

## THIRD AMENDATORY AGREEMENT

This **THIRD AMENDATORY AGREEMENT** is made between the **CITY AND COUNTY OF DENVER**, a municipal corporation of the State of Colorado (the “City”) and **SENSIBLEIOT, LLC**, a California limited liability company, authorized to do business in Colorado, whose address is 1909 Terrabella Court, Paso Robles, California 93446 (the “Contractor”), jointly (“the Parties”).

### RECITALS:

**A.** The Parties entered into an Agreement dated November 10, 2020, an Amendatory Agreement dated September 27, 2021, and a Second Amendatory Agreement dated November 28, 2022 (collectively, the “Agreement”) perform all of the services set forth on **Exhibit A**, Scope of Work, to the City’s satisfaction.

**B.** The Parties wish to amend the Agreement to extend the term, increase the maximum contract amount, amend the scope of work, and amend the budget.

**NOW THEREFORE**, in consideration of the premises and the Parties’ mutual covenants and obligations, the Parties agree as follows:

1. Section 3 of the Agreement entitled “**TERM:**” is hereby deleted in its entirety and replaced with:

“**3. TERM:** The Agreement will commence on **September 2, 2020**, and will expire **September 1, 2025** (the “Term”).”

2. Section 4 of the Agreement entitled “**COMPENSATION AND PAYMENT:**” Subsection d. (1) entitled “**Maximum Contract Amount:**” is hereby deleted in its entirety and replaced with:

“**d. Maximum Contract Amount:**

**(1)** Notwithstanding any other provision of the Agreement, the City’s maximum payment obligation will not exceed **SEVEN HUNDRED ONE THOUSAND ONE HUNDRED TWENTY DOLLARS AND NO CENTS (\$701,120.00)** (the “**Maximum Contract Amount**”). The City is not obligated to execute an Agreement or any amendments for any further services, including any services performed by Contractor beyond that specifically described in **Exhibit A**.

Any services performed beyond those in **Exhibit A** are performed at Contractor's risk and without authorization under the Agreement."

3. Section 19 of the Agreement entitled "**NO EMPLOYMENT OF WORKERS WITHOUT AUTHORIZATION TO PERFORM WORK UNDER THE AGREEMENT:**" is hereby deleted in its entirety and replaced with:

**"19. [RESCINDED.]"**

4. **Exhibit A, Exhibit A-1, and Exhibit A-2, Scope of Work** are hereby deleted in their entirety and replaced with **Exhibit A-3, Scope of Work**, attached and incorporated by reference herein. All references in the original Agreement to **Exhibit A, Exhibit A-1, and Exhibit A-2** are changed to **Exhibit A-3**.

5. All references in the original Agreement to **Exhibit B, Exhibit B-1 and Exhibit B-2, Budget** now refer to **Exhibit B, Exhibit B-1, Exhibit B-2, and Exhibit B-3. Exhibit B-3** is attached and incorporated by reference herein.

6. As herein amended, the Agreement is affirmed and ratified in each and every particular.

7. This Third Amendatory Agreement will not be effective or binding on the City until it has been fully executed by all required signatories of the City and County of Denver, and if required by Charter, approved by the City Council.

**[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK.]**

**Contract Control Number:** ESEQD-202368616-03 / ENVHL-202056096-03  
**Contractor Name:** SENSIBLEIOT, LLC

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of:

**SEAL**

**CITY AND COUNTY OF DENVER:**

**ATTEST:**

By:

\_\_\_\_\_

\_\_\_\_\_

**APPROVED AS TO FORM:**

**REGISTERED AND COUNTERSIGNED:**

Attorney for the City and County of Denver

By:

By:

\_\_\_\_\_


\_\_\_\_\_

By:

\_\_\_\_\_

**Contract Control Number:**  
**Contractor Name:**

ESEQD-202368616-03 / ENVHL-202056096-03  
SENSIBLEIOT, LLC

By:  BDCED8994CE549B...

Name: Charles Beach  
(please print)

Title: VP of software solutions  
(please print)

ATTEST: [if required]

By: \_\_\_\_\_

Name: \_\_\_\_\_  
(please print)

Title: \_\_\_\_\_  
(please print)

## EXHIBIT A-3 SCOPE OF WORK

### BACKGROUND

Since 2018, the Love My Air program has begun deploying cutting edge air sensor technology to create a citywide air quality monitoring network and evidence-based health intervention program at public schools in Denver, resulting in behavior change and better-informed policy to improve health outcomes.

### GOAL

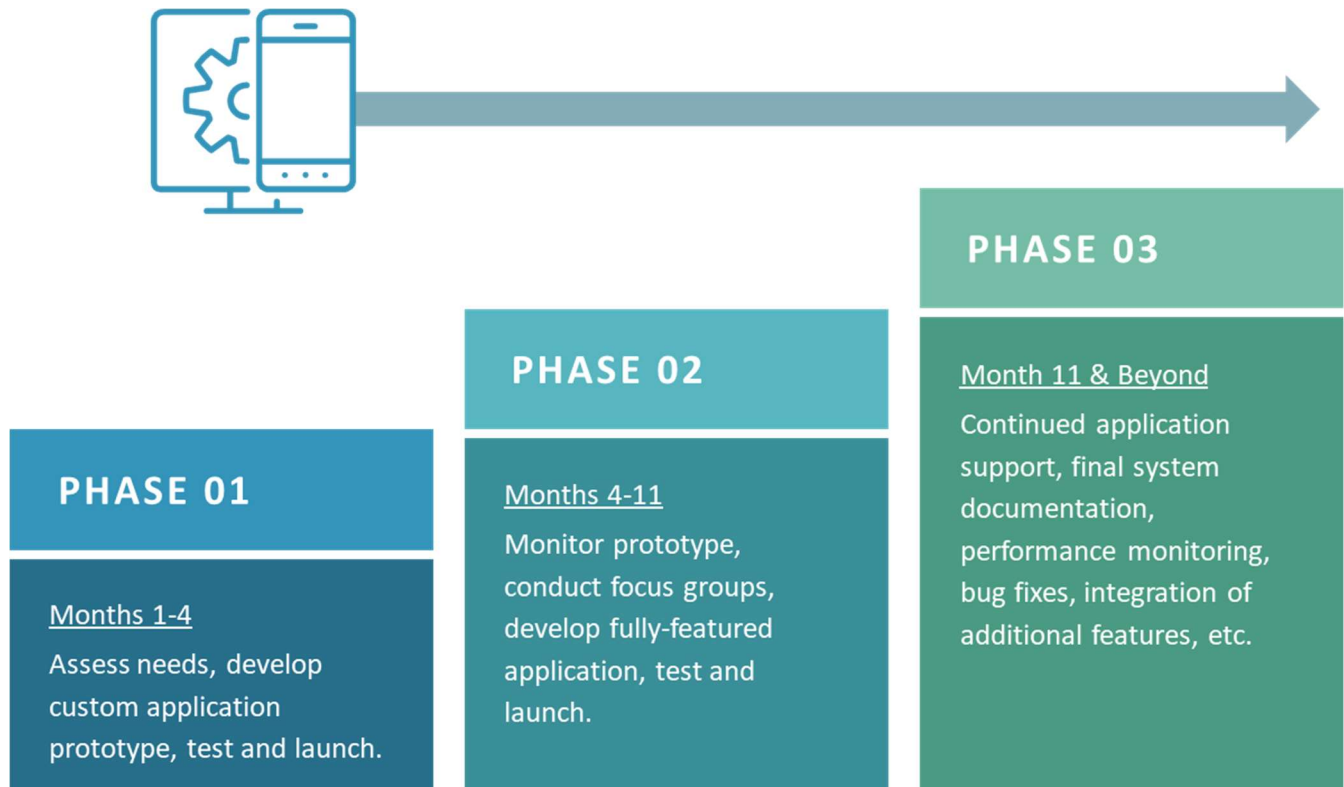
This goal of a phone application is to provide access to real-time information on all aspects of the Love My Air program. It would allow for push notification for influencing behavior change as well as receiving information and feedback from users that will be used to refine programming, data communication, and other program initiatives.

### SCOPE OF WORK

This scope of work includes key tasks and deliverables for development, or delivery, of an app for use by the City and County of Denver (CCD) with access to real time air quality data, understandable and customizable averaging and visualizations, document access (i.e. pdf reports), GPS location, feedback loops, and other interactive qualities.

### PHASES, DELIVERABLES, AND TIMELINES

Contractor must obtain prior written approval for the commencement of each phase.



#### Phase #1

Due to the custom nature of the application initial steps will focus upon working with DDPHE to identify an overarching plan for the application development. Contractor will seek to identify goals for each facet of the application to better

inform the design of the application and ensure it will meet both current and future needs. Phase 1 is intended to be complete upon the deployment of an initial version of the application and to last no longer than four months from the date of contract execution.

### Assessment

During Phase 1, Contractor will collaborate with DDPHE staff to propose and identify requirements/features for a minimum viable product (MVP) to meet the initial needs for the application. Contractor will work with DDPHE to define (and also provide recommendations for) key features of the application, including but not limited to, the following: application features; UI/UX; layout; menu; likely usage; anticipated number of users/load; social aspects/features; and, required features for low-fidelity version. Specifically, we propose that the Phase 1 application developed to meet the basic needs of the LMA phone application should include, at a minimum, the following features:

- Access to real-time air quality measurements
- Geolocation services allowing users to easily access data nearby
- Push notifications of air quality events (including text messaging for phones without data plans)
- Static educational content
- Geolocation opt-in/settings
- Developed for both iOS and Android technology
- Additional features as required by DDPHE to be included in the initial application and/or as agreed upon

### Security/Privacy Concerns

During Phase 1 of the project, Contractor will also propose solutions for and work with DDPHE to address issues related to: security requirements around geolocation tracking and data storage; security and legal requirements related to user reporting of health-related data; and, liability issues related to health advisories being misconstrued as medical advice. Having identified these topics for consideration regarding security concerns, legal requirements, and/or possible liability, we propose the following solutions:

- Security requirements related to geolocation tracking/data storage: A three-pronged approach for geolocation data risk mitigation. First, Contractor will use industry-standard cybersecurity practices and encryption techniques to take all appropriate and prudent steps to protect geolocation data. Depending upon the needs and requirements of DDPHE, Contractor will anonymize data at all levels where not required to do otherwise as a significant risk mitigation factor. Second, provide users with clear and easily accessible options for configuring individual user settings related to geolocation tracking. These settings would include opt-in/opt-out options for geolocation services thereby allowing each user to enable or disable these features, as per normal application standards. Third, we would work with DDPHE to integrate their privacy policy into a robust privacy policy for the LMA phone application.
- Security and legal requirements related to user reporting of health-related data: HIPAA compliance is the most obvious concern related to health data. The LMA phone application RFP does not make mention of any intent to share any of the health-related, user-reported data with any entity covered by HIPAA. The storage of Personal Health Information is easily avoided by anonymizing the data (i.e., not tracking information that identifies the reporting individual – or that could reasonably be used to identify the individual – such as an IP address). Assuming all of the above, the data does not fall under HIPAA requirements and there is no need for concern regarding HIPAA compliance. If, however, the requirements for the application were to change and data would at some point be required to be transmitted to an entity covered under HIPAA or to contain identifying information, then it would be prudent to build-in all appropriate security requirements at the beginning of development rather than attempting to add these security features later in the development process. Contractor will work with DDPHE staff to identify any possibility of requiring transmission of data to any such entity at a future point in time and/or the need to identify the sender of any health-related information.

- Liability issues related to health advisories being misconstrued as medical advice: Contractor believes that the simplest and most effective solution for this issue will be to ensure that we have robust language included in the Terms of Use as well as a disclaimer included within the application. This language should clearly identify that the information contained within the application is informational only and is not intended as medical advice. Contractor will collaborate with DDPHE to ensure that any and all language within such Terms of Use and/or disclaimer are within acceptable guidelines for DDPHE. Services of an attorney to review the language and ensure that it provides adequate and appropriate protection for all parties may also be retained, as needed.

## DEVELOPMENT

Once the baseline for the MVP has been determined in coordination with DDPHE, Contractor will proceed to development. Contractor will develop and deploy a prototype as the Phase 1 phone application for both iOS and Android. The application will be built using React Native, an open-source framework for designing custom applications quickly. This technology is at the core of many well-known applications with which you are likely familiar, including Facebook, Instagram, Bloomberg, Skype, Tesla and many others. This version of the application would be designed to include all identified initially required features and be deployed within four months of contract execution.

### Data Platform

The data for the application will be sourced from Sensible's existing data platform which already runs the LMA DenverAQ website. As a result of that experience, Contractor already has comprehensive knowledge of the data sources, formats, and nuances associated with this data. The data platform is built upon Microsoft SQL Server and has a proven track record of reliability. Additionally, numerous potential data sources were identified in the RFP; data platform already connects to and ingests data from the following: DDPHE FTP site files; AirNow API; AirNow Files on S3; PurpleAir API; ThingSpeak API; Clarity API; Weather Underground API; and, Lunar Outpost. We also have the resources, experience, and technology in place to provide any additional integration to any other data source as needed, requested, or required by DDPHE.

The server hosting the platform is located in a colocation facility with redundant internet connections and secure physical access protocols. Backups are taken daily and stored in an off-site location. The API platform for receipt/ingest of raw data is housed on Microsoft's Azure platform. This ensures that there are two locations securely storing the data, allowing for improved and enhanced data replication and restoration capabilities in the unlikely event of the need to implement disaster recovery protocols.

### Educational Content

TDE has developed a wide range of middle and high school programs that include curriculum, labs, videos for distance learning, and various experiments. Currently, TDE is developing a suite of educational videos for lab experiments specifically designed to address the challenges of distance learning. These materials can easily be integrated into the LMA phone app.

### Testing

Testing will be performed beginning at the feature level, as these pieces are completed, with tests derived from requirements and story acceptance criteria. Overall, test plans incorporate manual testing and test automation, and include load testing, functional testing, and regression testing.

### Launch

Contractor will oversee deployment to both Apple's App Store and Google Play.

## Phase #2

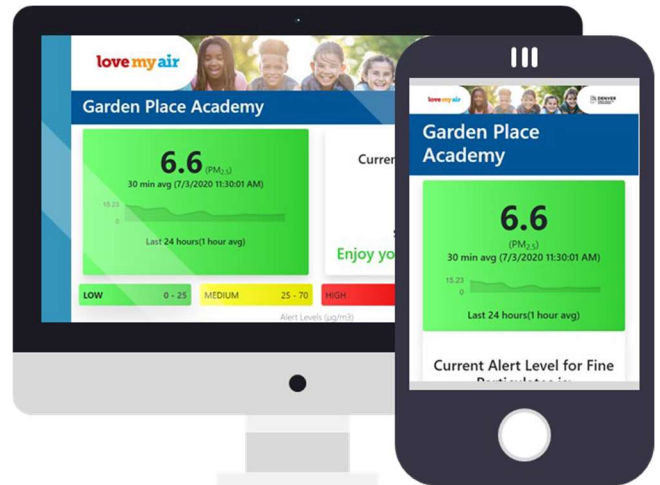
During Phase 2 we will leverage the Phase 1 application to inform and develop a fully-featured application.

### Discovery

Contractor will monitor the Phase 1 application to investigate load, user behavior, identify bugs, and otherwise test the application. This information will be integral to support and inform further development efforts and decisions for the Phase 2 version of the application including, but not limited to, application design, user flow, additional features, etc. Contractor will implement focus groups to gain feedback from a group representative of the actual intended user base. These activities will allow for feature development built around observed usage, load, etc. and provide a forum to identify additional features that would be most appreciated by the audience for whom the application is intended.

Contractor will collaborate with DDPHE to integrate all of the data, processes, features, and information identified throughout the testing and discovery portion of the project to develop and deploy a fully-featured application. The expected result is an application developed securely, built upon a robust platform, implementing all required features, and integrating information obtained from monitoring actual usage of the Phase 1 application. At a minimum, we anticipate and propose adding the following features to the features already included in the Phase 1 version:

- Access to historical air quality data, including reporting tools, averaging, etc.
- User reporting tools for submission of information related to:
  - User action taken in response to air quality events
  - User reporting of symptoms
  - Complaint reporting
- Low fidelity version
- Social aspects
- Customizable surveys
- Upload feature for user submission of photos
- Data, user-reported information, and survey response analysis and review tools for DDPHE staff via Sensible's web-based platform (AirSense)
- Additional features identified during Phase 1 and/or monitoring of Phase 1 application and as agreed upon



### Testing

As with testing during Phase 1, testing for the Phase 2 application will be conducted at the feature level as these components are completed. Tests will be derived from requirements and story acceptance criteria. Overall, test plans will follow the same path: we will incorporate manual testing and test automation and include load testing, functional testing, and regression testing.

### Launch

As with Phase 1, Contractor will manage deployment to Apple's App Store and Google Play.

## Phase #2B Regional Dashboard

In parallel with the app development and roll out of Phase #2, Contractor will create, develop, deliver, and maintain a web-based version of the Love My Air Denver app. This web-based version will leverage the same database and design

element developed for the app allowing for reduced development costs. As part of this phase the contractor will:

- 1) Create and develop dashboard design using elements employed in Love My Air Denver program
- 2) Create sustainable backend infrastructure for management of hybrid air monitoring network; Integrate data streams from all CCD projects including AirNow, PurpleAir.com, BoulderAir, APIS, CC-ND, and CDPHE/CDOT projects
- 3) Hosting of the regional dashboard website through December 31, 2021 at a custom URL to be determined in collaboration with DDPHE.
- 4) Work with project leads to refine beta release of Love My Air Network Dashboard

### Phase #3

Following the deployment of the Phase 2 application, Contractor will continue to monitor and assess performance, load, etc. to ensure the application is functioning properly and meeting DDPHE's needs. Application updates and bug fixes will be rolled out as agreed upon between DDPHE and Contractor.

Contractor will provide system documentation at this stage. This documentation will likely include information related to: application management; data system integration and/or API details; tutorials/instructions for using AirSense data analysis tools; and, methods for updating static educational content.

As a last step to the project, Contractor will also coordinate with DDPHE staff to have a final debrief regarding project success, deliverables, and the possibility for any ongoing support and/or development needs related to the LMA phone application.

### 2022 AirSense, Regional Dashboard, & Mobile App – Hosting & Maintenance

Since 2018 the development, maintenance, and hosting of AirSense has been done through a contract with TD Environmental. Contractor will now take on the responsibilities of that contract as it pertains to the items listed below.

- 1) Hosting and maintenance of the AirSense Denver Dashboard (50 sensors)
- 2) Hosting and maintenance for secure in-school dashboards for the Love My Air school based network.
- 3) AirSense security maintenance for secure hosting
- 4) Hosting and maintenance of the Regional Dashboard
- 5) Hosting and maintenance of the Love My Air Mobile App

### 2023 App and Website Development

Contractor will continue to monitor and assess performance, load, etc. to ensure the application is functioning properly and meeting DDPHE's needs. Application updates and bug fixes will be rolled out as agreed upon between DDPHE and Contractor.

### 2023 AirSense, Regional Dashboard, & Mobile App – Hosting & Maintenance

Contractor will continue to provide hosting and maintenance for the following:

- 1) Hosting and maintenance of the AirSense Denver Dashboard (now 65 sensors)
- 2) Hosting and maintenance for secure in-school dashboards for the Love My Air school-based network.
- 3) AirSense security maintenance for secure hosting
- 4) Hosting and maintenance of the Regional Dashboard
- 5) Hosting and maintenance of the Love My Air Mobile App

### 2024 App and Website Development

Contractor will continue to monitor and assess performance, load, etc. to ensure the application is functioning properly and meeting DDPHE's needs. Application updates and bug fixes will be rolled out as agreed upon between DDPHE and Contractor.

### 2024 AirSense, Regional Dashboard, & Mobile App – Hosting & Maintenance

Contractor will continue to provide hosting and maintenance for the following:

- 1) Hosting and maintenance of the AirSense Denver Dashboard (now 57 sensors)
- 2) Hosting and maintenance for secure in-school dashboards for the Love My Air school-based network.
- 3) AirSense security maintenance for secure hosting
- 4) Hosting and maintenance of the Regional Dashboard
- 5) Hosting and maintenance of the Love My Air Mobile App

### Jan 1 – Sep 1 2025 App and Website Development

Contractor will continue to monitor and assess performance, load, etc. to ensure the application is functioning properly and meeting DDPHE's needs. Application updates and bug fixes will be rolled out as agreed upon between DDPHE and Contractor.

### Jan 1 – Sep 1 2025 AirSense, Regional Dashboard, & Mobile App – Hosting & Maintenance

Contractor will continue to provide hosting and maintenance for the following:

- 1) Hosting and maintenance of the AirSense Denver Dashboard (now 57 sensors)
- 2) Hosting and maintenance for secure in-school dashboards for the Love My Air school-based network.
- 3) AirSense security maintenance for secure hosting
- 4) Hosting and maintenance of the Regional Dashboard
- 5) Hosting and maintenance of the Love My Air Mobile App

### Deliverables

List of all project deliverables:

Deliverable	Description
Language/Policies	Terms of Use, Medical Disclaimer, and Privacy Policy
Phase 1 Application	Phase 1 LMA phone application for iOS and Android with key features
Recommendations	Recommended changes, improvements, etc. based upon data collected during monitoring of Phase 1 application use
Phase 2 Application	Fully-featured Phase 2 LMA phone application for iOS and Android
Documentation	Final system documentation
Phase 2B Regional Dashboard	Web-based version of the LMA phone application leveraging the same database and information, with additional dataset from regional collaborators

## TIMELINE

Targets for key project dates are outlined in the table below and include estimated duration for completion of each task.

Description	From Contract Execution	Duration
Begin Phase 1	Immediately	
Refine list of key features, design, etc. for MVP	Immediately	3 weeks
Refine language for terms of use/disclaimer	2 weeks	1 week
Phase 1 application development	3 weeks	7 weeks
DDPHE review period	2 months 2 weeks	2 weeks
Refine features, layout, etc.	3 months	1 week
DDPHE user acceptance testing (UAT)	3 months 1 week	1 week
Application rollout	3 months 2 weeks	1 week
Verify application performance	3 months 3 weeks	1 week
End Phase 1	4 months	4 months
Begin Phase 2 + Phase 2B	4 months	
Monitor application for improvements and insights	4 months	2 months
Develop additional features for Phase 2 application	6 months	3 months
Mimic LMA data access, language, and UI in a web-based version.	6 months	4 months
DDPHE review period	9 months	2 weeks
Refine features, layout, etc.	9 months 2 weeks	3 weeks
DDPHE user acceptance testing	10 months 1 week	1 week
Application rollout	10 months 2 weeks	1 week
Verify application performance	10 months 3 weeks	1 week
End Phase 2	11 months	7 months
Begin Phase 3	11 months	
Final system documentation	11 months	1 month
Monitoring, bug fixes, etc.	11 months	TBD
End Phase 3	TBD	TBD
Begin 2023 Website App and Website Development	Immediately//As needed	
Monitor and assess performance, load, etc.	Immediately	12 months

Bug fixes, feature additions, etc. as agreed upon	As needed	12 months
End 2023 Website App and Website Development	12 months	12 months
Begin 2024 Website App and Website Development	Immediately/As Needed	
Monitor and assess performance, load, etc.	Immediately	12 months
Bug fixes, feature additions, etc. as agreed upon	As needed	12 months
End 2024 Website App and Website Development	12 months	12 months
Begin Jan 1 – Sep 1 2025 Website App and Website Development	Immediately/As Needed	
Monitor and assess performance, load, etc.	Immediately	8 months
Bug fixes, feature additions, etc. as agreed upon	As needed	8 months
End Jan 1 – Sep 1 2025 Website App and Website Development	8 months	8 months

# EXHIBIT B-3

## BUDGET

Phase 1	
Development of Phase 1 LMA phone application for iOS and Android	
Educational content integration/development	
Development/integration regarding language for Disclaimer, Privacy Policy, and Terms of Use	
Delivery of Phase 1 LMA phone application (prototype)	
<b>Total Phase 1</b>	<b>\$50,000.00</b>

Phase 2	
Monitoring and review of Phase 1 application	
Development of Phase 2 LMA application for iOS and Android	
Additional data system integration enhancements	
Delivery of Phase 2 LMA phone application (fully-featured)	
<b>Total Phase 2</b> <i>(Note: Budgeted amount reduced from original contract due to unused funds.)</i>	<b>\$160,000</b>

Phase 2B	
Create and develop dashboard design using elements employed in Love My Air Denver program	
Create sustainable backend infrastructure for management of hybrid air monitoring network; Integrate data streams from all CCD projects including AirNow, PurpleAir.com, BoulderAir, APIS, CC-ND, and CDPHE/CDOT projects	
Hosting of the regional dashboard website through December 31, 2021 at a custom URL	
Work with project leads to refine beta release of Love My Air Network Dashboard	
<b>Total Phase 2B</b>	<b>\$14,800</b>

Phase 3	
Minor bug fixes, feature additions, etc.	
Final system documentation	
<b>Total Phase 3</b>	<b>\$24,660</b>

<b>2022 AirSense, Regional Dashboard, &amp; Mobile App – Hosting &amp; Maintenance</b>	
Hosting and maintenance of the AirSense Denver Dashboard (50 sensors); Jan 1 – Dec 31 2022	
Hosting and maintenance for secure in-school dashboards for the Love My Air school based network; Jan 1 – Dec 31 2022	
AirSense security maintenance for secure hosting; Jan 1 – Dec 31 2022	
Hosting and maintenance of the Regional Dashboard; Jan 1 – Dec 31 2022	
Hosting and maintenance of the Love My Air Mobile App; Jan 1 – Dec 31 2022	
<b>Total Phase 2022</b>	<b>\$79,430</b>

<b>2023 App and Website Development</b>	
Monitor and assess performance, load, etc.	
Bug fixes, feature additions, etc. as agreed upon	
<b>Total Phase 2023 Development</b> <i>(Note: Budgeted amount; will not be spent unless used.)</i>	<b>\$60,000</b>

<b>2023 AirSense, Regional Dashboard, &amp; Mobile App – Hosting &amp; Maintenance</b>	
Hosting and maintenance of the AirSense Denver Dashboard (65 sensors); Jan 1 – Dec 31 2023	
Hosting and maintenance for secure in-school dashboards for the Love My Air school-based network; Jan 1 – Dec 31 2023	
AirSense security maintenance for secure hosting; Jan 1 – Dec 31 2023	
Hosting and maintenance of the Regional Dashboard; Jan 1 – Dec 31 2023	
Hosting and maintenance of the Love My Air Mobile App; Jan 1 – Dec 31 2023	
<b>Total Phase 2023 Hosting</b>	<b>\$79,430</b>

<b>2024 App and Website Development</b>	
Monitor and assess performance, load, etc.	
Bug fixes, feature additions, etc. as agreed upon	
<b>Total Phase 2024 Development</b> <i>(Note: Budgeted amount; will not be spent unless used.)</i>	<b>\$60,000</b>

<b>2024 AirSense, Regional Dashboard, &amp; Mobile App – Hosting &amp; Maintenance</b>	
Hosting and maintenance of the AirSense Denver Dashboard (65 sensors); Jan 1 – Dec 31 2024	
Hosting and maintenance for secure in-school dashboards for the Love My Air school-based network; Jan 1 – Dec 31 2024	
AirSense security maintenance for secure hosting; Jan 1 – Dec 31 2024	
Hosting and maintenance of the Regional Dashboard; Jan 1 – Dec 31 2024	
Hosting and maintenance of the Love My Air Mobile App; Jan 1 – Dec 31 2024	
<b>Total Phase 2024 Hosting</b>	<b>\$79,430</b>

<b>Jan 1 – Sep 1 2025 App and Website Development</b>	
Monitor and assess performance, load, etc.	
Bug fixes, feature additions, etc. as agreed upon	
<b>Total Phase Jan 1 – Sep 1 2025 Development</b> <i>(Note: Budgeted amount; will not be spent unless used.)</i>	<b>\$40,000</b>

<b>Jan 1 – Sep 1 2025 AirSense, Regional Dashboard, &amp; Mobile App – Hosting &amp; Maintenance</b>	
Hosting and maintenance of the AirSense Denver Dashboard (65 sensors); Jan 1 – Sep 1 2025	
Hosting and maintenance for secure in-school dashboards for the Love My Air school-based network; Jan 1 – Sep 1 2025	
AirSense security maintenance for secure hosting; Jan 1 – Sep 1 2025	
Hosting and maintenance of the Regional Dashboard; Jan 1 – Sep 1 2025	
Hosting and maintenance of the Love My Air Mobile App; Jan 1 – Sep 1 2025	
<b>Total Phase Jan 1 – Sep 1 2025 Hosting</b>	<b>\$53,370</b>