

# From Data to **Decision**: Moving from **Monitoring** to **Management**

Leveraging Global  
Technology for  
Hyperlocal Impact in  
Metro Manila



# 10+ years of experience with air quality monitoring projects globally

**500,000,000+**

air quality  
measurements



**10,000+**



unique deployments  
worldwide



**250+**



cities with Clarity air  
quality sensors

**85+ countries**

with air quality  
data recorded



# From Air Quality Monitoring Projects to Regional Air Quality Management Programs



# Clarity Node-S: How It Works



Measures **PM2.5** and **NO2**.

**FCC + CE, MCERTs certified** and designed for **easy deployment** everywhere, and **reliable operation** in adverse weather conditions.

# Breathe Metro Manila Module



**Node-S**  
provides  
connectivity  
to Clarity  
Cloud

## Clarity Add-On Modules:



**Wind Module**

Determine where air pollution is coming from



**Ozone Module  
(FEM-Capable)**

Confirm ozone attainment with this FEM-capable device



**Black Carbon Module  
(Lab-Grade)**

Understand composition and sources of particulates



**Multi-Gas Module  
(NOx, CO, O3)**

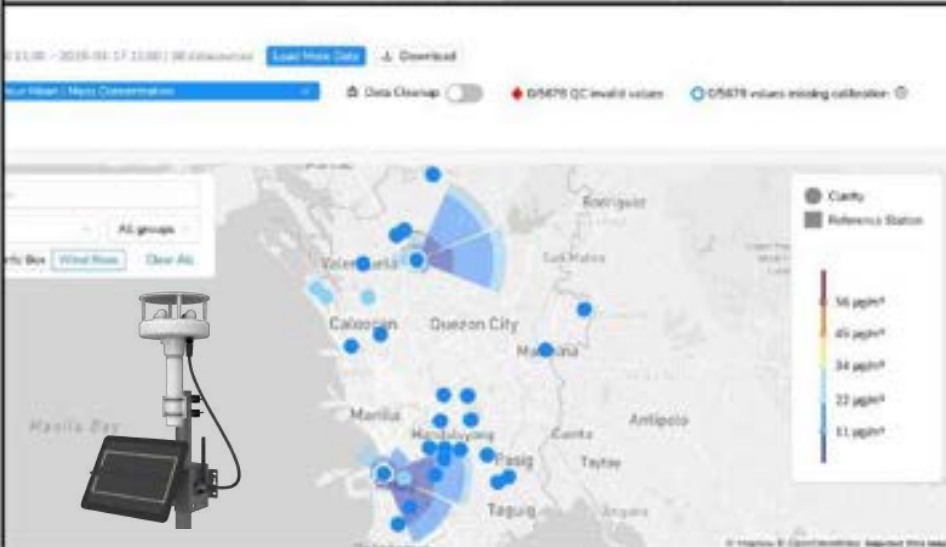
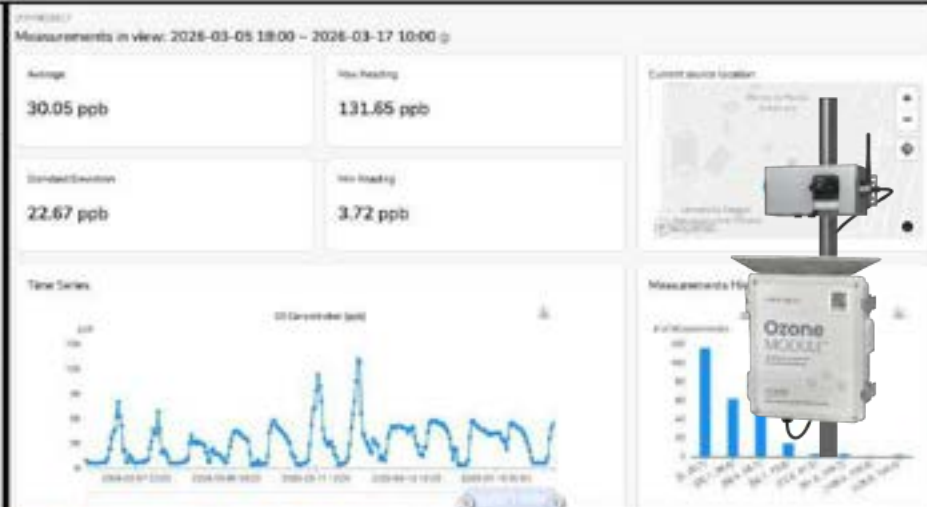
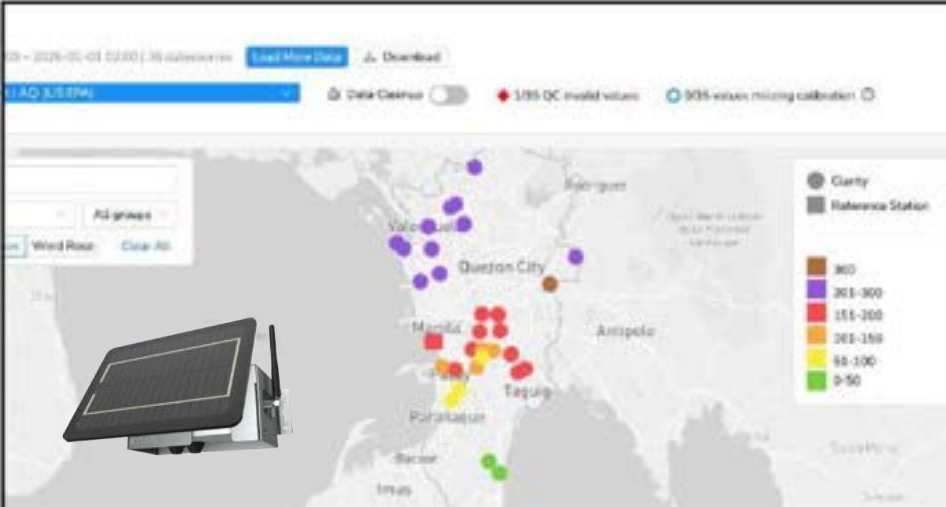
Measure additional gaseous pollutants - CO, NOx (NO2 + NO) and O3



**Dust Module  
(PM10)**

Accurate coarse mode PM detection







# Breathe Metro Manila

powered by clarity Clarity Sensor

US EPA AQI

Good Hazardous

Search place

## Monumento, Caloocan

### Current Air Quality



Unhealthy for Sensitive Groups

US EPA AQI **102**

Main Pollutant: PM2.5

Measured 68 minutes ago

### Health Recommendations



Sensitive individuals should limit time outside; others can reduce the intensity or duration of outdoor activities.



Move indoors if you experience symptoms like coughing or throat irritation.

Trend

<https://breathe-metromanila.org>

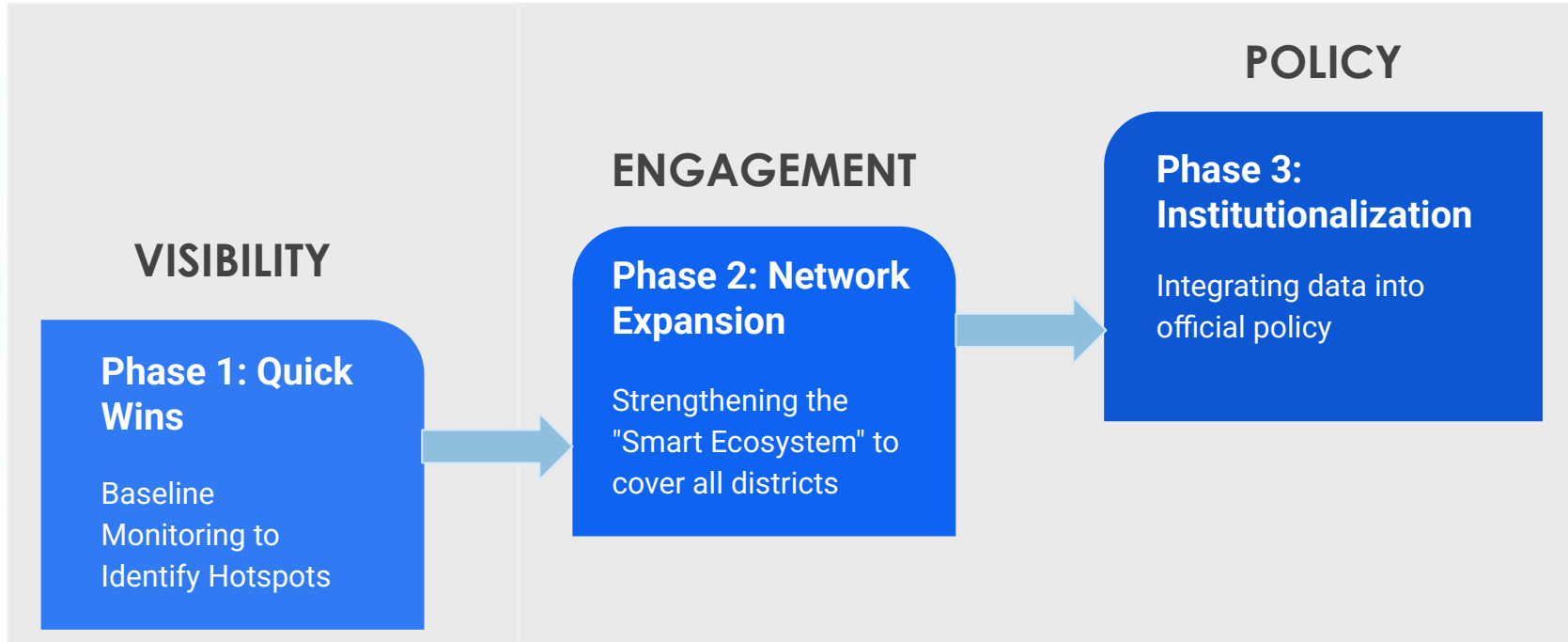


<https://map.clarity.io/breathe-metro-manila>

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# Proof Points: The Adoption Progression

*Successful cities don't build a 500-sensor network overnight; they follow a "Maturity Curve."*



# How **Six Cities** Use Clarity Node-S



# Los Angeles Unified School District

Los Angeles, CA, USA

Number of Clarity Nodes: **200+**

“Clarity gives us the granular and accurate air quality data we need to proactively protect our students and staff. With more extreme wildfires each year, it’s more important than ever to have an air quality action plan.”



**Carlos Torres**  
Director, Office of Environmental Health & Safety, LA Unified

Action Enabled:

**Protect student health from poor air quality**

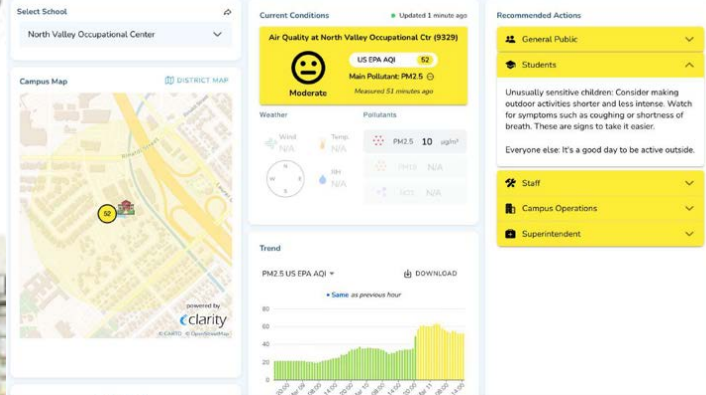
COALITION FOR CLEAN AIR

clarity



**LAUSD**  
UNIFIED

The Los Angeles Unified Know Your Air Network



Select School 

North Valley Occupational Center 

Campus Map

 DISTRICT MAP



Current Conditions

 Updated 1 minute ago

Air Quality at North Valley Occupational Ctr (9329)



Moderate

US EPA AQI **52**

Main Pollutant: PM2.5 

Measured 51 minutes ago

Weather



Wind

N/A

Temp.

N/A



Hum.

N/A

Pollutants



PM2.5 **10**  $\mu\text{g}/\text{m}^3$



PM10 N/A



O<sub>3</sub> N/A

Trend

PM2.5 US EPA AQI 

 DOWNLOAD

 Same as previous hour



Recommended Actions


 General Public 

 Students 

Unusually sensitive children: Consider making outdoor activities shorter and less intense. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.

Everyone else: It's a good day to be active outside.

 Staff 

 Campus Operations 

 Superintendent 

# Breathe Philly

Philadelphia, PA, USA

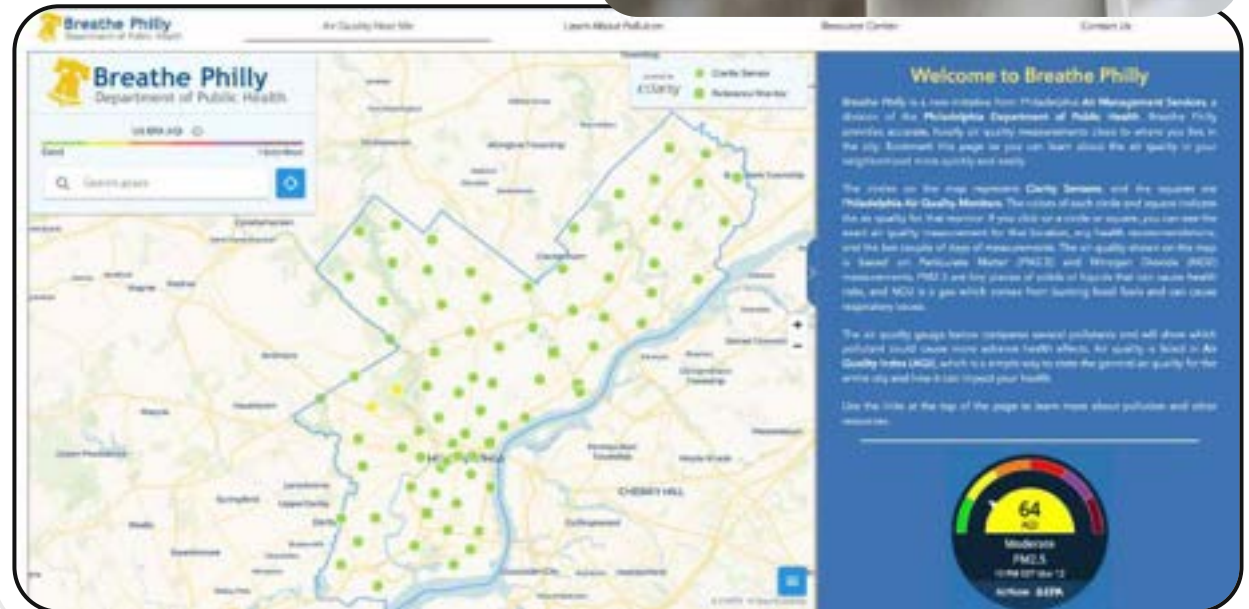
Number of  
Clarity Nodes: **75+**

"This is what it looks like when government works. Breathe Philly ensures no matter your zip code, you have access to real-time information about the air you and your family are breathing. This is about transparency, environmental justice, and giving residents tools to protect their health.



**Cherelle Parker**  
Mayor of Philadelphia

Action Enabled:  
**Provide local, real-time air  
quality data for citizens**



# Open Air Chicago

Chicago, IL, USA

Number of  
Clarity Nodes: **275+**

“Installing air sensors across our city is imperative in assessing what risks there are and protecting our community members, especially those who are most vulnerable.

CDPH continues to gather the best available data for all Chicagoans to guide the development of interventions to improve the health of Chicagoans.”



**Olusimbo “Simbo” Ige,  
MD, MS, MPH**

CDPH Commissioner

Action Enabled:

**Collect data to guide targeted  
air quality interventions**



# Yerevan Citywide Construction Monitoring

Yerevan, Armenia

Number of  
Clarity Nodes: **170+**

“Clarity’s innovative technology has significantly improved our understanding of urban air pollution and its impact on public health and the environment. The system’s accuracy, reliability, and user-friendly interface have proven to be extremely effective tools for both decision-makers and the public.”



**Sargis Manukyan**

Director of the Technology Management Center of Yerevan City

Action Enabled:

**Ensure AQ compliance with construction regulations**



**TMCYC**



# Breathe London Communities

London, United Kingdom

Number of  
Clarity Nodes: **450+**

“I am delighted that Londoners will now have access to real-time, accurate air quality data for their area from more than 400 monitoring sites. This will improve awareness and help people reduce their exposure to polluted air, and better target efforts on improving air quality at a local level.”



**Sadiq Khan**  
Mayor of London

Action Enabled:  
**Improve air quality with  
targeted policies**

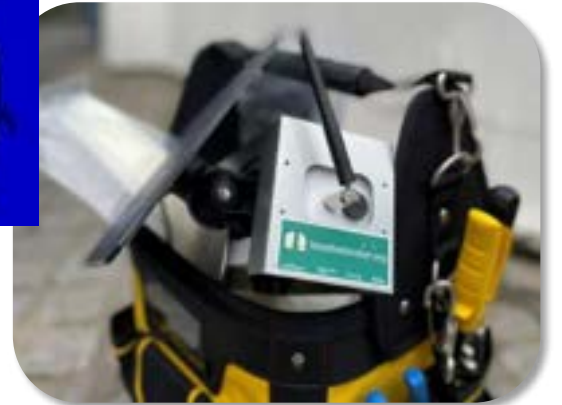
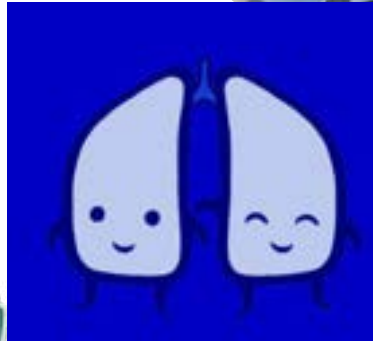


GREATER  
**LONDON**  
AUTHORITY

CLEAN  
AIR  
FUND

Imperial College  
London

clarity



# Royal Automobile Club, Western Australia

Perth, Australia

Number of Clarity Nodes:

**200+**  
December 2022

“Through the RAC Air Health Monitor, we want to accelerate action to reduce vehicle emissions in Western Australia. This requires government and individual behavioural change. Governments in terms of policy changes, investment and education to support electric vehicle uptake and tackle congestion. Individuals in terms of purchasing lower emission vehicles and driving less through considering greater use of public transport and e-mobility devices and walking and cycling more.”

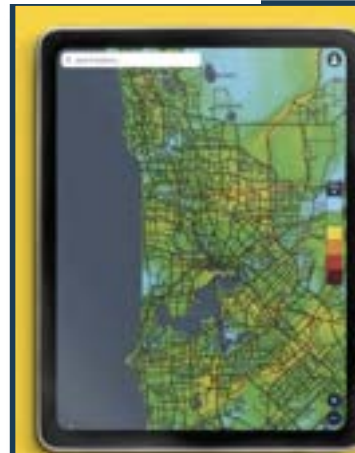
**Patrick Walker**

RAC WA Executive Social and Community Impact

Action Enabled:  
**Improve air quality with  
targeted policies**



**For the better**



**183**  
live sensors

**60+**  
partners

**135k+**  
daily  
measurements

**Tiny particles,  
big impact**



**PM<sub>2.5</sub>**

• Annual concentration  
**6.45 µg/m<sup>3</sup>**  
• NEPM standard  
**8 µg/m<sup>3</sup>**  
• WHO annual recommendation  
**5 µg/m<sup>3</sup>**

**PM<sub>10</sub>**

• Annual concentration  
**16.72 µg/m<sup>3</sup>**  
• NEPM standard  
**25 µg/m<sup>3</sup>**  
• WHO annual recommendation  
**15 µg/m<sup>3</sup>**

**Traffic-related NO<sub>2</sub>  
remained Perth's  
dominant air-quality  
challenge**



WU annual  
concentration  
**11.51 ppb**

The National Environment  
Protection Authority's  
annual limit

**15 ppb**

World Health  
Organization limit

**5.33 ppb**

# Breathe Metro Manila

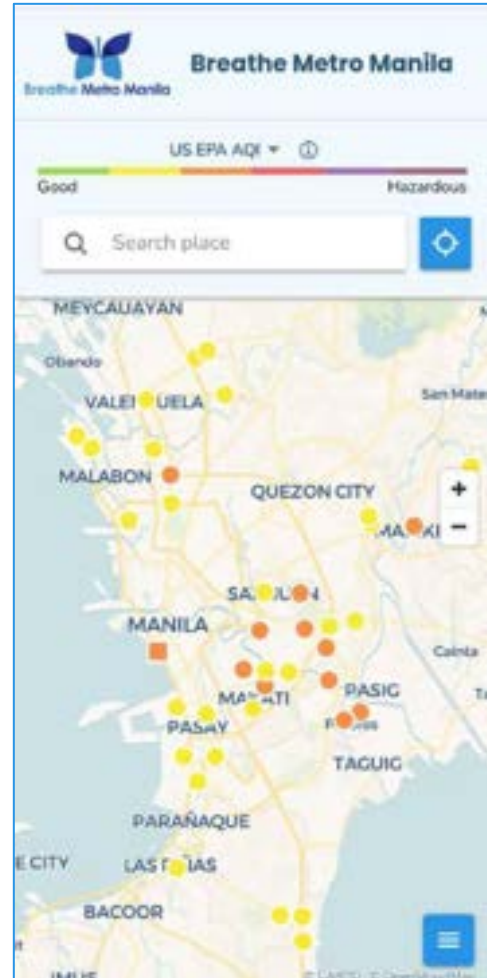
We make air quality **visible**, **actionable**,  
and **publicly-accessible**.

-  **Real-time insights** → Better protection
-  **Hyperlocal data** → More informed decisions
-  **Open Access** → Transparent, trusted analytics
-  **Science-based metrics** → Stronger, healthier cities

 clarity



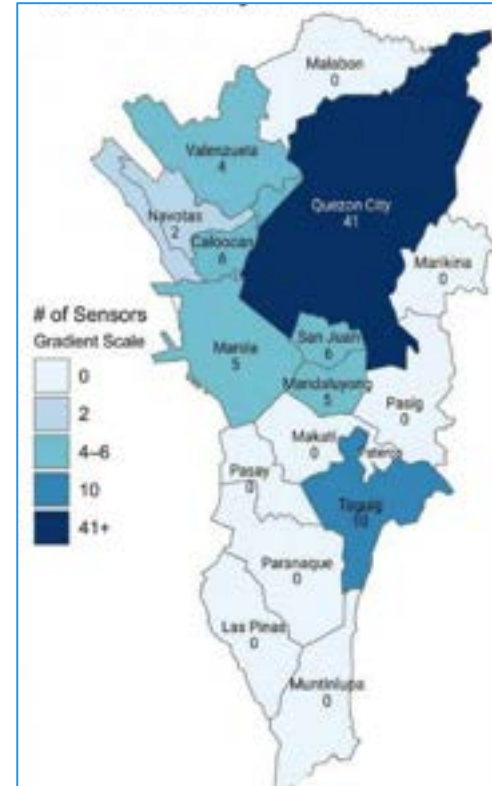
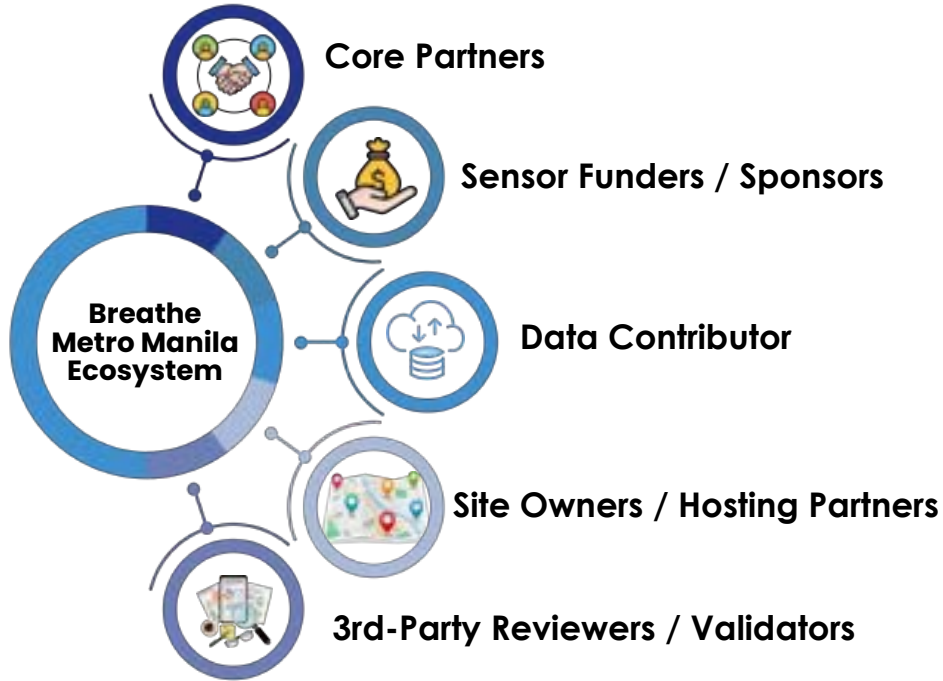
 acri



© Breathe Metro Manila

# We Want You.

*Be a leader in Metro Manila's air quality transformation.*



# Your Role Matters.

Join Breathe Metro Manila: Better air quality is a shared responsibility.



## Core Partners

**Description:** BMM's primary leaders: The technical and strategic architects steering the entire air quality network.

**Role:** They provide the scientific blueprint, technology backbone, and strategic directions to ensure the BMM network is sustainable and effective.



## Sensor Funders / Sponsors

**Description:** Organizations (private, corporate, or development) that provide the essential financial capital.

**Role:** Your cash procures and maintains the critical sensor hardware and intelligence software allowing BMM to expand into unmonitored areas.



## Data Contributor

**Description:** Entities (LGUs, research institutions, etc.) that share their existing or new air quality data feeds from "live" Clarity sensors with the BMM platform.

**Role:** They aggregate diverse data to build a more accurate, granular "heat map" of air quality across Metro Manila.



## Site Owners / Hosting Partners

**Description:** Local businesses, schools, government offices, or households providing a strategic physical location for a Clarity AQ sensor.

**Role:** They are the on-the-ground stewards who keep the physical sensors secure and operational in high-impact public spaces, e.g., school zones.



## 3rd-Party Reviewers / Validators

**Description:** Independent scientific and public health experts who ensure data integrity.

**Role:** They validate BMM's sensor data against official "gold-standard" monitors, making it credible for policy and health advisories.



# Where We Are Today



Breathe Metro Manila AQ sensors in **seven (7)** cities only.



*Help us reach 100% coverage in 24 mos.*

Philippines is **still above the WHO guideline value** of  $5 \mu\text{g}/\text{m}^3$  annual and  $15 \mu\text{g}/\text{m}^3$  24-hour  $\text{PM}_{2.5}$  cycle



AIR QUALITY  
ALERT



# What We Can Do Now



**Check the air you breathe daily:** Open the Breathe Metro Manila monitoring map as faithfully as you check PAGASA for weather status.



**Invest in your most valuable asset: PEOPLE.** Protect your workforce and citizens with hyperlocal AQ data to manage future costs from productivity losses and public health issues.



If you can't measure it, you can't fix it.

Now we can measure it and **go beyond**  
**“one-size-fits-all”** approaches.

**Join us.**



# Annexes





# The BMM Ecosystem: Roles & Descriptions

The ecosystem operates through a multi-sectoral partnership where each stakeholder plays a specific role in the data-to-action pipeline:

## 1. Core Partners

**Description:** The primary governing body and technical leadership of the initiative.

**Role:** These organizations (including Ateneo BUILD, ACRI, Manila Observatory, and Clarity) provide the scientific framework, technological backbone, and strategic direction. They are responsible for project management, data infrastructure, and overall sustainability of the network.

## 2. Sensor Funders / Sponsors

**Description:** Philanthropic organizations, private corporations, or development agencies.

**Role:** They provide the financial capital required to procure and maintain the sensor hardware and the network. By "sponsoring", they enable the sustainability and/or expansion of the network into underserved or high-traffic areas that lack government monitoring.

# The BMM Ecosystem: Roles & Descriptions

## 3. Data Contributor

**Description:** Entities that feed existing or new air quality data from their own Clarity sensor networks into the BMM platform.

**Role:** This includes research institutions and local government units who share their own sensor feeds. By aggregating diverse data sources, they help create a more comprehensive and granular "heat map" of air quality across the metropolis.

## 4. Site-Owners / Hosting Partners

**Description:** Local businesses, schools, churches, or government offices located in strategic areas.

**Role:** These partners provide the physical space, and infrastructure (poles or walls) needed to host the sensors. They act as "on-the-ground" stewards, ensuring the equipment remains secure and operational in high-impact locations like transport hubs and school zones.

## 5. 3rd Party Reviewers / Validators

**Description:** Independent scientific bodies, auditors, and public health experts.

**Role:** They ensure the integrity and accuracy of the data/reports. By cross-referencing low-cost sensor data with "gold-standard" reference monitors (like those from the DENR), they provide the necessary validation to make the data credible for policy-making and health advisories.



**Breathe Metro Manila**

Bey@breathCounts: Air Quality Data for a Sustainable Metro Manila

**Vision: To establish a high-resolution, regional-scale air quality monitoring network that empowers data-driven urban policy and protects public health through real-time, hyperlocal insights.**

### MAKING CLEAN AIR YOUR BUSINESS

Air pollution is a significant material risk for the Philippine private sector, impacting workforce productivity, healthcare costs, and estate livability. It is increasingly factored into climate transition and physical risk scoring for assets.

**Economic Cost**  
Air pollution cost the Philippines over **₱6.43 trillion**, approximately 23% of the national GDP in 2019.

**Health Burden**  
₱3 billion is lost annually due to years lived with disabilities, reducing quality of life and productivity.

**Productivity Loss**  
₱26.7 billion is lost to work absences caused by illness, such as strokes, lung cancer, and asthma.

**Premature Deaths**  
Poor air quality is linked to approximately **44,000** premature deaths per year in the Philippines.

**Breathe Metro Manila: From Blind Spots to Intelligence**

Current monitoring is sparse and under-representative, leaving major CBDs and urban corridors invisible to policy.

**BUILD** **acri** **clarity**

<https://breathethemetromanila.org/>



acri



clarity



Breathe Metro Manila

### LEAD THE TRANSFORMATION: FROM CSR TO ESG STRATEGY

Join a science-based, citizen-focused environmental action model for Metro Manila.

#### Environmental

Provides high-resolution, hyperlocal air quality data to inform climate transition and physical risk scoring.

#### Social

Directly impacts public health through air pollution health risk assessments and policy impact studies.

#### Governance

Ensures transparency through an open-access data platform and a multi-sectoral fiduciary framework.

### Invest in Cleaner Skies for Metro Manila

A tiered partnership model powering real-time air quality intelligence.

<b>TOP - BLUE SKY CHAMPION</b>	Powers at least 20 sites. Drives policy. Leads the network.	₱4M+ annually
<b>MANGIN HERO</b>	Expands and sustains monitoring coverage.	₱2M+ annually
<b>INSIGHT BUILDER</b>	Operational Data Continuity. Sustains impact.	₱1.2M+ annually
<b>KA-BREATHE</b>	Stakeholder Engagement and Social License to Operate. Local action.	volunteers, in-kind donations, etc.

### From Funding to Measurable Impact

#### Your partnership directly enables:

- Hyperlocal PM2.5 monitoring across Metro Manila
- Continuous data transparency through a public platform
- Science-based policy engagement and decision support
- Real-time risk communication for communities
- Long-term sustainability of a citywide monitoring network



Lead the shift toward data-driven, preventive clean air solutions.



## A GLOBALLY RECOGNIZED AIR QUALITY SENSOR

Clarity's Node-S air quality sensor is self-powered, FCC/CE certified, MCERTS-certified for use with solar power, UV-resistant, and weatherproof. Used in more than 85 countries, Clarity's air quality sensors provide affordable, continuous monitoring and accurate, color-coded air pollution data for cities globally. Add-On Modules available for Dust (PM10), Black Carbon, Ozone, Wind, and more.

Learn more at [www.clarity.io](http://www.clarity.io)

### The Core Infrastructure: Clarity Node-S

**Real-Time Connectivity:**  
Seamlessly transmits data to the Clarity Cloud for immediate public and private access.

**Operational Reliability:**  
Designed to ensure 99% data availability for consistent urban monitoring.

**Hyperlocal Precision:**  
Enables the deployment of a regional-scale network for street-level insights.

### Institutional Credibility & Fiduciary Trust



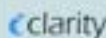
**Ateneo Business Insights Laboratory for Development:** Serves as the fiduciary lead, providing transparent accounting, fund management, and stakeholder engagement.



**Ateneo Center for Research and Innovation:** Conducts health risk communication and promotion programs based on study site data.



**Manila Observatory:** Leads scientific validation, calibration, and spatiotemporal analysis to ensure data integrity.



**Clarity Movement**  
A mission-oriented organization that provides the world-class sensor hardware and the global cloud platform.

## BREATHE METRO MANILA | SPONSORSHIP PROSPECTUS 2026

### Transforming Urban Intelligence into Corporate Strategy

Air pollution costs the Philippines over P4.43 trillion annually—roughly 23% of national GDP. For the private sector, this is a material risk impacting workforce productivity, healthcare costs, and the long-term livability of real estate assets. Breathe Metro Manila offers your organization a science-based, data-driven pathway to lead the transition from traditional CSR to a high-impact ESG Strategy.

#### Why Partner with Breathe Metro Manila?

- Data-Driven Resilience:** Access high-resolution, hyperlocal air quality data to inform climate transition and physical risk scoring for your assets.
- Workforce Protection:** Mitigate the P24.7 billion productivity loss caused by air-quality-related illnesses and work absences.
- Institutional Trust:** Partner with world-class leaders including the Manila Observatory, Ateneo BUILD, and Clarity Movement to ensure scientific validation and fiduciary transparency.

Tier	Investment	Strategic Impact
Blue Sky Champion	Php 4M+ annually	<b>Lead the Network:</b> Powers at least 20 monitoring sites. Directly drives regional urban policy and secures a seat as a primary influencer of the ecosystem's strategic direction.
Hangin Hero	Php 2M+ annually	<b>Expand Coverage:</b> Sustains and expands monitoring across critical urban corridors and Central Business Districts (CBDs) currently invisible to policy.
Insight Builder	Php 1M+ annually	<b>Sustain Impact:</b> Ensures the continuous flow of real-time data and supports the long-term reliability of the monitoring infrastructure.
Ka-Breathe	In-Kind, Volunteer	<b>Local Action:</b> Builds community awareness and powers local action through site hosting or volunteer-led data contributions.

#### Measurable Outcomes for your Organization

- Hyperlocal PM2.5 Monitoring:** Real-time insights at the street level across Metro Manila.
- Transparency & Reporting:** Continuous data transparency via an open-access public platform, supporting your ESG disclosure requirements.
- Health Risk Assessments:** Science-based studies on the public health impacts of air pollution to guide corporate wellness and community programs.
- Operational Reliability:** Access to a network designed for 99% data availability using FCC/CE certified, solar-powered Clarity Node-S sensors.

Secure Your Legacy in Metro Manila's Future. Join the shift toward data-driven, preventive clean air solutions.

Contact us to finalize your commitment.  
Website:  
[breathemetromanila.org](http://breathemetromanila.org)



For more information:

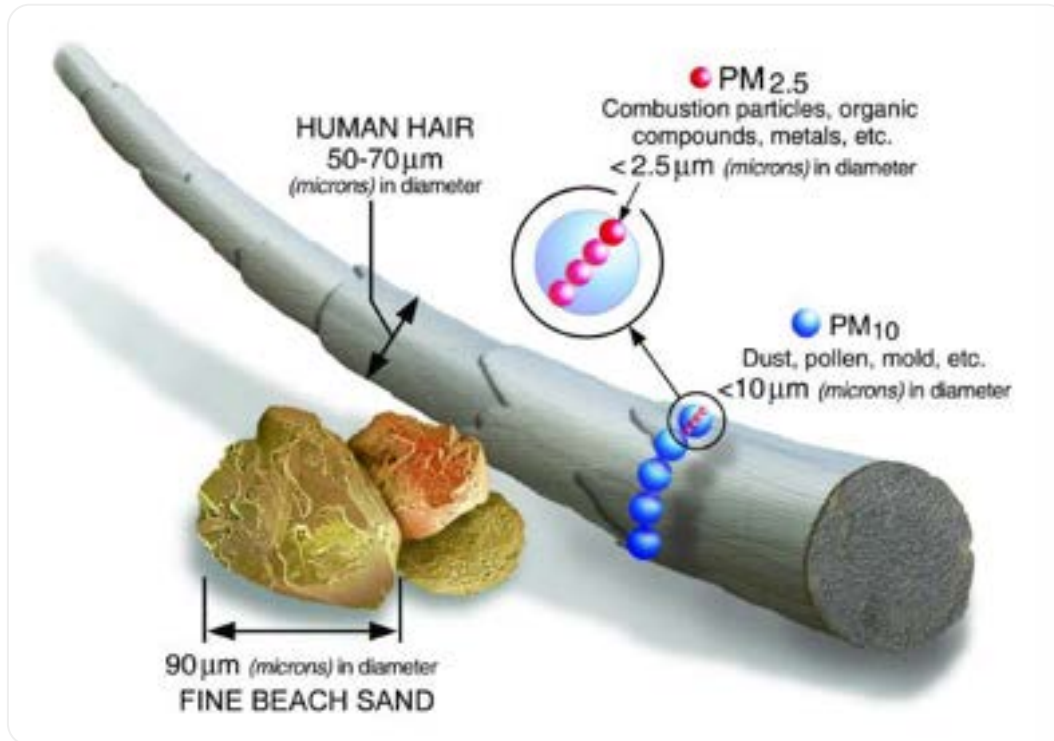
**<https://breathemetromanila.org/>**

For the latest Air Quality Data in Metro Manila:

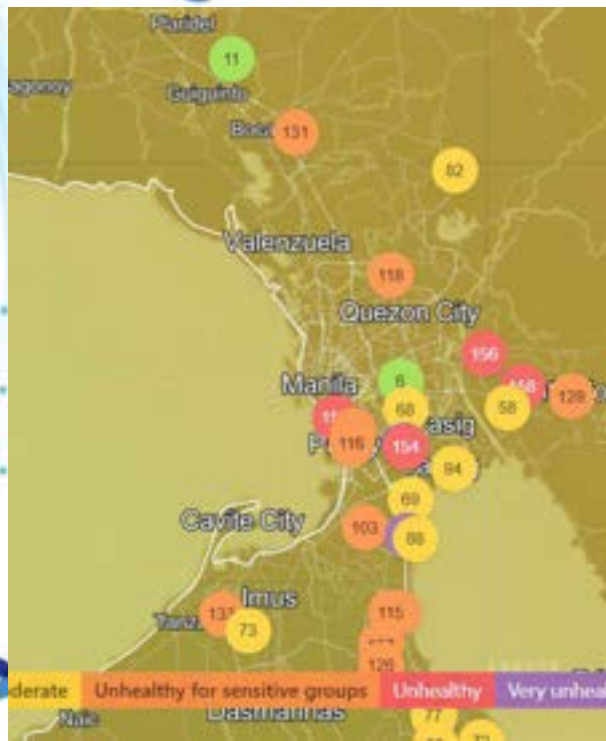
**<https://map.clarity.io/breathe-metro-manila>**



# Imagining the size of PM2.5



# The Usual Go-To Portal for AQ Data



Continuous Ambient Air Quality Monitoring Station

**PM 10**

Station	AQI	AQI Remarks 1
Makati	120	Unhealthy for Sensitive Groups
Mandaluyong	30	Good
Parañaque	59	Fair
San Juan	7	Good
Valenzuela	103	Unhealthy for Sensitive Groups

Station	AQI PM2.5	AQI Remarks 2
Valenzuela	55.03	Fair

**Air Quality Monitoring Stations (AQMS) in other Cities are for repair.**

Continuous Ambient Air Quality Monitoring Station

**PM 2.5**

Station	AQI	AQI Remarks 2
Parañaque	115	Unhealthy for Sensitive Groups
Makati	20	Good

Station	AQI PM2.5	PM2.5 Remark
Valenzuela	55.03	Fair

Monitoring: \*Data available on site  
Multi-Agency: \*Data available on site

Generated Data as of: **8/5/2025 02:00:00 PM**

**GOOD**

0-50

**FAIR**

51-100

**UNHEALTHY FOR SENSITIVE GROUPS**

101-150

**UNHEALTHY**

151-200

**VERY UNHEALTHY**

201-300

**EXTREMELY UNHEALTHY**

301-500

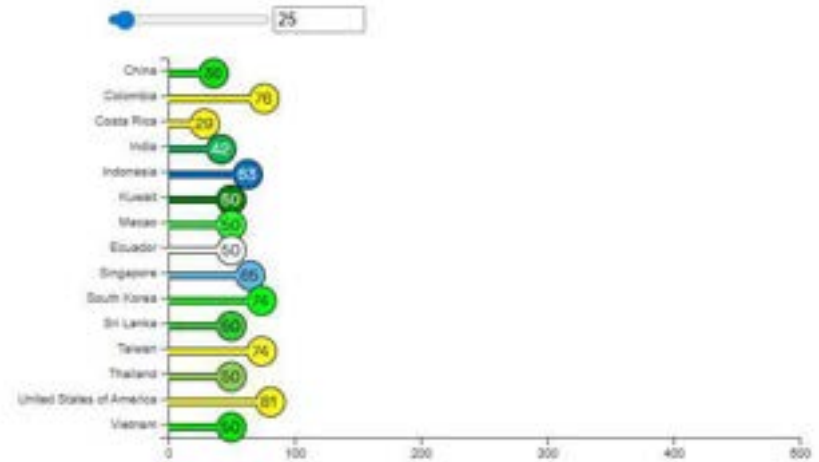
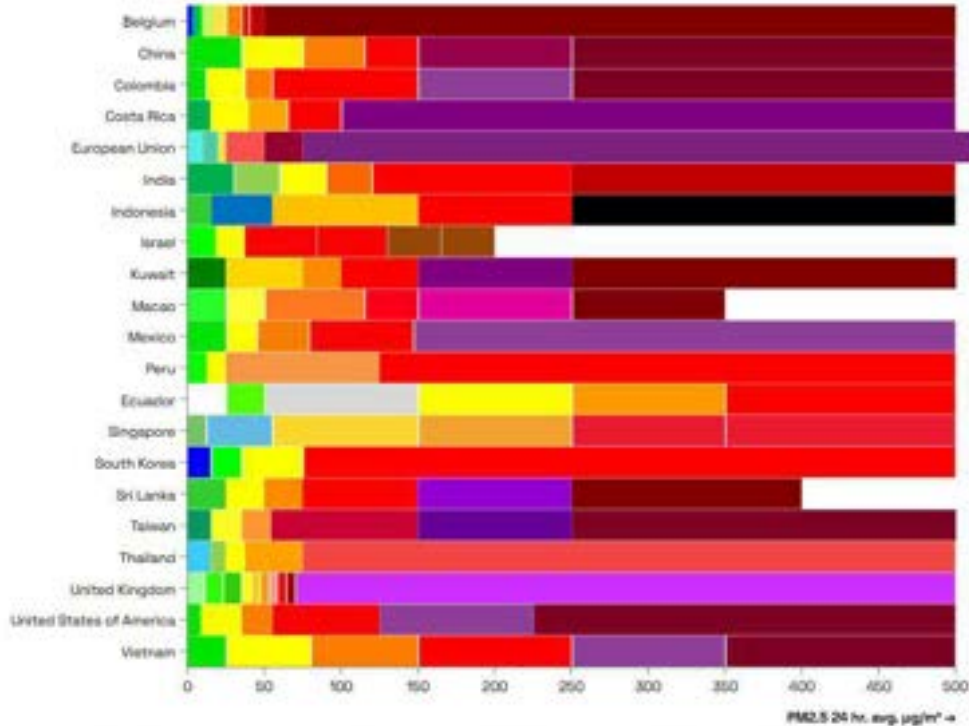
Generated Data as of: **8/5/2025 02:00:00 PM**

▲ 105 Parañaque ▲ 59 Taguig ▲ 31 Mandaluyong ▲ 30 San Juan ▲ 7

# Air Quality Index

## Philippines AQI

PM <sub>2.5</sub> (AQI)		CATEGORY	PM <sub>2.5</sub> (µg/Ncm)	
Lo	Hi		BP <sub>Lo</sub>	BP <sub>Hi</sub>
0	50	GOOD	0	25
51	100	FAIR	25.1	35.0
101	150	UNHEALTHY FOR SENSITIVE GROUPS	35.1	45.0
151	200	VERY UNHEALTHY	45.1	55
201	300	ACUTELY UNHEALTHY	55.1	90
301	500	EMERGENCY	91	above



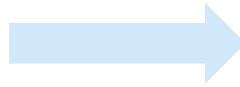
# The Problem: You Can't Manage What You Don't Measure

## Metro Manila's Blind Spots

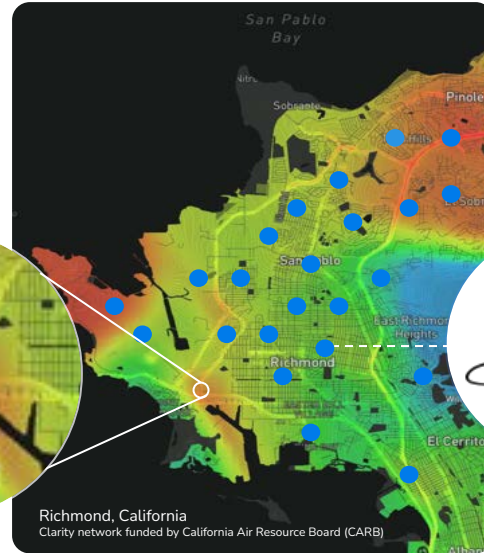
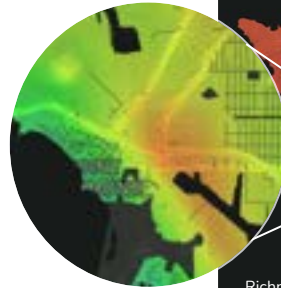
### Past Air Monitoring



Sparse, under-representative  
air quality information <sup>1</sup>



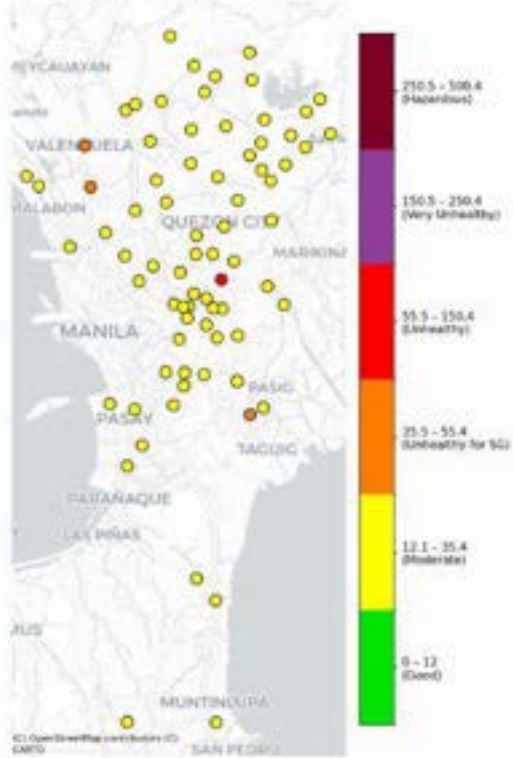
### Future of Air Monitoring



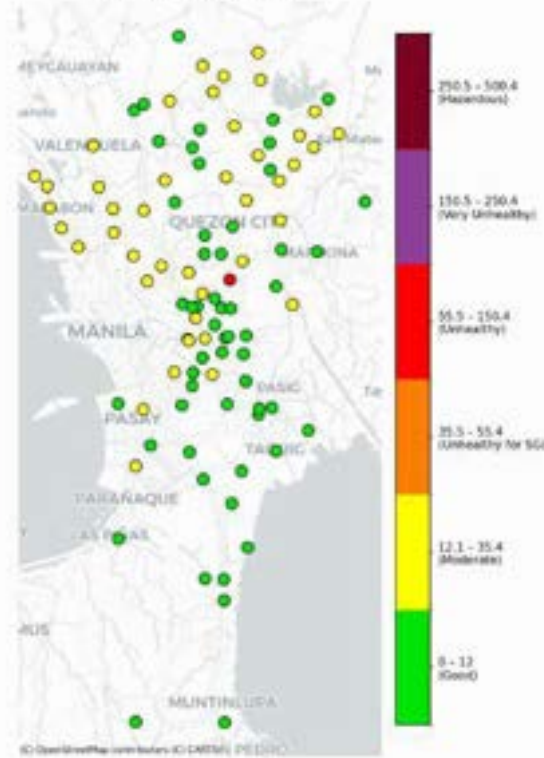
Localized, real-time & accurate  
air quality data

# Metro Manila's Blind Spots

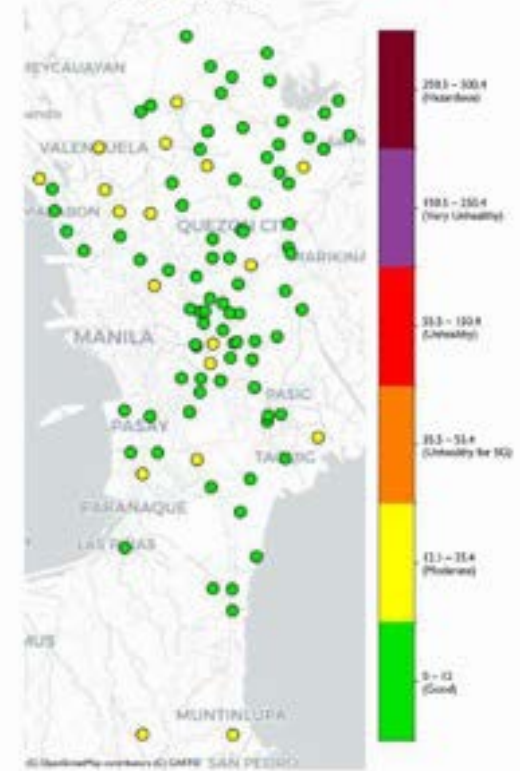
PM2.5 NowCast Concentration  
2024-08-18 00:00 PST



PM2.5 NowCast Concentration  
2025-04-27 12:00 PST



PM2.5 NowCast Concentration  
2025-09-14 08:00 PST



We cannot protect communities if we cannot see what they breathe.

- South is better (except the threat of Taal)
- North - industrial → traffic → Higher volume of trucks
- We are still blind for major thoroughfares, urban corridors, CBDs

Average PM2.5 by Site Location

