

JUNE 2023

# AIR MONITORING PLAN

A Framework for Evaluation and Building Resilient  
Solutions Toward a Just Transition in Leimert and  
Surrounding Frontline Communities

# KEY REPORT FINDINGS

Air pollution remains a global and public health concern. Amidst the climate crisis, Black, Indigenous, and People of Color (BIPOC) and historically marginalized communities bear a disproportionate burden of air pollution and other environmental impacts. Leimert Park (a predominantly Black Community in South Los Angeles), is faced with poor air quality compared to other coastal neighborhoods. This Air Monitoring Plan (AMP) examined the current conditions of Leimert Park in regard to air quality. Adopting a community-based participatory model, the authors analyzed the air quality levels from existing case studies and created a roadmap to address existing environmental conditions in Leimert Park. This report offered policy solutions and community-led solutions such as the installation of air sensors in the community, cost analysis, and community benefits impact from this project. A practical resource guide was also provided to help residents with mitigation strategies for air pollution, climate change, and environmental awareness. Monitoring the air quality to understand the pollutant levels in Leimert Park is essential. This will ensure that Leimert Park residents have access to a clean and healthy environment as the world transitions to a sustainable, resilient, and inclusive economy.



# ABOUT EZRACH

[Ezrach](#) is a social, economic, and environmental justice nonprofit that works through faith and community-based organizations to improve the trajectory for historically marginalized communities in South Los Angeles (emphasis on Service Planning Area -SPA 6 Regions).

We do this by identifying trends in our communities in order to develop effective and equitable solutions, working on community-led solutions that incorporate a just transition framework, building trust and healthy community partnerships, community organizing, community education and outreach, offering programs and direct services with community stakeholders for the benefit of community residents.

***To change the trajectory of historically  
marginalized communities,  
one idea at a time***



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# ACKNOWLEDGEMENTS

## Authors:

**Haley Gunther**, UCLA Graduate Student

**Kazuo Harrison**, UCLA Student

**Michael Flores**, UCLA Student

**Edidiong Mendie**, Ph.D., Executive Director of Ezrach Brain Trust Association

This work was done in partnership between UCLA and the Ezrach Brain Trust Association.

The UCLA team would like to express our sincere gratitude to our Project Advisor, **Dr. Edidiong Mendie**, for her invaluable guidance, expertise, and unwavering support throughout the duration of this project. Her insights and feedback have played a crucial role in shaping our approach and ensuring the success of our work.

Additionally, we would like to extend our appreciation to our UCLA Professor, **Dr. Regan Patterson**, for her valuable input and mentorship. Her vast knowledge and encouragement have been instrumental in informing our project and fostering our intellectual growth. We are truly fortunate to have had the opportunity to work with such dedicated and knowledgeable advisors, and their contributions have significantly enriched our learning experience.

We would also like to acknowledge the Chumash and Tongva peoples as the original land caretakers of both the UCLA campus and Leimert Park.

*A special thank you to the Ezrach Brain Trust Association and the people of Leimert Park for allowing us to collaborate on this project.*



**Ezrach Association  
Monitoring Plan 2023**

# EXECUTIVE SUMMARY

Air pollution is detrimental to human health as they emit harmful particles to the environment. Nevertheless, the burden of air pollution is not evenly shared as some racial and ethnic groups have a higher exposure to pollutants. The disparities in the impact of air pollution are experienced in South Los Angeles affecting communities like Leimert Park (a predominantly Black community), which is the basis of this report.

The goals of this report are to:

- Educate the community of Leimert Park about the state of their air quality.
- Educate the community about typical levels of pollutants and Leimert Park's standing.
- Develop a roadmap for Ezrach to spearhead the installation of air monitor sensors in the community and the steps involved.
- Describe how to use these sensors and what the data collected represents.
- Create a resource guide with immediate proactive steps that residents can implement both short-term and long-term for their well-being and safety.

The content of this report is broken down into different sections which encompass:

- Background information on air pollution and criteria pollutants in Los Angeles.
- Overviews of sensor technology.
- Recommendations and justifications for sensors.
- Estimated cost for the entirety of the project and longevity.
- Operational requirements for proper analysis.

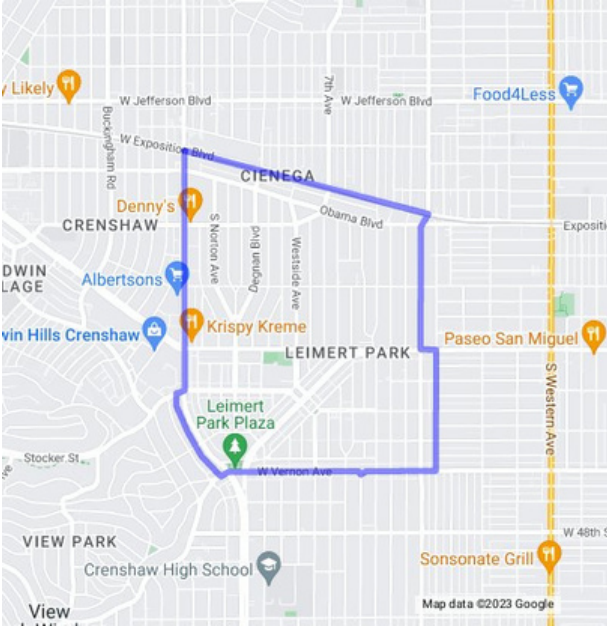
Air pollution remains a significant challenge for the people of Leimert Park and other frontline communities. Combating air pollution requires the collective collaboration of environmental justice organizations, community engagement, academic partnerships, etc.

Ezrach, in collaboration with the UCLA Department of Engineering, answered this call to create this Air Monitoring Plan to help implement solutions that address air pollution in Leimert Park and promote a clean and healthy environment for residents. Ezrach intends to continue the work until every household in Leimert Park has access to clean and healthy air.

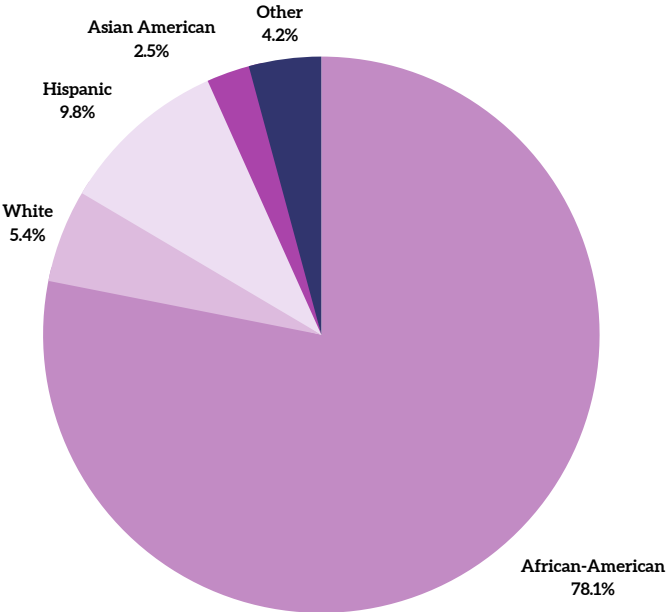
# INTRODUCTION

Leimert Park is a neighborhood found in South Los Angeles. Estimates from the 2020 U.S. Census records a population of 12,000 people, with roughly 9,800 people per square mile. Of this population, around 79% of the neighborhood identifies as Black, much higher than in other parts of LA county.

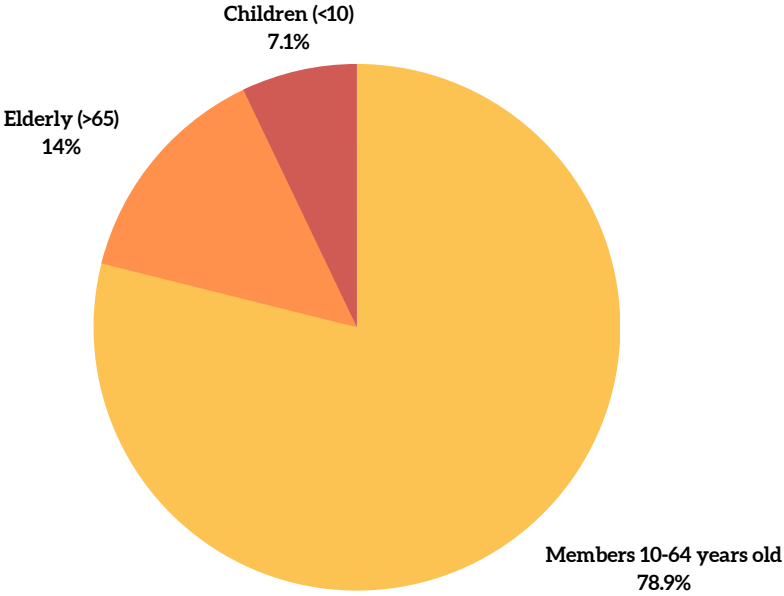
Thanks to the rich African American culture that was fostered in the neighborhood, Leimert Park is considered a center for black art and creativity ([Discover Los Angeles, 2023](#)). The vibrant culture of Leimert Park makes it very unique and residents pride themselves on preserving this culture.



Source: Google Maps



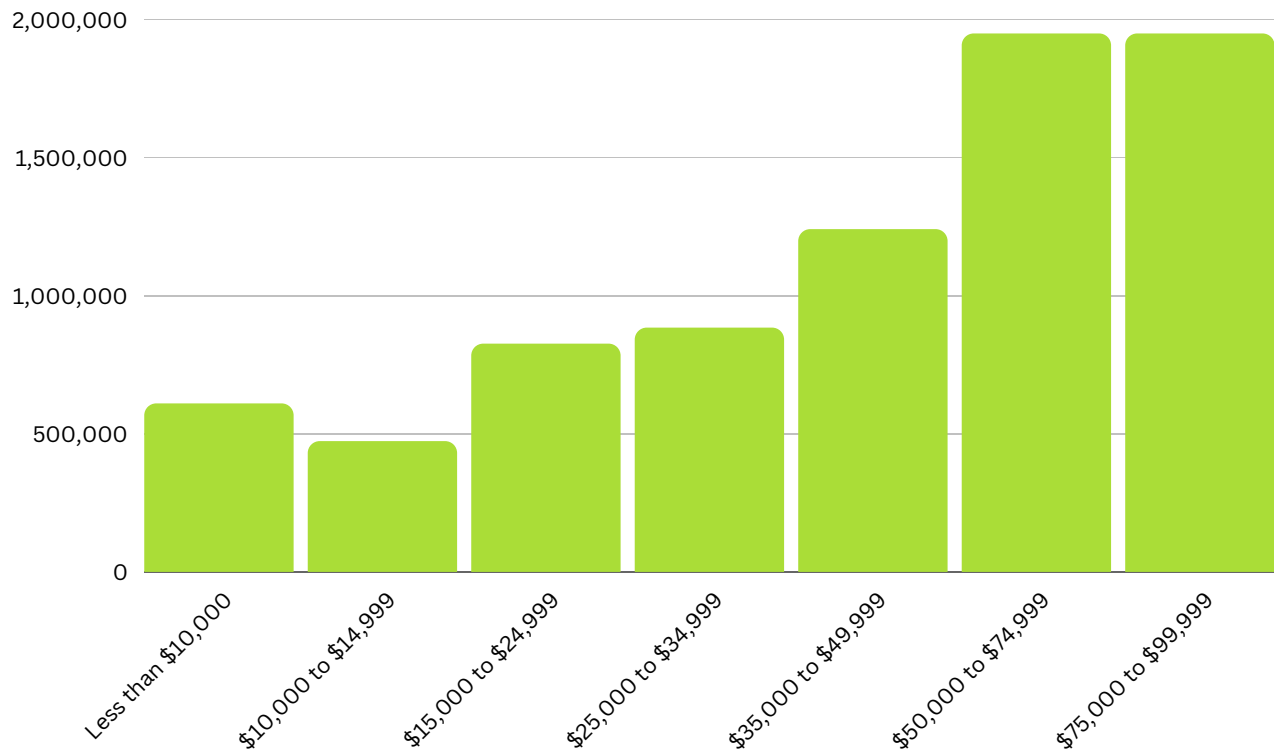
Race/Ethnicity of Leimert Park



Age Distribution of Leimert Park (Age by Years)

Demographic breakdown sourced from [CalEnviron Screen 4.0](#)

# INCOME AND POVERTY LEVEL IN LOS ANGELES



X-axis: Annual Income; Y-axis: Population Data sourced from [US Census Data](#)

The median earning for working-class residents of Leimert Park and surrounding areas is estimated to be roughly \$40,900, according to the [US Census Data](#), on the lower end compared to the rest of Los Angeles city. Notably, about 4.7% of residents in the Leimert community fall under the poverty line.

As studied by the [National Institute of Health](#) and the [Environmental Protection Agency](#), there is a high correlation between poverty and poor communities being affected by environmental hazards and harms, including poor air quality. Longstanding issues and neglect of these communities have fostered further environmental harms to arise and worsen, especially across the Los Angeles Basin.



# LEIMERT PARK

## Leimert Park Statistics

**~12,000**

**Individuals  
living in the  
area**

**79%**

**Population  
Identifies as  
Black**

**80th**

**Percentile  
poor air  
quality**

The long-standing history of air pollution in Los Angeles is rooted in its development. The Clean Air Act, the major federal law that oversees air quality regulations in the United States, requires the Environmental Protection Agency ([EPA](#)) to set National Ambient Air Quality Standards for six “criteria air pollutants” (see Table 1). These air pollutants include ozone, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, particulate matter 2.5, and particulate matter 10.

The Los Angeles (LA) Basin, in which Leimert Park lies, does not meet the national ambient air quality standards for several criteria pollutants, most notably lead and particulate matter 2.5. This causes much of Los Angeles County to be classified as a non-attainment area ([County of Los Angeles Public Health](#)).

Currently, there are resources that collect air quality on both a City and County level. The EPA uses NowCast, which “blends measurements from high-quality regulatory monitors, hundreds of quality-controlled and calibrated low-cost sensors, and an air quality model”. This tool can be used to find air quality ratings by zip code, including that of Leimert Park.

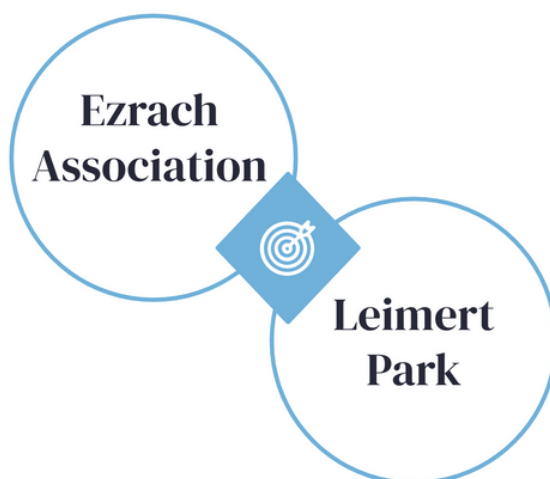
# EZRACH'S PROJECT BETHANY

Project Bethany of the Ezrach Brain Trust Association was established as a comprehensive strategy and blueprint to combat chronic unemployment, eradicate financial illiteracy, and **mitigate poor air quality**. Project Bethany is scheduled to be piloted at a subset of “Bethany Sites” -- local churches and community and faith-based organizations in different parts of the community. One such area is Leimert Park.

Specifically, Project Bethany is focused on providing programming to Los Angeles County Service Planning Area 6 (SPA 6). SPA 6 has been found to have some of the [worst outcomes](#) regarding the social and physical determinants of health (e.g., high rates of unemployment, homelessness, and exposure to poor air quality).

## Project Bethany

One of the goals for the Leimert Park Project Bethany site is to develop an Air Monitoring Plan (AMP).



This AMP will identify strategies, policies, and programs to support the installation of sensors and air monitors in Leimert Park.

# PROJECT OVERVIEW

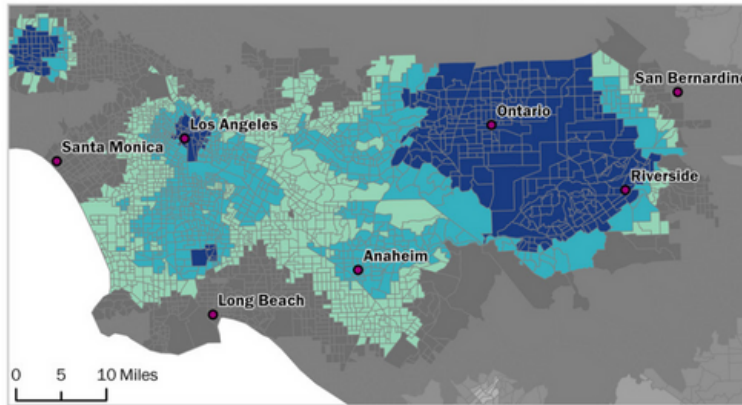
## Project Overview



- As part of our evaluation of Leimert Park, we considered a number of topics, including the history of the community, the most common air pollutants, environmental law, and earlier case studies. Our team researched and spoke to company representatives to find all the necessary information regarding technologies such as air sensors, and data management/visualization software. Finally, and most importantly, we traveled to Leimert Park to make connections with the residents and assess the area for our air monitoring plan feasibility report.
- Our team created a feasibility analysis report translated into this air monitoring plan (AMP). The AMP is intended to help members of the community better understand the pollution levels in Leimert Park and the subsequent plan for the air monitoring project.
- Our final deliverable was a Resources Guide. This guide is a community resource focused on monitoring air pollution levels (notably Particulate Matter (PM)), and offers helpful advice to locals about adopting safer behaviors to minimize pollution. With the help of this manual, residents of Leimert Park should be able to quickly analyze sensor readings and understand the effects of air pollution, giving them the knowledge and confidence to take proactive measures to improve their community's environment.

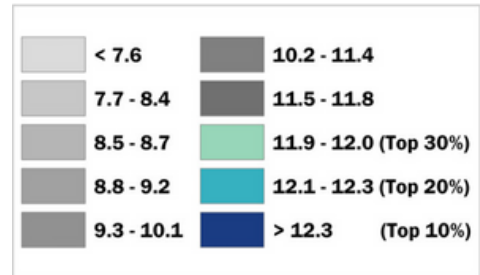
# CRITERIA AIR POLLUTANTS VISUALIZED

## Annual Mean 2.5 Concentration

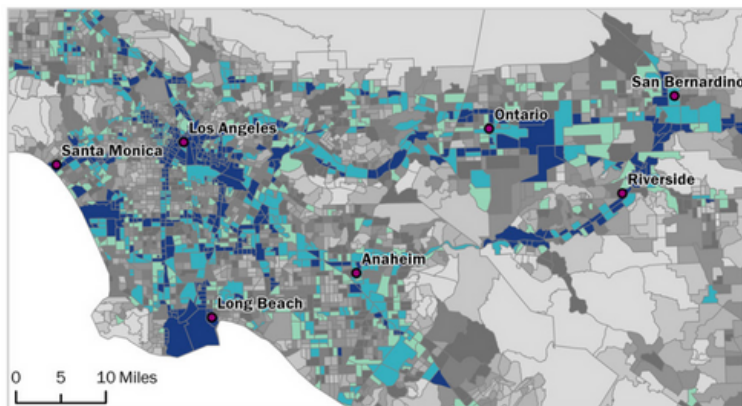


Greater Los Angeles Area

CalEnviroScreen 4.0

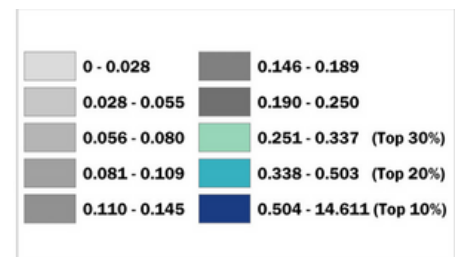


## Diesel PM emissions tons/year



Greater Los Angeles Area

CalEnviroScreen 4.0

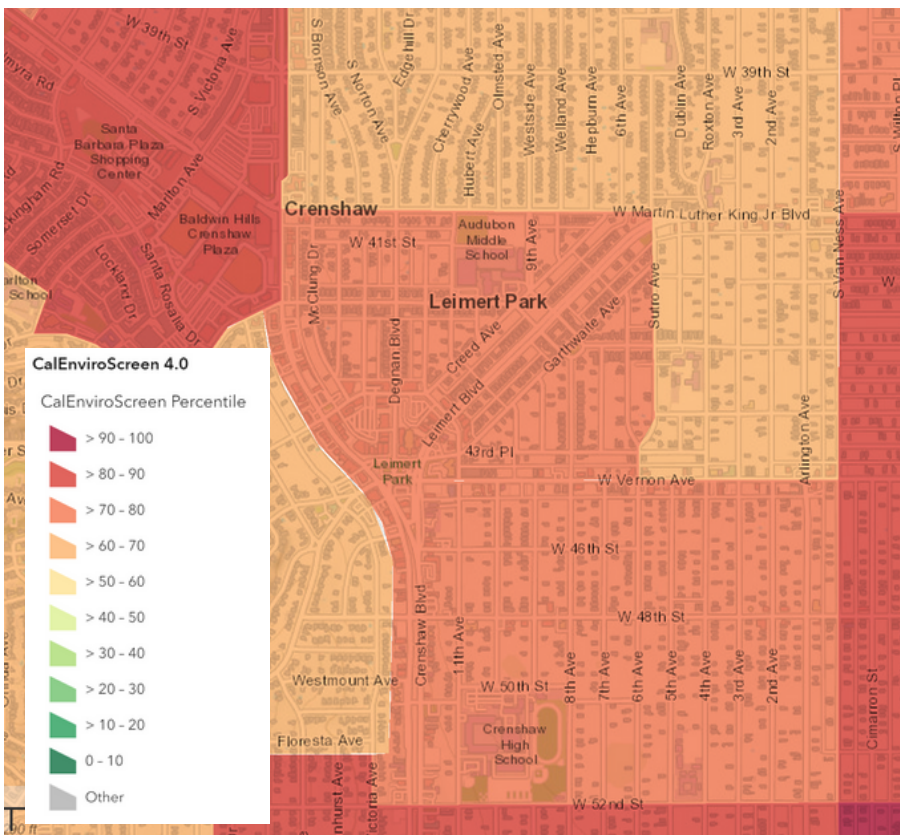


The maps shown above display the annual mean PM 2.5 concentration and the diesel PM emissions (measured in tons per year) respectively. By acknowledging the poor air quality across the Los Angeles Basin and surrounding Southern California (SoCal) areas, members of the SoCal areas can understand the severity of air quality disparities that affect more than just a single community.

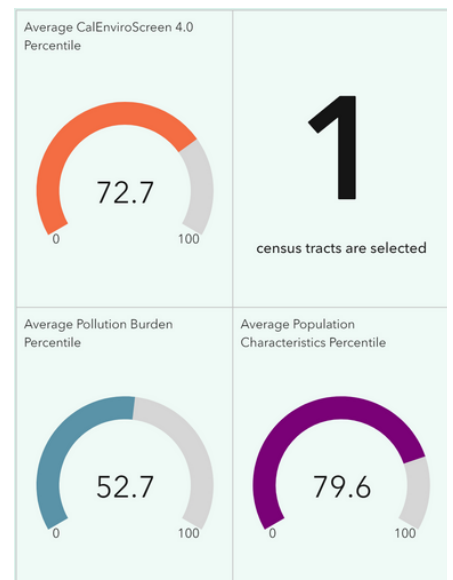
# AIR QUALITY IN LEIMERT PARK

The California Communities Environmental Health Screening Tool, [CalEnviroScreen 4.0](#), is a mapping tool that provides a visual demonstration of pollution sources and vulnerable hotspots in the state. CalEnviroScreen provides a score to each census tract by multiplying the pollution burden, taking into account the average exposures and environmental effects, the population characteristics, the average of sensitive populations, and socioeconomic factors.

By these calculations, Leimert Park's census tracts correspond to a score of 73, a number relatively high compared to surrounding areas. Notably, Leimert Park scored a 74 percentile ranking for Particulate Matter 2.5 and 83 in toxic releases. According to CalEnviroScreen 4.0, areas defined under Leimert Park's boundaries have a summed concentration of 0.045 ppm for an 8-hour average time for ozone pollution. This places Leimert Park in the 40th percentile, meaning that the summed concentration of ozone is 40% higher than the other census tracts in California. This concentration is slightly lower than the California Ambient Air Quality Standard, which sets a standard of 0.07 ppm for an 8-hour average.

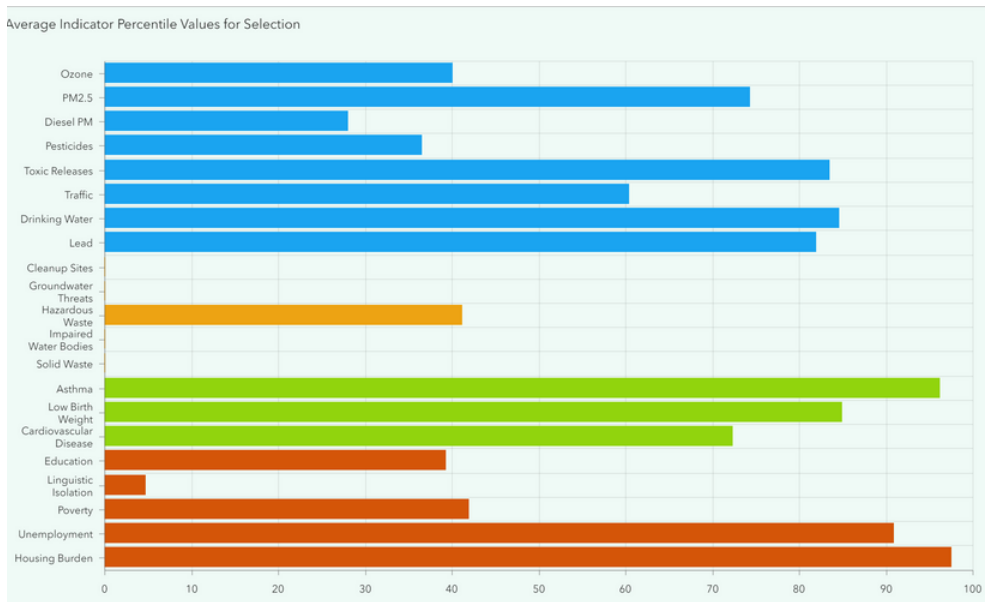


Source: [CalEnviroScreen 4.0](#)



*CalEnviroScreen Dashboard for Leimert Park compared to surrounding areas*

# AIR QUALITY IN LEIMERT PARK



Pollution Burden includes the following indicators:

- Ozone, PM 2.5,
- Diesel PM
- Toxic Releases
- Traffic
- Lead
- Drinking Water
- Cleanup sites
- Groundwater threats
- hazardous waste
- impated water bodies
- solid waste.

Population characteristics include the following:

- asthma
- low birth weight,
- cardiovascular disease,
- education,
- linguistic isolation,
- poverty,
- unemplowment,
- housing burden.

The above statistics are grouped into two groups of indicators: Pollution Burden and Population Characteristics. The results for each indicator range from 0-100 and represent the percentile ranking of the census tract corresponding to Leimert Park's boundaries relative to other census tracts.

These drastic numbers have motivated many community members to seek action. [SCLA-PUSH](#), a collaborative initiative, conducted a study in 2019-2020 focused on collecting data on air pollutants in South Central LA, an area defined by community standards to also include Leimert Park. **This research found that Leimert Park had high concentrations of ozone, diesel pollution, and PM 2.5 pollution.** This is a concern as census tracts demonstrate a consistent record of South Central communities scoring in the top 10% of vulnerable communities, based on socio-economic issues. **These high pollution levels in Leimert Park raises concern about environmental injustice.**

"Representatives from [Black Women for Wellness](#), a non-profit in Leimert Park working to advance the health and well-being of Black women and girls in South LA, shared that at some of their environmental justice events, listening sessions, and canvassing efforts they hear **BIPOC Angelenos across the City and County express concerns for their air quality from a range of sources including aviation, highways, oil and gas facilities, and more.**"

The collaborative efforts of the UCLA Department of Engineering and the Ezrach Brain Trust Association are designed to combat these inequalities. That is, through the implementation of this air monitoring project (AMP) and the eventual installation of air sensors in Leimert Park.

*BIPOC Angelenos across the City and County express concerns for their air quality from a range of sources including aviation, highways, oil and gas facilities, and more.*

**Ezrach Association  
Air Monitoring Plan 2023**

# CRITERIA AIR POLLUTANTS

Pollutant [links to historical tables of NAAQS reviews]		Averaging Time	NAAQS Level	Form	Level of Pollutant in Leimert Park
<a href="#">Carbon Monoxide (CO)</a>		1 hour	20 ppm	not to be exceeded	N/A
<a href="#">Lead (Pb)</a>		Rolling 3 month average	0.15 µg/m <sup>3</sup>	Not to be exceeded	N/A
<a href="#">Nitrogen Dioxide (NO<sub>2</sub>)</a>		1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	0.018 ppm **
		1 year	53 ppb	Annual Mean	
<a href="#">Ozone (O<sub>3</sub>)</a>		8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	0.033 ppm *
<a href="#">Particle Pollution (PM)</a>	PM <sub>2.5</sub>	8 hours	12 µg/m <sup>3</sup>	not to be exceeded	11.92 µg/m <sup>3</sup> *
	PM <sub>10</sub>	24 hours	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year on average over 3 years	25 µg/m <sup>3</sup> *
<a href="#">Sulfur Dioxide (SO<sub>2</sub>)</a>		1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	0.007 ppm **
		3 hours	0.5 ppm	Not to be exceeded more than once per year	

**Table 1:** Summary of the six "criteria air pollutant" levels, as set by the EPA. See [this EPA link](#) for additional details and to access the table.

According to the [California Air Resources Board](#), Los Angeles (and thus, Leimert Park) lies in a non-attainment zone for several criteria air pollutants, including ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>.

Non-attainment areas are areas that do not meet the air quality standards set by the EPA.

\*Data is taken from the [CalEnviroScreen](#) tool

\*\*Data is taken from [Accuweather Website](#)

# POLLUTANT FINDINGS/ RESOURCE GUIDE

The purpose of this resource guide is to provide background information on the Environmental Protection Agency's criteria for pollutants, the harms they can cause, and compare the EPA criteria levels for air pollutants with those found in the area of Leimert Park. Ambient air quality standards, which define the maximum amount of a pollutant that can be present in outdoor air without harm to the public's health, are described for each of the criteria pollutants. The units used in these standards, parts per million, refer to one part of a substance dissolved into a million parts of another substance.

## No. 01 – Ozone

Ozone is a harmful gas that forms through a complex reaction between emissions from motor vehicles, industrial plants, and consumer products.

Significant concerns about ozone come from its ability to damage the respiratory tract. High exposure to ozone is proven to cause:

- inflammation and irritation of respiratory tissues
- reduce the volume of air the lungs can hold
- and shorten typical breaths.

According to CalEnviro Screen 4.0, areas defined under Leimert Park's boundaries have a summed concentration of 0.045 ppm for an 8-hour average time for ozone pollution. This places Leimert Park in the 40th percentile, meaning that the added concentration of ozone is 40% higher than the other census tracts in California. This concentration is slightly lower than the California Ambient Air Quality Standard, which sets a standard of 0.07 ppm for an 8-hour average. It is important to note that ozone concentrations tend to rise and exceed health-protective standards when temperatures rise in the summer months, most notably in metropolitan areas such as Los Angeles.

Because ozone tends to generate in the atmosphere, people who spend a lot of time outdoors undergoing strenuous physical activities are more likely to be exposed, and harmed, by ozone. **Since ozone pollution is worse during the summer heat, it is important to minimize outdoor activities and stay indoors. It is also beneficial to avoid running your motor vehicles to decrease excessive emissions and save gardening and lawn chores for evenings once the sun is down.**



# POLLUTANT FINDINGS/ RESOURCE GUIDE

## No. 02 – Particulate Matter (PM) 2.5 and 10

Particulate matter is a complex mixture of chemicals, solids, and liquids that are released into the air. Much of the particulate matter can be traced from construction sites, fires, fields, and other sources. Particulate matter can be classified by size. PM 10 is particulate matter with a diameter of 10 microns or less. For reference, human hair ranges from 50 to 70 microns. On the other hand, PM 2.5 is particulate matter with a diameter of 2.5 microns or less.

Harms of particulate matter vary depending on the size of the particle. Inhaled PM 10 tends to attach to the larger airways of the upper lung. Prolonged exposure to PM 10 can worsen asthma and other chronic conditions. When someone inhales excessive PM 2.5, these particles target deep into the lungs. Prolonged exposure to PM 2.5 has been shown to be linked to:

- premature mortality
- acute and chronic bronchitis
- triggering asthma attacks

According to CalEnviroScreen 4.0, areas defined within Leimert Park's boundaries have a concentration of 11.92 micrograms per meter cubed. The PM 2.5 percentile for Leimert Park is 74, meaning that Leimert Park is 74% higher in PM 2.5 concentrations compared to the rest of California. California Ambient Air Quality Standards set the annual average PM 2.5 concentration to 12 micrograms per meter cubed, meaning Leimert Park just barely meets the standard.

While protecting oneself from particulate matter can be difficult, especially in urban areas, some steps that can be taken to reduce particulate matter exposure include:

- **Avoiding the use of fire, fireplace, and wood stoves.**
- **Avoid utilizing gas-powered gardening and lawn equipment.**
- **Avoid smoking indoors.**
- **Avoid spending significant time outdoors near congested roads or construction sites.**

# POLLUTANT FINDINGS/ RESOURCE GUIDE

## No. 03 – Carbon Monoxide

Carbon monoxide is an odorless, colorless gas. Often, carbon monoxide results from the combustion of fuels. In urban settings, the fumes from motor vehicles, power plants, and other mobile sources are the leading contributors to carbon monoxide emissions.

A major harm caused by carbon monoxide is the reduction of the blood's ability to carry oxygen. This reduction occurs when carbon monoxide binds to hemoglobin, a protein in red blood cells. By reducing the oxygen in the blood, people with high exposures to carbon monoxide suffer from:

- Increases oxygen demand for exercise
- Decreases the body's ability to respond to stress and physical excursion
- Increases prenatal development abnormalities

Because carbon monoxide is often released by combustion, especially from motor vehicle fuels, it is important to:

- **Avoid being in congested traffic and high-motor-vehicle use areas.**
- **Do not turn on motor vehicles in an enclosed area, such as a garage.**
- **Do not use gasoline-powered energy items unless there is an open vent at least 20 feet away.**
- **It is also recommended that each household has a backup carbon monoxide detector and that batteries are checked and replaced twice a year.**

California's Ambient Air Quality Standard sets carbon monoxide levels to be 20 ppm, or 20 parts per million, per hour.

# IMPORTANCE OF THE PROJECT

## Ensuring Compliance with Regulations

By providing Leimert Park community members access and tools about their environment, they can ensure that local officials are prioritizing wellbeing and keeping environmental regulations in check.

## Protecting Public Health

Offering resources to Leimert Park community members about the real harms of air pollution gives them the ability to protect themselves.

## Ezrach's Community Education on Air Quality and Environmental Justice

Air quality monitoring allows Leimert Park community members to see the progression of their efforts, effects on climate change, and provide motives for advocacy for environmental justice.

# TECHNICAL ASSESSMENT



Image [Source](#)

Factors to consider when selecting an air monitoring sensor:




- **Accuracy**
  - Lower-cost sensors typically have lower precision, requiring a calibration process with a reference monitor. They also typically only measure particulate matter data.
- **Accessibility**
  - Some air sensors come with easy-to-use data display software, which can be accessed by community members
- **Price**
  - The price must be within the means of the community, with allowances made for maintenance and unforeseen circumstances.
- **Existing Networks**
  - Existing networks may be leveraged to increase network coverage and accuracy.

## OVERVIEW OF AIR QUALITY SENSOR TECHNOLOGY

Ezrach Association  
Air Monitoring Plan 2023

# AIR SENSOR OPTIONS

There are three identified price ranges for sensors, each with their own benefits and drawbacks. Here are the models in consideration.

Sensor	Benefits	Drawbacks	Pricing*
 <p><b>PurpleAir Flex</b></p>	<p>Accurately measures a range of particulate matter from PM 1.0 to PM 10 after correction.</p>	<p>Sensitivity degrades with a <a href="#">steep decline after 3.5 years</a>. Requires correction factor, as it <a href="#">consistently overreports data</a>. Requires a power cable.</p>	<p>The <a href="#">Purple Air Flex</a> is low cost, at a price of \$269, with an additional \$40 for its power cable.</p>
 <p><b>Clarity Node-S</b></p>	<p>Measures PM2.5 and NO2, with optional ozone and wind data modules. SIM card and service included, as well as a solar panel, weatherproofing and UV resistance. Maintenance fees and data visualization software are covered.</p>	<p>Subscription based model means pricing is on an annual basis.</p>	<p>Options ranging from \$1,200 to \$1,400 per year depending on additional capabilities. 20% community based project discount.</p>
 <p><b>AQ5 1 Urban Air Quality Monitor</b></p>	<p>Measures several pollutants, including ozone, nitrogen dioxide, sulfur dioxide, and particulate matter. It is highly accurate and provides real-time data</p>	<p>May be prohibitively expensive, as multiple sensors are needed for this project.</p>	<p>\$12,000 to \$22,000 for a single sensor.</p>

# SENSOR RECOMMENDATION



*The Clarity Node - S is recommended due to its useful features in four key areas: Accuracy, Accessibility, Price, and its Existing Network*

## No. 02 – Clarity Node – S

With modules including PM2.5, NO2, and optional wind data collection, as well as onboard cellular and solar-powered capabilities, the Clarity Node - S is accurate and reliable for a yearly per-node price between \$1,200 to \$1,400. The service also comes with maintenance and data visualization software, allowing residents to see their data in real-time.

Clarity Node-S is recommended over the PurpleAir Flex for its greater reliability and accuracy, as the PurpleAir only measures particulate matter, and requires a power cord to work, which may complicate installation and maintenance. The PurpleAir has also been seen to have a [steep decline in sensitivity after 3.5 years](#).

The Aeroqual sensor is much more expensive than the other options, and as multiple sensors are preferred to cover the neighborhood of Leimert Park, the price will likely be prohibitive for this module.

Clarity also has a demonstrated track record of working with disadvantaged communities for environmental justice reforms, where its work is being used as a blueprint for AB 617, a landmark regulation that empowers communities to take control of air pollution. Clarity is also known to offer a 20% discount to community-based projects, and in line with the principles of Community Based Participatory Research, (CBPR), the data collected is owned solely by the community partner and does not disappear after the subscription is ended.

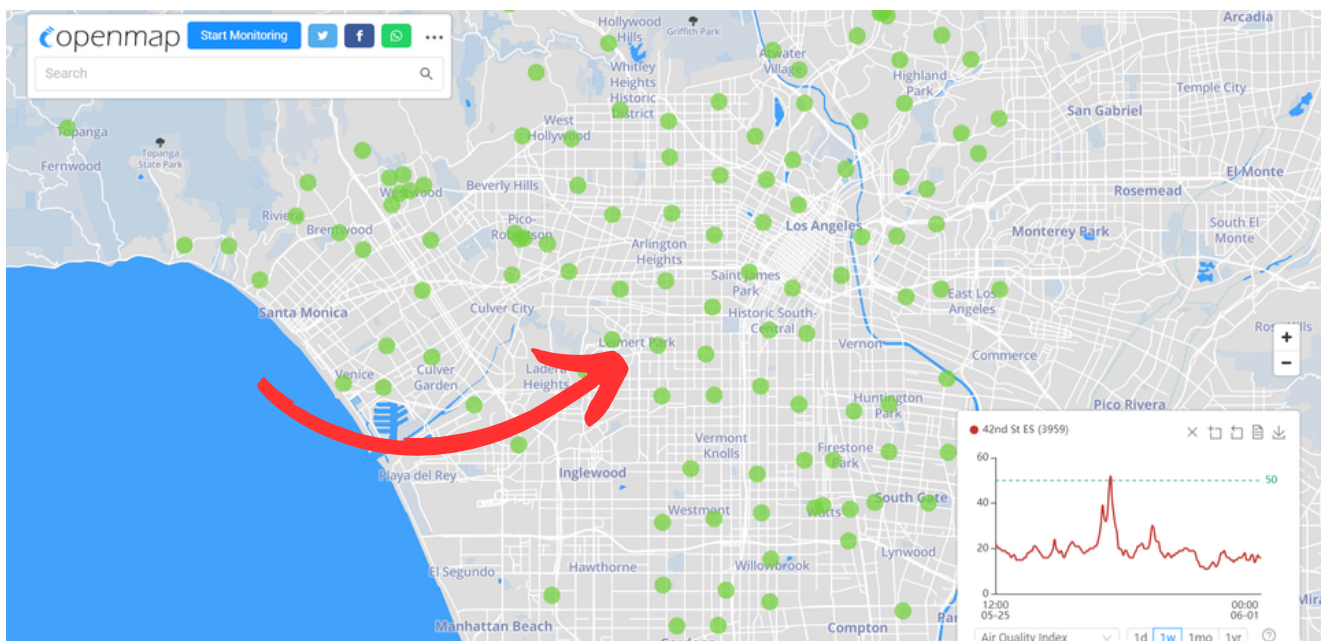
# SENSOR RECOMMENDATION

## Richmond, CA, A Case Study:

Clarity is no stranger to environmental justice initiatives, as seen in Richmond, a city characterized by intensive industrial activities and high traffic volumes. Home to large Hispanic, Black, and Asian populations, [the prevalence of asthma \(25%\) is about double the statewide rate of 13%](#).

With funding from AB 617, the environmental and youth development organization [Groundwork Richmond](#) partnered with Clarity to build an air monitoring network. This network delivers high-quality data, raising awareness for 110k residents and creating 9 jobs. This model by Clarity as seen in Richmond can be replicated in Leimert Park for effective results.

Additionally, there is already an existing Clarity node network in Los Angeles. While it is not at the concentration wanted to measure the air quality of Leimert Park specifically, it will be useful as a reference for our Clarity sensor readings. Due to Clarity's partnership with LAUSD, there is already a sensor installed near 42nd St. Elementary School in Leimert park, which is highlighted in the below figure.



Snapshot of [Clarity's included data visualization tool](#).

Includes individualized time-series data for each node (bottom right).  
Currently showing data from 42nd St. Elementary School in Leimert Park

# INSTALLING AN AIR MONITOR

After selecting an air monitoring sensor, there are several logistical [considerations](#) to be made when choosing where to install them.

## Where in the community will these sensors be placed?

- To monitor ambient community air quality, sensors should be placed away from hyperlocal pollution sources or sink such as dusty roads, building exhausts, or trees. Sensors should also be placed where Ezrach is able to safely and legally access them.

## How to power the sensors:

- The Clarity Node-S device can run for more than 5 years under direct continuous sunlight. In the absence of sunlight, it can run for 30 days on stored battery power. In the case of the PurpleAir, a power cord must be plugged into the unit.

## Connectivity:

- The Clarity Node comes with its own onboard cellular, making it easy to upload data without access to a Wifi network. Other sensors may require Wifi or ethernet connectivity.

## Security

- The sensors may be at risk for theft or tampering. Therefore they should be placed in secure, inconspicuous locations, or out of arm's reach.

## Ideal Placement

- Sensors should be placed 3 to 6ft above the ground in the typical breathing zone, with at least 270° unobstructed airflow. Additionally, try to stay away from high-voltage power lines, as they may cause unwanted electronic interference.





# INSTALLING AN AIR MONITOR

After installing an air monitoring sensor, there are several actions to be implemented to get the best tracking result.

## What to do *after* installing the air sensor?

- **Monitor the data over time for spikes during the day**
  - Spikes may indicate hyperlocal sources of pollution, like smoking or cooking.
  - Periodic spikes may indicate daily trends, like when an A/C unit is turned on nearby.
- **Compare the data to nearby reference monitors**
  - Locate sensors near already established reference monitors. For example, there is already a Clarity node located near 42nd Street Elementary School in Leimert Park, which can be used to calibrate the data.
- **Is the data accurate?**
  - If the air monitoring data does not match long-term regional trends, or experiences a large amount of data spikes, it may be necessary to find a new location.

# DATA MANAGEMENT



Data management systems are useful tools that can store data collected from air quality sensors. They can also aid with analyzing and visualizing that data to better understand the air quality levels.

## Benefits of data management systems

- Specialized functionality which is specifically designed for air quality monitoring and recording.
- Customizable: Most systems have the ability to be tailored to the specific project.
- Regulatory Compliance: Some softwares are specifically designed to comply with regulatory requirements for air pollutant monitoring, making the data that is collected more scientifically stable.

## Drawbacks of data management systems




- Pricing: The pricing for data management systems can fluctuate greatly, depending on which software and features are used.
- Other sensors come already equipped with a data management and visualization package, so there may not be any need to purchase additional software.
- Learning curve: Many softwares would require someone to learn how to use and customize the software.

# DATA MANAGEMENT SYSTEMS

# DATA MANAGEMENT SOFTWARE OPTIONS

It is important to note that the Clarity Node-S air sensors come with their own data management and visualization software. Therefore, it **IS NOT** necessary to purchase secondary data management software if using these sensors.

Alternatively, if Ezrach decides to use a different sensor that does not come equipped with its own data management and visualization software, there are several third-party software options listed below.

Software	Benefits	Drawbacks	Pricing*
<a href="#">EQuIS</a> 	<ul style="list-style-type: none"> <li>Offers tools for data validation, quality control, and analysis</li> </ul>	<ul style="list-style-type: none"> <li>Could be costly to implement, as the price can range greatly</li> </ul>	Pricing could range from \$3000-\$50,000 per year, depending on package
<a href="#">AV- Trend</a> 	<ul style="list-style-type: none"> <li>Includes tools to collect, review, chart, edit, and provide summary in real time</li> </ul>	N/A	\$3500 base + ~\$100 per air sensor. 15% educational discount.
<a href="#">AQMIS SAAS</a> 	<ul style="list-style-type: none"> <li>Cloud based system (more accessible)</li> <li>Accounts for permitting and compliance</li> </ul>	<ul style="list-style-type: none"> <li>May require ongoing subscription fee</li> <li>May not be as customizable as other systems</li> </ul>	Starts at \$2750 per month to manage less than 5 ambient air monitors

\*Pricing indicated are **estimated** pricing and are subject to change

# RECOMMENDED SOFTWARE FOR LEIMERT PARK AIR MONITORS

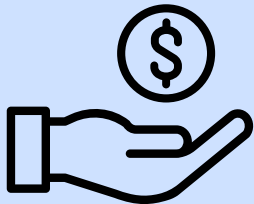


## Clarity Cloud Services Benefits

No extra costs  
associated



Total ownership  
of data



Real time data  
visualization



Data is easy to  
share with  
community  
members



Ability to  
contribute to  
open data  
platform

# ECONOMIC ASSESSMENT



The main cost for this project will be the purchase of the air sensors. Other costs include human labor costs and maintenance costs broken down below:

- **Air Sensors**
- **Human Labor**
  - **Installing the Sensors**
  - **Training costs**
  - **Data Collection and Analysis**
- **Maintenance**

# ESTIMATED PROJECT COST



## Clarity Node S Sensors

- \$1,200-\$1,400 per year **per sensor**
- 20% community project discount

## Sensor Installation

- Price can vary greatly.

## Training

- Price will vary. Most likely will be an hourly cost associated with training the employee (Data Analyst) who will be analyzing the data.

## Data Analysis

- Data Analyst positions can range anywhere from \$58K to \$140k per year. Ezrach may decide to hire a data analyst specifically for this project.

## Maintenance

- According to [Clarity](#), "The Clarity device is designed to be low maintenance and no regular scheduled maintenance is required."

# COST-TO-BENEFIT RATIO



There is a good cost-benefit ratio for carrying out an air quality monitoring study in Leimert Park. While buying and installing sensors, skill training, and data analysis does come with their respective costs, the advantages of such a project for residents are significant.

## **Environmental Benefits**

It is possible to prioritize mitigation efforts and make well-informed decisions with the use of accurate and timely air quality data that can reveal important insights into the concentrations and distribution of pollutants. Leimert Park's air quality conditions may be better understood, allowing for the identification of public health threats, the increased level of public concern, and the development of policy initiatives that will both enhance air quality and safeguard the health of residents. This will also put Leimert Park to be in compliance with [California's air pollution reduction goals](#) of 71% by 2045.

## **Community Benefits**

There will be increased awareness regarding environmental health regulations, as well as the real-time air pollutant levels of Leimert Park, which will lead to more autonomy and informed decision-making of community members throughout the implementation of this project.

## **Creation of "Green" and "Clean" Jobs for Community Residents**

This project will lead to an increase in the creation of "green and clean jobs" for community members who will be involved with the project. Installers for the air monitors and management of the systems would be recruited from the community.

*The expenses of starting an air quality program are overall outweighed by the long-term advantages, which include improved public health, increased environmental stewardship and community awareness, and the creation of green and clean jobs.*

# IMPACT OF COST ON COMMUNITY MEMBERS

We understand that community members may have valid concerns regarding the impact of the air monitoring project on daily life. Below are responses to some common concerns and suggestions to alleviate community members concerns.

## Cost on Community Members

We do not anticipate any project costs being imparted to community members residing in Leimert Park.

With adequate funding from agencies and our elected officials, Ezech anticipates defraying costs from such support.

## Social Costs

There may be concerns about social costs, such as gentrification arising from the addition of new technologies in the area.

However, our team does not anticipate any negative social impacts on the community due to the installation of air sensors.

## Aesthetic concerns

We anticipate the installation of around 5 sensors throughout public lands in Leimert Park. Each sensor is quite compact, and will just require mounting on a pole.

We do not anticipate this to have a large negative aesthetic effect on the community.

## Anticipated Length of Project

The project is anticipated to last between 1-5 years.

Ezech will host community sessions, focus groups, and webinars at every stage to keep community members informed and also answer questions during this time.



# OPERATIONAL ASSESSMENT



## What needs to be done for the sensors to work correctly?

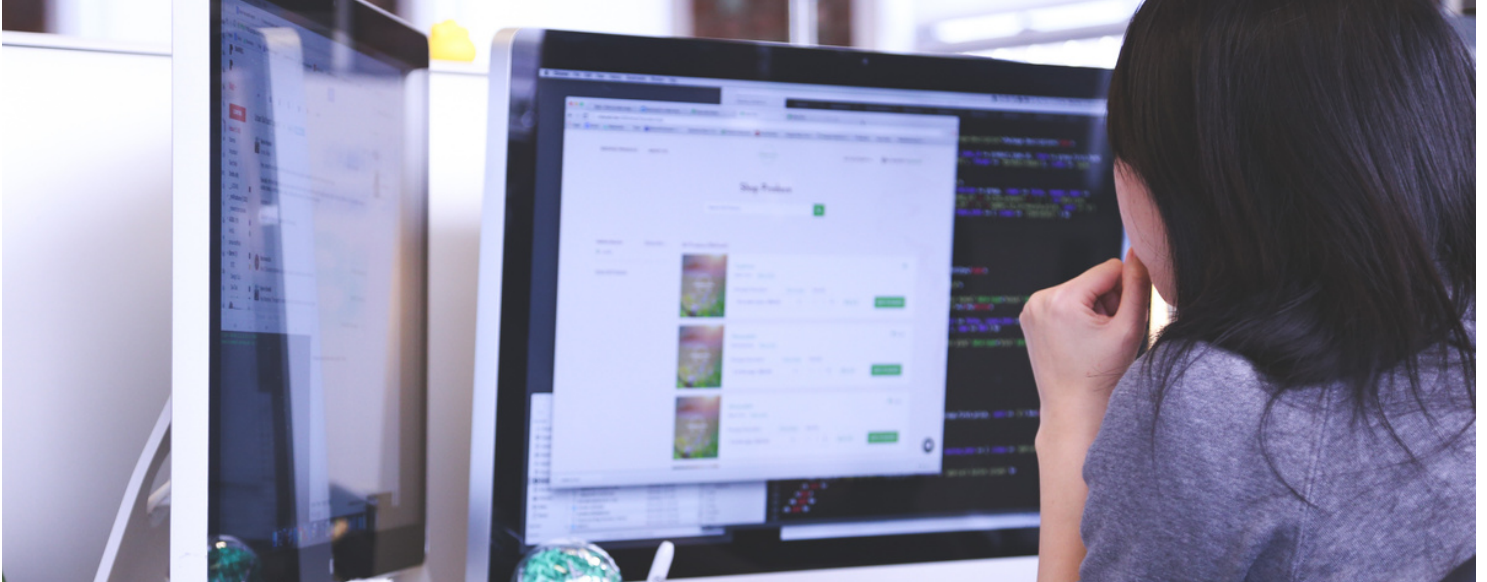
In order for the sensors to work correctly, they need to be positioned according to the [EPA guide](#). Specifically, sensors should be placed away from hyperlocal pollution sources, 3-6 feet above the ground, with 270° of unobstructed airflow. The sensors utilize a solar panel as a power source, and the panel must receive sunlight at least every 30 days in order to keep the sensors powered.

## What maintenance and repairs will need to be done?

The Clarity Node-S sensors are made for easy operations of the system. The sensors do not need routine maintenance, according to Clarity. The Clarity Node-S sensors come with free hardware replacements in the event that it doesn't work correctly.

# AIR MONITORING SENSORS- CLARITY NODE S

# DATA MANAGEMENT



## **What needs to be done for the data management software to work correctly?**

In order for the data to accurately be uploaded, an internet connection is used. This connection is included with the sensor. The data is uploaded in real-time via 3G/4G LTE to the Clarity Cloud. No extra steps need to be taken for this action other than installing and setting up the sensors.

## **What maintenance and repairs will need to be done?**

We do not anticipate the need for maintenance or repairs on the data management software. If anything, perhaps the data visualization would need to be customized in order to show different representations of the data for different grants.

## **Other potential operational challenges and their potential solutions.**

If there is any technical issue that arises, Clarity has a responsive Customer Success team that can help to resolve the issue.

# DATA MANAGEMENT SOFTWARE

# PREVENTATIVE ACTIONS

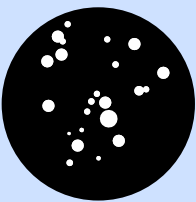
The resource guide below provides some practical recommendations on how community members can actively reduce their exposure to air pollutants.



## No. 01 – Use the [Air Quality Index \(AQI\)](#) to Plan Outdoor Activities

Using the AQI helps to inform community members about the quality of outdoor air. By reducing outdoor activity during periods of lower air quality, you reduce your exposure to air pollutants like ozone and particulate matter.

- Scheduling outdoor activities during the morning hours is best.
- Consult the local news or weather app on your mobile devices to see air quality levels daily.
- Do activities indoors (if possible) when the air quality is worse.
- Limit physical exertion/exercise when outdoors or near polluting point sources.

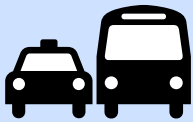


## No. 02 – Keep [Particle Levels](#) Low Indoors

- Eliminate tobacco smoke.
- Reduce the use of wood stoves and fireplaces.
- Use [HEPA](#) air filters and air cleaners designed to reduce particles.
- Avoid burning candles.

# PREVENTATIVE ACTIONS

The resource guide below provides some practical recommendations on how community members can actively reduce their exposure to air pollutants.



## No. 03 – Energy Efficient Transportation

Avoid idling. Idling a vehicle occurs an engine is running and the vehicle is parked or not in use. Idling vehicles pollute the air.

- Turn off the engine when not in motion or in use.
- Warm up your engine or car interior by driving it, not idling.
- Post anti-idling signs in Leimert Park school areas where buses and parents usually park their cars.

See [U.S Department of Energy Guide](#)



EZRACH COMMUNITY TREE  
PLANTING 2023

## No. 04 – Be a Thoughtful Neighbor

- Avoid burning household garbage. Contact the County for trash pick-up services.
- Limit backyard fires as much as you can.
- Plant and nourish trees. Trees absorb carbon dioxide which reduces the carbon dioxide concentration in the atmosphere.
- Sign up with Ezrach to learn more and take action.

# CONCLUSIONS



Leimert Park has a vibrant and rich cultural heritage that must be preserved.

Overall, the Leimert Park area is a viable location for this air monitoring plan and to also receive air monitors because of the high pollution levels and poor air quality.

This air monitoring plan will better inform community members, stakeholders, policymakers, and regulatory agencies about creating a clean and healthy environment.



Our findings indicate the need for installing air monitors in Leimert Park. This air monitoring plan has been established to help with the smooth implementation of the air monitoring sensors.

Also, a resource guide has been created to help residents with active tools for protecting themselves from pollution



We hope that this air monitoring plan will be able to inform community members as to the specifics of the project in a way that is easily accessible.

Contact Ezech for more information.

# RECOMMENDATIONS



Training is required on how to learn the specifics of the sensor, and how to utilize the data management and visualization systems.

This creates an opportunity for green and clean jobs for residents in Leimert Park.



Ezrach to work with community partners to ensure there is adequate security for the sensors, in order to avoid tampering or theft.



Ezrach to ensure that community members understand the purpose and process of the air monitoring plan for easy collaboration and collective work toward cleaner air.

*This project will ensure that Leimert Park and surrounding communities have access to cleaner air, and healthy environments, and are working toward a clean, resilient, sustainable, and just transition economy.*

# POLICY IMPLICATIONS

Leimert Park residents have lived neglected while facing disproportionate health conditions from exposure to air pollution. Eradicating the ills of air pollution requires a multifaceted approach from policymakers, community stakeholders, and allied personnel/institutions. Below are some key actions.

- Provision of services and installation of necessary equipment such as air monitors in Leimert Park. This report is Ezech's first step toward achieving this goal.
- Funding that supports environmental justice communities from the iconic [Inflation Reduction Act](#) and [Bipartisan Infrastructure Law](#) must be watched closely to ensure that they are equitably distributed and actually benefit marginalized communities like Leimert Park. This will also ensure that the [Justice40 Initiative](#) is living true to its goal that 40 percent of benefits from federal investments flow to disadvantaged communities burdened by pollution
- Policies should prioritize core community engagement and participation in decision-making on issues of air pollution. Policymakers and elected officials should ensure that community voices and concerns are heard through community hearings, town hall meetings, etc.
- Supporting community organizations such as Ezech that provide education and awareness to residents. Educational accessibility to residents is essential to teach practical and sustainable practices that help in reducing air pollution.
- Stricter emission standards must be implemented on polluting industries and guidelines created to help transition them to clean energy.
- Funding support from federal, state, and local agencies will be essential to translate this report into other languages. This will make the data accessible to all individuals, and translation of materials into other languages may be beneficial.

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# AIR MONITORING PLAN

A Framework for Evaluation and Building Resilient Solutions Toward a Just Transition in Leimert and Surrounding Frontline Communities



Ezrach  
Brain Trust Association

WEBSITE [www.ezrach.org/](http://www.ezrach.org/)  
EMAIL [admin@ezrach.org](mailto:admin@ezrach.org)  
ADDRESS 3125 W. 54th Street  
Los Angeles, CA 90043, USA

**Ezrach Association  
Air Monitoring Plan 2023**