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CALIFORNIA



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OFFICE OF THE
BOARD OF PUBLIC WORKS

DR. FERNANDO CAMPOS
EXECUTIVE OFFICER

200 NORTH SPRING STREET
ROOM 361, CITY HALL
LOS ANGELES, CA 90012

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<http://bpw.lacity.org>

October 16, 2020

BPW-2020-0650

The Honorable Mayor Garcetti
City Hall – Room 320
Los Angeles, CA 90012
Attn: Heleen Ramirez

The Honorable City Council
Room No. 395
City Hall

GRANT ACCEPTANCE - NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

As recommended in the accompanying report from the Director of the Bureau of Street Lighting, which this Board has adopted, the Board of Public Works (Board) recommends that the Mayor and City Council:

1. AUTHORIZE the Executive Director of the Bureau of Street Lighting or designee to accept this NASA Grant and execute any necessary agreements, in an amount not to exceed \$2,500,000 from NASA, for a 2.5-year period effective October 20, 2020 through May 15, 2023;
2. AUTHORIZE the Bureau of Street Lighting to accept the NASA grant, approve the designation of the Bureau of Street Lighting as the administrative and fiscal agent for the NASA Grant to facilitate receipt and disbursement of grant funds, track and report matching funds, as well as reimburse the City for any grant-related expenditures;
3. APPROVE the program grant agreement for the Bureau of Street Lighting to assist the City in the NASA Grant implementation in accordance with the terms and conditions set forth in the grant agreement;
4. AUTHORIZE the Controller to transfer and deposit \$822,271 from Fund TBD to the Bureau of Street Lighting Fund 347, Dept. 50, Account TBD;



Grant Acceptance - NASA

5. APPROVE the program grant agreement between the Bureau of Street Lighting and OpenAQ in the amount of \$74,000 to conduct two workshops and assist the City in the NASA Grant implementation in accordance with the terms and conditions set forth in the grant agreement; and
6. APPROVE the program grant agreement between the Bureau of Street Lighting and the California State University Los Angeles in the amount of \$433,593 to conduct data analysis and assist the City in the NASA Grant.

Fiscal Impact: There is no impact to the General Fund.

Sincerely,



DR. FERNANDO CAMPOS,
Executive Officer, Board of Public Works

FC:lc

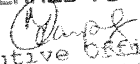
DEPARTMENT OF PUBLIC WORKS
BUREAU OF STREET LIGHTING
REPORT NO. 1
DATE: OCTOBER 16, 2020

BPW-2020-0650

ADOPTED BY THE BOARD
PUBLIC WORKS OF THE CITY
of Los Angeles, California
AND REFERRED TO THE MAYOR
OCT 16 2020

CD/s: ALL

Honorable Board of Public Works
of the City of Los Angeles

AND REFERRED TO THE CITY COUNCIL

Executive Officer
Board of Public Works

REQUEST FOR AUTHORITY TO ACCEPT GRANT FUNDING FROM THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA) IN AN AMOUNT NOT TO EXCEED \$2,500,000; AUTHORITY TO EXECUTE AN AGREEMENT WITH EACH, OPEN AQ, AND THE CALIFORNIA STATE UNIVERSITY LOS ANGELES (CSULA); AUTHORITY TO APPROPRIATE FUNDS TO BUREAU OF STREET LIGHTING'S (BSL) CONTRACTUAL SERVICES ACCOUNT UPON AVAILABILITY OF FUNDS.

RECOMMENDATIONS

Recommending the Board of Public Works (Board), subject to Mayor and Council Approval:

1. Authorize the Executive Director of BSL or designee to accept this NASA Grant and execute any necessary agreements, in an amount not to exceed \$2,500,000 from NASA, for a 2.5-year period effective October 20, 2020 through May 15, 2023;
2. Authorize BSL to accept the NASA grant, approve the designation of the Bureau of Street Lighting as the administrative and fiscal agent for the NASA Grant to facilitate receipt and disbursement of grant funds, track and report matching funds, as well as reimburse the City for any grant-related expenditures;
3. Approve the program grant agreement for the Bureau of Street Lighting to assist the City in the NASA Grant implementation in accordance with the terms and conditions set forth in the grant agreement;
4. Authorize the Controller to Transfer and deposit \$822,271 from Fund TBD to BSL Fund 347 Dept 50 Account TBD;
5. Approve the program grant agreement between BSL and OpenAQ in the amount of \$74,000 to conduct two workshops and assist the City in the NASA Grant implementation in accordance with the terms and conditions set forth in the grant agreement;
6. Approve the program grant agreement between BSL and the California State University Los Angeles (CSULA) in the amount of \$433,593 to conduct data analysis and assist the City in the NASA Grant

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implementation in accordance with the terms and conditions set forth in the grant agreement.

TRANSMITTAL

1. Copy of Agreement with OpenAQ
2. Copy of Agreement with CSULA

DISCUSSION

Background

The City submitted a competitive proposal to NASA's Advanced Information Systems Technology call for proposals and was selected. The project, *Predicting What We Breathe*, funds air quality research and system development using machine learning and predictive data analytics using satellite and ground data. This will provide the City of Los Angeles with information about the effectiveness of our interventions (from tree planting to policy changes) on air quality in specific L.A. neighborhoods, and provide a platform for sharing data and successful city solutions with other global cities. In addition, the project will study the effect of decreased traffic during the COVID-19 safer at home time.

ABOUT L.A.'S AIR QUALITY DATA

The City of Los Angeles is in a unique situation to be an urban proving ground to look at how to better understand, predict, and mitigate the issues of air pollution for 4 million citizens. The proposed system (Predicting What We Breathe) looks at the time-series measurements of aerosol and ozone data and public and private ground data sensors and applies machine learning to uncover patterns that may not be discernible to human analysts. By enhancing human understanding and prediction of air quality, local governments and others can help mitigate the effects of air pollution through interventions that have measured results.

Data will be brought together from multiple sources, many of which (but not all) are running through the OpenAQ platform and are being used or provided by Federal, State, City, or other organizations, and this allows for easier data federation and layering. Most of the data used is expected to be geospatial data as the assessments and sensors are all tied to a specific location. Partners on this project include the

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South Coast Air Quality Management District (AQMD) and the County of Los Angeles, and private organizations like Anthem Blue Cross, and community groups like the Southern California Asthma Association.

Ambient air quality data (PM2.5, PM10, O3, and NO2 from ground monitoring sources in other global cities will be accessed via the OpenAQ Platform (openaq.org), which is an open-source platform (github.com/openaq) that makes available historical air quality data from government and research sources, and has aggregated 405,485,362 air quality measurements from 10,386 locations in 70 countries. Data are aggregated from 117 government level and research-grade sources. The disparate data sources are made available through one harmonized data format, making the dataset well-suited to analyzing and comparing cities' ambient air quality. We will be using the data standards and toolkit within OpenAQ for data aggregation and normalization.

COMPLEMENTING THE COVID DATA ANALYSIS, THE GREEN NEW DEAL, A RESILIENT L.A., AND THE SUSTAINABILITY PLAN

The project supports both the City's Green New Deal Sustainability pLAn and the Resilient Los Angeles Plan as they relate to air quality efforts. Within the Green New Deal, this project supports achieving the targets for clean, healthy air through identifying ways to reduce air pollution (Chapter 8, Industrial Emissions and Air Quality Monitoring). In the Resilient Los Angeles plan, Goals 12 and 15 with corresponding actions 74, 75, and 95 will be addressed by the NASA project:

- Goal 12: Use climate science to develop adaptation strategies consistent with the Paris Climate Agreement
 - Action 74: Transition to zero-emissions technology at the Port of LA to reduce emissions, improve air quality and build disaster resilience
 - Action 75: Transition to fossil-fuel free streets to fight air pollution and help tackle the global threat of climate change
- Goal 15: Grow public, private and philanthropic partnerships that will increase resources dedicated to building resilience
 - Action 95: Collaborate with cities to build resilience around the globe

The Air Quality Lead in the Office of Sustainability and the Chief Resilience Officer are part of the Project's Leadership team.

The Chief Data Officer is also serving as the Principal Investigator and was the submitter of the proposal. She has 30 years of experience at NASA in the field of satellite data and extensive experience in data architectures, machine learning, and smart cities.

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PROJECT GOALS AND EXPECTED OUTCOMES

Year One

The team will identify the datasets, and develop a framework to collect and analyze data, look at historical trends and events, select a data architecture and models, initialize the computational space and migrate data to it, create a first set of machine learning algorithms to understand data trends, run the algorithm against the training data, and validate the initial set of algorithms. Community meetings at conferences and in Los Angeles, online forums, and a social media campaign will help to ensure community usage and participation early on. A workshop in L.A. will occur virtually or in person as possible.

Year Two

Focus: The team will refresh the data identification to include possible additional datasets, validate the models based on emergent research, run the algorithms against control data, and update/retrain algorithms and run against additional control data. As this work is completing and preparing for initial open source publication, the team will hold an international workshop to socialize the models, promote the open source, and gather requirements. Sister cities will be identified and recruited.

Throughout the task, there are administrative activities as well to ensure that the project meets the goals and remains on time and on budget. These include:

- Weekly virtual team meetings and monthly virtual team deep dive sessions
- Quarterly technical reports (7) and quarterly budget meetings
- Mid-year interim reports (2) and annual reports (2)
- Annual ESTO meeting attendance

Specific goals of this project are to:

1. Create a sustainable city and community
2. Continue leadership on climate action
3. Innovate approaches to clean water and sanitation

GRANT ADMINISTRATION AND MANAGEMENT

The responsibility for the administration and management of this grant will rest with BSL.

BSL will oversee \$822,271 for project management and conduct data collection,

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integration, and analysis work to be conducted at the City, while \$433,593 will be contracted to California State University, Los Angeles (a member of the City's Data Science Federation) to apply machine learning to these big data sets and develop algorithms that provide predictive analytics and historical assessment of past interventions. \$74,000 will be used by OpenAQ to support access to high-quality air quality data and to conduct open workshops to make this more useful for Angelenos and community groups, and also for other megacities in the world. This work will be coordinated with the Chief Data Officer who is the designated NASA Principal Investigator for the project.


FISCAL IMPACT STATEMENT

There is no additional impact to the General Fund in the current year with the approval of the above recommendation. The recommendation in this report is consistent with the City's Financial Policies.

STATUS OF FINANCING

There is no impact to the General Fund, and there is no request necessary for front funding. The City has already been chosen for the grant, with current funding of \$1.3M, and the possibility of additional funding in Year 2, up to \$2.5M total. NASA will disperse funds twice per year, with the first disbursement expected before December 2020. The second disbursement would be expected in March 2021.

Respectfully submitted,



Megan Hackney
Executive Officer
Bureau of Street Lighting

MEMORANDUM OF UNDERSTANDING

ORGANIZATION PARTNER: OpenAQ

Regarding: Predicting What We Breathe Project

Agreement Number: _____

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**AGREEMENT BETWEEN
THE CITY OF LOS ANGELES
AND
OPEN AQ
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 OpenAQ, a Washington, DC-based non-profit organization (hereinafter referred as the “OpenAQ”), located in Washington, DC (hereinafter referred as the “Washington, DC”).

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, OpenAQ will help provide and identify ground monitoring air quality data, providing additional sources, as feasible and available.

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 OpenAQ will provide harmonized data sets from their open data platform (including 10,000 government and research stations from 70 countries) as well as run 1 in-person air quality workshop in Los Angeles and 1 virtual workshop.

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 S Broadway, Suite 200, Los Angeles, California 90015.
- b. OpenAQ – OpenAQ, a Washington, DC based 501(c)(3) non-profit organization, with a business address at 1226 9th St NW #200, Washington, DC 20001.

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:

Christa Hasenkopf, Executive Director
 OpenAQ
 1226 9th St NW #200
 Washington, DC 20001

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 OpenAQ will identify ground monitoring air quality data from their 10,000 government and research stations from 70 countries, harmonized into one data format. As feasible, OpenAQ may add additional data sources ("refresh data") and provide these additional sources. To note: This agreement does not cover building additional adapters to the OpenAQ Platform.
- 3.2 OpenAQ will ensure identified data is available via their open source platform and provide user-requested data from the platform via csv files or json. OpenAQ can additionally provide support to users on how to access and implement existing open-source tools built on top of the OpenAQ Platform.
- 3.3 OpenAQ will run two (2) air quality workshops with key program stakeholders. One workshop will be held in Los Angeles and the other will be virtual.
- 3.4 OpenAQ will produce quarterly technical, mid-year interim and annual reports during the duration of the project.
- 3.5 OpenAQ will provide expenditure reports and invoicing during the duration of the project.
- 3.6 OpenAQ will synthesize outcomes and key findings into annual reports during each project year.

3.6 Service Delivery

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

Task #	Tasks	Start	Duration
Task 3.1	Identify and share status of existing data upon request	Second quarter 2020	Through first quarter 2022
Task 3.2	Continue to publish open source data as available	Third quarter 2021	Through first quarter 2022
Task 3.3	Design and run OpenAQ air quality workshops (2 workshops - 1 in LA, 1 virtual)	Third quarter 2021	Through fourth quarter 2021
Task 3.4	Complete Financial Reporting (per reporting requirements)	Second quarter 2020	Through third quarter 2022
Task 3.5	Complete Quarterly Technical report	Second quarter 2020	Through second quarter 2022
Task 3.6	Mid-Year Interim Report	Third quarter 2020	Through first quarter 2022
Task 3.7	Annual Report	First quarter 2021	Through second quarter 2022

4.0 COMPENSATION AND METHOD OF PAYMENT

4.1 Compensation

The City shall pay OpenAQ for the satisfactory performance of the terms and conditions of this Agreement. Total costs for this project equal \$74,000.00 and is payable per Section 200.202(b)(2). This includes the continuous costs of OpenAQ support and expertise, \$46,000 and costs for the in-person and virtual air quality workshops, \$28,000.

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

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

OpenAQ's services are being performed as an independent contractor and not as an agent or employee of the City. Thus, OpenAQ 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 OpenAQ in accordance with Section 4.1 above and the other conditions and provisions of this Section after receipt and approval of OpenAQ'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

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

1. Name and address of OpenAQ
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 OpenAQ's letterhead, contain OpenAQ 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 OpenAQ 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 OpenAQ. The City will not compensate OpenAQ 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.

OpenAQ 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

OpenAQ 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

OpenAQ 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. OpenAQ 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 **OpenAQ** thirty days written notice. Upon receipt of the notice of termination, **OpenAQ** 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 **OpenAQ** 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 **OpenAQ** to effect the termination. Thereafter, **OpenAQ** 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. **OpenAQ** 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 OpenAQ 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 OpenAQ written notice of such default. If OpenAQ 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 OpenAQ's breach of this Agreement.
- b. If a federal or state proceeding for relief of debtors is undertaken by or against OpenAQ, or if OpenAQ makes an assignment for the benefit of creditors, then City may immediately terminate this Agreement.
- c. If OpenAQ 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 OpenAQ 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 OpenAQ 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 OpenAQ by the City and other documents to which OpenAQ has access during the term of this Agreement are confidential information (herein after referred to as "Confidential Information"). OpenAQ 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 OpenAQ's services to be provided expeditiously, OpenAQ may have provided services prior to the execution of this Agreement. To the extent that OpenAQ's services were performed in accordance with the terms and conditions of this Agreement, those services are hereby ratified.

11.0 STANDARD PROVISIONS

OpenAQ 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.

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.