

The PurpleAir Monitoring Project

The Department of Energy and Environment (DOEE) recognizes that air quality is more than an environmental health issue; it is a matter of environmental justice. Historically, there have been specific communities in the District that have been and continue to be overburdened by air pollution. To better understand the disparities and address this imbalance, DOEE seeks to increase its measurements of air pollution on a hyperlocal scale. To this end, DOEE is empowering residents from across the District to participate in the PurpleAir monitoring project.

PurpleAir sensors track and collect localized air quality data, measuring particulate matter (PM2.5) in the surrounding area. By providing residents with the opportunity to monitor air pollution in their neighborhood, DOEE seeks to improve the community's understanding of air quality while also giving them a chance to contribute to environmental improvements.

How It Works

Residents can host the PurpleAir sensor at their home or their workplace. DOEE will loan PurpleAir sensors to residents through a loan agreement signed by both DOEE and the resident. Installation and maintenance of the PurpleAir monitors will be handled by DOEE staff and trained Air Ambassadors. Residents will be responsible for downloading and using the paired PurpleAir app to ensure the monitor collects data.

If any issues arise, staff from DOEE's Air Quality Division (AQD) will be available to provide technical assistance. .

Eligibility

Applicants selected to host a PurpleAir sensor must meet the following criteria:

1. **Landlord/Employer Approval:** Ensure hosting the sensor does not conflict with any agreements with landlords or employers.
2. **Reliable Internet and Power:** Have a dependable Wi-Fi connection and an external power source for the monitor.
3. **Coordination with DOEE Staff:** Be available to communicate and coordinate with DOEE Air Quality Division staff for a home visit to determine the most appropriate placement of the sensor.

Strategic and Equitable Sensor Placement

Our existing permanent monitoring network provides a valuable overview of air quality in the District; however, DOEE understands that it may not capture the full scope of pollution. This project focuses on areas in the District that have been historically neglected and overlooked, especially pollution hotspots. Residents in overburdened communities, as identified by Council on Environmental Quality's (CEQ) [Climate and Economic Justice Screen](#) (CEJST) tool, are often exposed to higher levels of particulate matter (PM), nitrogen oxides (NOx), sulfur dioxide (SO₂), and volatile organic compounds (VOCs), all of which have been shown to exacerbate negative health outcomes. DOEE used the CEJST tool to help identify areas for sensor placement. The CEJST tool identifies various indicators of burdens for disadvantaged communities, including climate change, health, housing, legacy pollution, and more. Additionally, findings from the 2023-2024 Aclima mobile monitoring study, which surveyed and collected air quality data in the District, provided valuable insights into the areas that are burdened by pollution from vehicles, construction projects, and other sources.

Some of the factors being considered for sensor placement are:

1. **Proximity:** To minimize overlaps/gaps in coverage, DOEE will ensure that sensors are spread out across communities. This may mean that if a sensor is already hosted in your community or a permanent monitor is nearby, you could be ineligible to host one at your home.
2. **Overburdened Community:** Census tracts that experience burdens in or near the 90th percentile of the eight categories of the CEJST tool are being prioritized. For example, communities within the 75-90th percentile for “**Diesel particulate matter exposure,**” will be given priority over other areas with relatively low pollution exposure.
3. **Environmental Factors:** Large trees or nearby exhaust vents can interfere with the sensor's ability to collect data accurately.
4. **Areas of Interest:** We will focus on locations with high pollution levels near populations of sensitive groups, such as elementary school children. This will help us understand how pollution affects vulnerable groups.
5. **Potential for Future Research:** Aclima's block-by-block air pollution data and other sources, can provide valuable insight into potential study areas for further research.

While the primary focus of the project will be in CEJST-identified communities, we will also welcome residents in other communities to participate in PurpleAir monitoring if they experience high volumes of traffic and are frequently exposed to other sources of pollution.

By empowering residents to monitor air pollution in their neighborhoods, we can gain better insight into specific pollution hotspots. DOEE will use the localized data to inform potential interventions and policy decisions and encouraging further research on environmental justice issues throughout the District.

DOEE reserves the right to update its factors if a new factor arises that was unforeseen and will publish the factor on this website.

If you have questions or would like further explanations, please contact Kane Samuel at kane.samuel@dc.gov.