned to a substitute contractor, a successor in interest, or a purchaser of the contract without express permission of the City. If the City does not approve or grant permission to be a subsequent contractor to assume the services outlined in this contract, then the contract will be terminated.

## 2.0 TERM OF AGREEMENT

The term of Agreement shall be from May 18, 2020 through May 18, 2023. Said term is subject to the termination provision contained in this Agreement.

## 3.0 SERVICES TO BE PROVIDED

- 3.1 The UAS will work with City and non-City Air Quality stakeholders noted in Sections 2.1 (Ground AQ Sensor Data) and 2.3 (NASA Mission data) of the PWWB proposal to collect, cleanse and analyze the data collected.
- 3.2 The UAS will develop machine learning algorithms for identifying and monitoring air quality trends, as well as predict air quality patterns, using satellite and ground level data and leveraging other data sets to measure mode shift and other changes in air quality patterns.
- 3.3 The UAS will select the cloud computational environment.
- 3.4 The UAS will work with the City to showcase the project at scheduled air quality convenings (local and global) from 2020 - 2023.
- 3.5 The UAS will make algorithms and cleansed datasets accessible via GitHub and/or other agreed upon open source tools
- 3.6 The UAS will produce quarterly technical, mid-year interim and annual reports during the duration of the project.
- 3.7 The UAS will provide expenditure reports and invoicing during the duration of the project.

- 3.8 The UAS will synthesize research, outcomes, and key findings into annual reports during each project year.

### 3.6 Service Delivery

The UAS shall provide the data analysis and services based on the following schedule:

Task #	Tasks	Start	Duration
Task 3.1	Identify, develop, confirm data models	Third quarter 2020	Through first quarter 2022
Task 3.2	Select data architecture	Fourth quarter 2020	Through fourth quarter 2020
Task 3.3	Initialize computational space	Fourth quarter 2020	Through fourth quarter 2020
Task 3.4	Migrate data to platform	Fourth quarter 2020	Through fourth quarter 2020
Task 3.5	Data cleansing and preprocessing	Fourth quarter 2020	Through fourth quarter 2020
Task 3.6	Develop machine learning algorithm	Fourth quarter 2020	Through first quarter 2021
Task 3.7	Conduct training runs	First quarter 2021	Through fourth quarter 2021
Task 3.8	Validate algorithm	Second quarter 2021	Through first quarter 2022
Task 3.9	Final machine learning model refinement	Fourth quarter 2021	Through second quarter 2022
Task 3.10	Publish open source data and code	Fourth quarter 2021	Through third quarter 2022
Task 3.11	Complete Financial Reporting (per reporting requirements)	Third quarter 2020	Through fourth quarter 2022
Task 3.12	Complete Quarterly Technical report	Third quarter 2020	Through third quarter 2022
Task 3.13	Mid-Year Interim Report	Fourth quarter 2020	Through second quarter 2022
Task 3.14	Annual Report	Second quarter 2021	Through third quarter 2022

## 4.0 COMPENSATION AND METHOD OF PAYMENT

### 4.1 Compensation

The City shall pay the UAS for the satisfactory performance of the terms and conditions of this Agreement. Total costs for this project equal \$433,593.00 and is payable per Section 200.202(b)(2). Co-I Pourhomayoun will be dedicated for 66% effort for the summer for two years, and during the academic year at 21.6% effort (Year 1) and 21.6% effort (Year 2). Salary rate is based on PI's current appointed Academic Year (AY) salary rate. A 3% cost of living increase has been considered for the salaries of all personnel including the Co-I. Also, a faculty fringe benefit rate of 17% is applied to the summer salary for the Co-I.

**Other Personnel:** Computer Science Graduate and Undergraduate Students: Three students and one PostDoc (or Research Associate) are budgeted for every year of the project. The students will play an important role in research progress and the achievement of the project objectives. The graduate students will work closely under the supervision of the PI and Co-I in development, end-to-end integration, and testing of the major components described in the proposal. They will be involved in system design and development, back-end development and data processing, machine learning, and predictive analytics.

**Other Cost: Travel and Supplies:** Attending project-related meetings and conferences, as well as presenting research findings, is an important aspect of research academia. We plan for at least four travels (including two in-state and two out-of-state travels) throughout the project lifetime. The estimated amount of \$10K per year is budgeted for travel expenses to attend relevant conferences and workshops and present findings. This includes participation in related conferences and ESTO and/or AIST required project meetings. The budget includes \$4900 to purchase high-performance computer per year for graduate students' access for data processing, analytics, and machine learning.

Senior Design Project: 5 senior undergraduate students per year are budgeted to participate in the project development and implementation.

**Indirect Costs (Facilities and Administrative Costs):** This grant allows for 8% Facilities and Administrative Costs. This is inclusive of any required lab space.

The money provided in this agreement is a gift and may not be used for any other overhead costs.

The grantee allows to deposit the fund by the end of the project term OR after that until all funds are spent.

The UAS shall be responsible for paying for any and all of the incidental costs (e.g., travel, outsourced programming, storage). The UAS incurs in providing services to the City.

The UAS's services are being performed as an independent contractor and not as an agent or employee of the City. Thus, the UAS is not entitled to any vacation, sick leaves, workers' compensation, pension or any other City benefits.

## 4.2 Method of Payment

### Invoices

The City shall pay the UAS in accordance with Section 4.1 above and the other conditions and provisions of this Section after receipt and approval of the UAS's invoices by the City. To ensure that services provided under personal services contracts are measured against services as detailed in the contract, the Controller of the City of Los Angeles has developed a policy requiring that specific supporting documentation submitted with invoices.

### Billing & Invoicing Requirements

The UAS is required to submit invoices that conform to City standards and include, at a minimum, the following information:

1. Name and address of UAS
2. Name and address of City department being billed
3. Date of invoice and period covered
4. Contract number
5. Description of completed task and amount due for tasks including:
  - a. Name of personnel working on tasks
  - b. Hours spent on task and timesheet supporting changes (if applicable)
  - c. Rate per hour and total due
6. Certification by Contractor
7. Discount and terms (if applicable)
8. Remittance Address (if different from company address)

All invoices shall be submitted on UAS's letterhead, contain UAS official logo, or other unique and identifying information such as the name and address of the contractor. Evidence that tasks have been completed, in the form of a report, brochure, or photograph, shall be attached to all invoices. Invoices shall be submitted within 30 days of service, or monthly, and shall be payable to the UAS no later than 30 days after City approval of a complete invoice. Invoices are considered complete when appropriate documentation or services are signed off as satisfactory by the City's Contract Manager.

Invoices and supporting documentation shall be prepared at the sole expense and responsibility of the UAS. The City will not compensate the UAS for costs incurred in invoice preparation.

The City may request, in writing, changes to the content and format of the invoice and supporting documentation at any time. The City reserves the right to request additional supporting documentation to substantiate at any time. Failure to adhere to these policies may result in nonpayment or non-approval of demands, pursuant to Charter 262(a), which requires the Controller to inspect the quality, quantity, and condition of services, labor, materials, supplies, or equipment received by any City office or department, and approve demands before they are drawn on the Treasury.

The UAS understands that the City makes no commitment to fund this Agreement beyond the terms set herein.

Invoices must be e-mailed and mailed to:



Megan Hackney  
 Bureau of Street Lighting  
 City of Los Angeles  
 1149 S Broadway #200  
 Los Angeles, California 90015  
 jeanne.holm@lacity.org

## **5.0 OWNERSHIP AND INTELLECTUAL PROPERTY RIGHTS**

### **5.1 Intellectual Property Warranty**

The UAS represents and warrants that its performance of all obligations under this Agreement does not infringe in any way, directly or indirectly, upon any third party's intellectual property rights, including, without limitation, patents, copyrights, trademarks, trade secrets, and rights of publicity.

### **5.2 Survival of Provisions**

The provisions of this Section shall survive expiration or termination of this Agreement. Further, the rights and remedies are cumulative of those provided for elsewhere in this Agreement and those allowed under the laws of the United State, the State of California, and the City of Los Angeles.

## **6.0 RETENTION OF RECORDS**

The UAS shall maintain records pertaining to the performance of this Agreement, in their original form, in accordance with requirements prescribed by the City. These records must be retained for a period of no less than three (3) years following final payment made by the City hereunder or the expiration date of this contract, whichever occur last. Said records will be subject to examination and audit by authorized City personnel or by the City's representative at any time during the term of this contract or within the three (3) years following the final payment made by the City hereunder or the termination date of this Agreement, whichever occurs last. The UAS will provide any reports requested by the City regarding performance of the Agreement.

## **7.0 TERMINATION**

### **7.1 Termination for Convenience**

**CITY** may terminate this Contract for **CITY'S** convenience at any time by providing **UAS** thirty days written notice. Upon receipt of the notice of termination, **UAS** shall immediately take action not to incur any additional obligations, costs or expenses, except as may be necessary to terminate its activities. **CITY** shall pay **UAS** its reasonable and allowable costs, including documentable non-cancellable obligations (e.g. procurement costs which are paid in advance for which costs are non-refundable and student fee tuition and remission costs) through the effective date of termination and those reasonable and necessary costs incurred by **UAS** to effect the termination. Thereafter, **UAS** shall have no further claims against **CITY** under this Contract. All work, finished and unfinished documents and materials ("Work Products") produced under this Contract, shall become **CITY** property upon the date of the termination. **UAS** agrees to execute

any documents necessary for CITY to perfect, memorialize, or record CITY'S ownership of rights provided herein.

### **7.2 Termination for Breach of Agreement**

- a. If UAS fails to perform any of the provisions of this Agreement or so fails to make progress as to endanger timely performance of this Agreement, City may give UAS written notice of such default. If UAS does not cure such default or provide a plan to cure such default which is acceptable to the City within the time permitted by City, then City may terminate this Agreement due to UAS's breach of this Agreement.
- b. If a federal or state proceeding for relief of debtors is undertaken by or against UAS, or if UAS makes an assignment for the benefit of creditors, then City may immediately terminate this Agreement.
- c. If UAS engages in any dishonest conduct related to the performance or administration of this Agreement or violates City's lobbying policies, then City may immediately terminate this Agreement.
- d. In the event City terminates this Agreement as provided in this Section, City may procure, upon such terms and in such manner as City may deem appropriate, Services similar in scope and level of effort to those so terminated, and UAS shall be liable to City for all of its costs and damages, including, but not limited to, any excess costs for such Services.
- e. All finished or unfinished documents and materials produced or procured under this Agreement shall become City property upon date of such termination.
- f. If, after notice of termination of this Agreement under the provisions of this Section, it is determined for any reason that UAS was not in default under the provisions of this Section, or that the default was excusable under the terms of this Agreement, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to Section 7.1, Termination for Convenience.
- g. The rights and remedies of City provided in this Section shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Agreement.

### **8.0 CONFIDENTIALITY OF INFORMATION**

Information, documents, records, software programs, and data furnished to the UAS by the City and other documents to which the UAS has access during the term of this Agreement are confidential information (herein after referred to as "Confidential Information"). The UAS may not disclose Confidential Information in any manner without the prior written consent of the City.

### **9.0 AMENDMENTS**

Any change in the terms of this Agreement must be incorporated into this Agreement by a written amendment properly executed and signed by the person authorized to bind the parties thereto.

**10.0 RATIFICATION**

Due to the need for the UAS's services to be provided expeditiously, UAS may have provided services prior to the execution of this Agreement. To the extent that UAS's services were performed in accordance with the terms and conditions of this Agreement, those services are hereby ratified.

**11.0 STANDARD PROVISIONS**

The UAS shall comply with the applicable requirements of the Standard Provisions for City Contracts (Rev. 10/17)[V.3], attached hereto as Appendix A and incorporated herein by this reference.

**12.0 ENTIRE AGREEMENT**

This Agreement contains the full and complete Agreement between the two parties. No verbal agreement or conversation with any officer or employee of either party will affect or modify any of the terms and conditions of this Agreement.

This Agreement is executed in three (3) originals, each of which is deemed to be an original.