

April 16, 2026

Shelby County Health Department
Attn: Michael Goldstein
Meteorologist Manager
Air Pollution Control Program
1826 Sycamore View Road
Memphis, TN 38134

RE: Public Comments on Shelby County Health Department's March 17, 2026 Public Notice for Modification of the Ambient Air Monitoring Network Plan

Dear Mr. Goldstein:

Together with Young, Gifted & Green, Memphis Community Against Pollution, and the Chickasaw Group of the Tennessee Chapter of the Sierra Club, the Southern Environmental Law Center respectfully submits the following comments on proposed modifications to the 2025 Shelby County Ambient Air Monitoring Network Plan. Shelby County Health Department (SCHD), in accordance with 40 CFR Parts 58.10 and 58.14, as well as US EPA Region 4 Guidance on Establishing, Relocating, or Discontinuing a State Monitoring Station, has proposed adding an ambient air monitoring site in the Riverview neighborhood of South Memphis—specifically, at 216 Joubert Avenue, Memphis, Tennessee.¹ This proposed air monitor will be capable of monitoring both ozone and carbon monoxide.²

We applaud SCHD's decision to install this air monitor. South Memphis has lacked air pollution monitoring data for more than a decade, despite the presence of “several large point and area sources” that impact the health and well-being of hundreds of thousands of Shelby County residents.³ The addition of this air monitor will provide Shelby County residents with critical data to better understand their local air quality and SCHD with the data necessary to fulfill its mission: to promote, protect, and improve the health of all in Shelby County.⁴

However, we urge SCHD to include a particulate matter 2.5 (PM_{2.5}) monitor to the proposed air monitor station. Despite the aforementioned presence of several large point and area sources in close proximity to residential neighborhoods, and despite the serious health risks that

¹ SCHD, *2025 Ambient Air Monitoring Network Plan – MODIFIED: Shelby County Health Department Air Pollution Control Program Including the Metropolitan Statistical Area (Memphis, TN-MS-AR)* (excerpts), pg. 1, 53 (March 10, 2026), <https://www.shelbytnhealth.com/DocumentCenter/View/7690>. Hereafter “2025 Ambient Air Monitoring Network Plan.”

² *Id.* at 53.

³ *Id.*

⁴ *Id.* at 53, 56; SCHD, *Mission and Vision* (last accessed Apr. 15, 2026), <https://www.shelbytnhealth.com/279/Mission-and-Vision>.

this criteria pollutant poses, SCHD currently operates no PM_{2.5} air monitor in the South Memphis area; the closest PM_{2.5} monitor is about five miles to the north and on the other side of Downtown.⁵ Notably, that monitor has the highest EPA-certified PM_{2.5} readings of the three Shelby County monitors: the most recent design value was 8.9 µg/m³, just shy of the 9 µg/m³ National Ambient Air Quality Standards (NAAQS).⁶

Further, data from PurpleAir PM_{2.5} air monitors, installed by Memphis Community Against Pollution (MCAP) in South Memphis and corrected per EPA guidance, shows that the average levels of PM_{2.5} have exceeded the 9 µg/m³ NAAQS over the period since they were installed.⁷ Establishing a PM_{2.5} air monitor in South Memphis is crucial to more fully document ongoing and harmful air quality problems.

I. PM_{2.5} is a criteria pollutant that can cause harmful and even fatal health effects in impacted populations like South Memphis.

The dire health impacts of particulate matter make the collection of data on this criteria pollutant critically important to protect Memphians.⁸ “Particulate matter” is a category of small, hazardous particles formed by the burning of carbon-rich materials like fossil fuels. They are commonly produced by power plants, gas and diesel engines, industrial processes, and atmospheric reactions of gaseous pollutants.⁹ “PM_{2.5}” describes particles that are 2.5 microns in diameter or smaller: finer than the width of a single human hair or a grain of sand.¹⁰

There is simply no threshold at which inhaling PM_{2.5} is safe.¹¹ Even short-term exposure to particulate matter can lead to grievous health outcomes, including increased mortality in infants; increased hospital and emergency department visits for cardiovascular disease, such as heart attacks, and lung disease, such as COPD and asthma; and increased severity of asthma attacks in children.¹² A short-term increase of even 10 µg/m³ of PM_{2.5} in air breathed is

⁵ This is the Alabama Ave. Station, located at 416 Alabama Avenue, Memphis, TN.

⁶ EPA, *Air Quality Design Values, 2024 PM_{2.5} Design Values*, (last updated Aug. 28, 2025), <https://www.epa.gov/air-trends/air-quality-design-values>.

⁷ **Attachment 1**, PDF file of PurpleAir PM_{2.5} air monitor data (Excel spreadsheet data is on file with author and available upon request).

⁸ See EPA, *Final Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM)*, PARTICULATE MATTER (PM) POLLUTION (last updated Apr. 14, 2026), <https://www.epa.gov/pm-pollution/final-reconsideration-national-ambient-air-quality-standards-particulate-matter-pm> (“Particle or soot pollution is one of the most dangerous forms of air pollution, and an extensive body of science links it to a range of serious and sometimes deadly illnesses.”).

⁹ EPA, AMERICA’S CHILDREN AND THE ENVIRONMENT 33 (3d ed., Jan. 2013); Am. Lung Ass’n, *What Is Particle Pollution?*, PARTICLE POLLUTION (last updated May 27, 2025), <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>.

¹⁰ Am. Lung Ass’n, *What Is Particle Pollution?*, PARTICLE POLLUTION (last updated May 27, 2025), <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>.

¹¹ *Id.*

¹² *Id.*; EPA, AMERICA’S CHILDREN AND THE ENVIRONMENT 33 (3d ed., Jan. 2013); EPA, *Final Rule to Strengthen the National Air Quality Health Standard for Particulate Matter Fact Sheet* at 2 (last accessed Apr. 15, 2026), <https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-overview.pdf>.

associated with an increase in daily mortality of about one percent: this represents an increase of one and a half deaths per one million people per day.¹³ The relationship between PM_{2.5} and increased mortality exists even at concentrations below 15 µg/m³, potentially even as low as 2 µg/m³.¹⁴ Long-term exposure is associated with higher rates of asthma in children; slowed lung function growth in both children and adults; worsening COPD in adults; higher risk of heart attack, stroke, lung cancer, diabetes, and dementia; negative pregnancy and birth outcomes such as preterm birth, low birth weight, and increased fetal and infant mortality; and increased risk of death from cardiovascular disease.¹⁵

Certain sensitive populations are at higher risk of negative health impacts from PM_{2.5} exposure. These groups include infants, children, and teens; adults over sixty-five; people with cardiovascular or lung disease, obesity, or diabetes; people in low wealth communities; women; individuals who are pregnant; people of color; and people who live close to emission sources.¹⁶

Critically, the vast majority of South Memphis's population belongs to one or more of these sensitive populations.¹⁷ In zip code 38109, where the proposed air monitor station would be located, the population is ninety-five percent Black and fifty-five percent female.¹⁸ Children and adults over sixty-five are both at heightened risk for negative health impacts from PM_{2.5}; in 38109, nineteen percent of the population is sixty-five or over – a proportion roughly twenty-five percent higher than the Memphis Metro Area as a whole – and a quarter of the population is under eighteen – a proportion ten percent higher than Tennessee and the national average.¹⁹ Nearly one-third of the population lives below the poverty line, including half of children and twenty-one percent of adults over sixty-five, a proportion nearly double the rate of the Memphis Metro Area and more than double the rate of Tennessee and the national average, respectively.²⁰

¹³ Qian Di et al., *Association of Short-term Exposure to Air Pollution with Mortality in Older Adults*, J. Am. Med., Dec. 26, 2017, at 2.

¹⁴ *Id.* at 6-7.

¹⁵ Am. Lung Ass'n, *What Is Particle Pollution?*, PARTICLE POLLUTION (last updated May 27, 2025), <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>; EPA, *Final Rule to Strengthen the National Air Quality Health Standard for Particulate Matter Fact Sheet* at 2 (last accessed Apr. 15, 2026), <https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-overview.pdf>.

¹⁶ EPA, *AMERICA'S CHILDREN AND THE ENVIRONMENT* 33 (3d ed., Jan. 2013); Am. Lung Ass'n, *What Is Particle Pollution?*, PARTICLE POLLUTION (last updated May 27, 2025), <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>; Di et al., *supra* note 13, at 6 (“Medicaid-eligible individuals, females, and the elderly had higher mortality rate increases associated with PM_{2.5} than other groups. ... Poverty, unhealthy lifestyle, poor access to healthcare, and other factors may make some subgroups more vulnerable to air pollution.”); EPA, *Final Rule to Strengthen the National Air Quality Health Standard for Particulate Matter Fact Sheet* at 1 (last accessed Apr. 15, 2026), <https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-overview.pdf> (“PM_{2.5} is a pollutant of great concern to those with asthma or lung disease and already overburdened and vulnerable communities, including many communities of color, and low[-]income communities...”).

¹⁷ See Census Reporter, *Profile for 38109* (last accessed Apr. 15, 2026), <https://censusreporter.org/profiles/86000US38109-38109/> (data collected from 2024 U.S. Census).

¹⁸ See *id.*

¹⁹ See *id.*

²⁰ See *id.* (showing 32.1% of population below poverty line, including 55% of children and 21% of seniors).

The situation of sensitive populations, and the close proximity of polluters to residential neighborhoods in South Memphis, mean that SCHD cannot rely on PM_{2.5} data collected at other air monitoring sites in Shelby County to understand the threat that PM_{2.5} poses specifically to South Memphians. To fulfill its duty to protect the health and well-being of *all* residents of Shelby County, SCHD must establish a PM_{2.5} air monitor in South Memphis.

II. South Memphis is home to Shelby County's largest PM_{2.5} emitters.

The lack of a PM_{2.5} monitor in South Memphis is especially troubling given the fact that the largest emitters of PM_{2.5} in the metro area are clustered here. In particular, of all sources within Shelby County, DeSoto County (MS) and Crittendon County (AR), the four largest sources (per EPA's most recent National Emissions Inventory) are the Valero Refinery (250 tons of PM_{2.5}); the TVA Southaven plant (172 tons of PM_{2.5}), the TVA Allen plant (91 tons), and the Nucor Steel mill (89 tons of PM_{2.5}).²¹ Together these four sources add up to 602 tons of PM_{2.5} emissions, which accounts for a whopping 67% of all facility emissions in the three counties.²² Notably, this data does not include recent new additions in Southwest Memphis like the two xAI power plants and TVA Allen's new turbines.

The map below shows the largest PM_{2.5} emitters²³ in the Memphis area (the size of the circle represents the magnitude of reported emissions), along with both existing PM_{2.5} monitors and the proposed new monitor location:

²¹ EPA, National Emissions Inventory (2020), <https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>.

²² *Id.* Total PM_{2.5} emissions from facilities in the three counties were 899 tons.

²³ The map shows any source that reported emitting more than 10 tons of PM_{2.5} in the 2020 NEI.

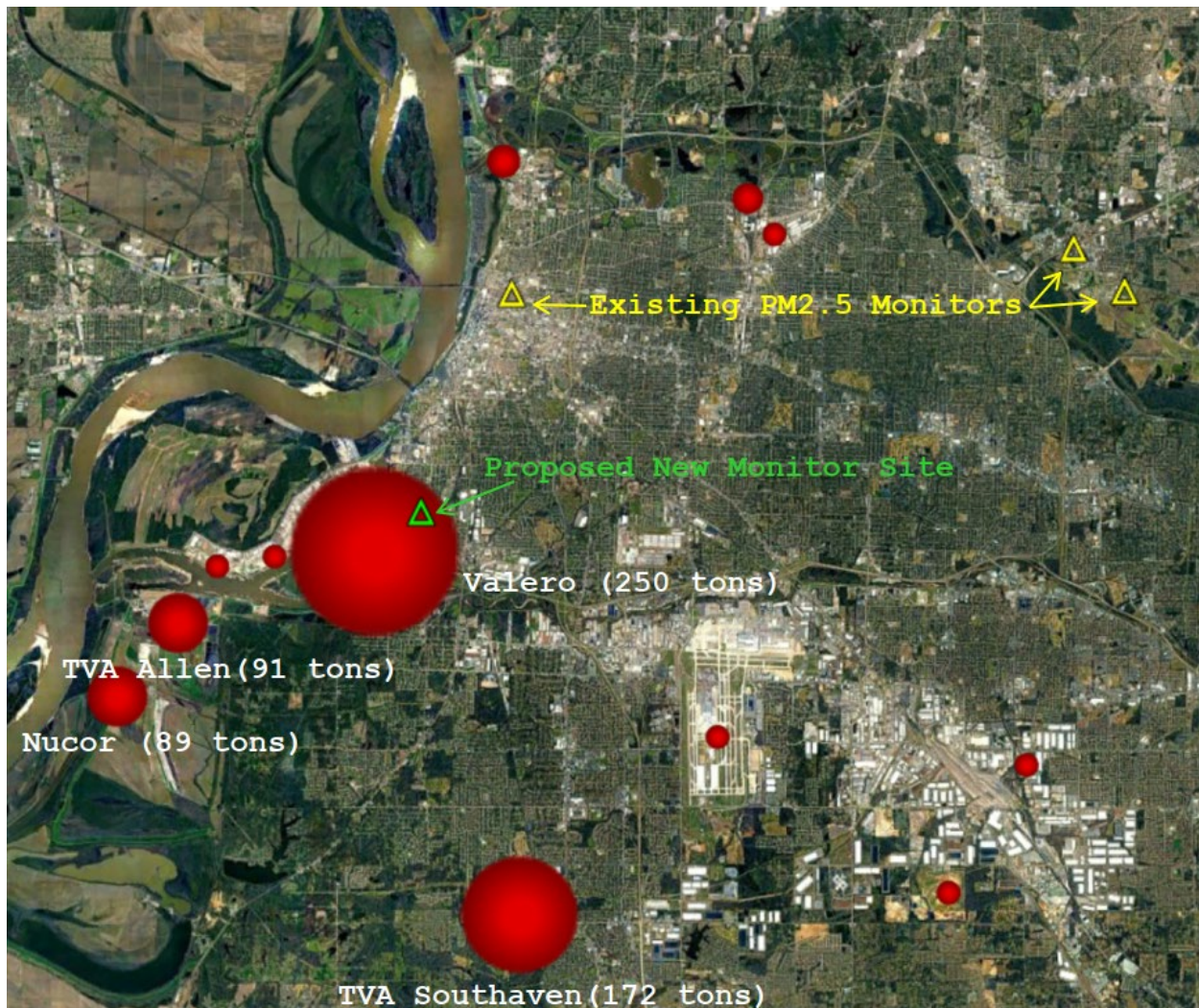


Figure 1: Largest $PM_{2.5}$ emitters in the Memphis area. EPA, National Emissions Inventory (2020), <https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>.

Additionally, Southwest Memphis is home to significant truckyards, railyards, warehouses and other transit infrastructure that drive additional mobile-source emissions, sources not represented on the map above.²⁴

In sum, the largest emitters of $PM_{2.5}$ in the Memphis metro area are all located in Southwest Memphis, yet the existing monitors are located far from these sources. The new proposed monitoring location, meanwhile, is much closer to these sources and would provide valuable information on localized $PM_{2.5}$ impacts.

²⁴ See, e.g., Chunrong Jia & Jeffery Foran, *Air toxics concentrations, source identification, and health risks: An air pollution hot spot in southwest Memphis, TN*, 81 *Atmospheric Environment* 112–116 (2013), <https://www.sciencedirect.com/science/article/abs/pii/S1352231013006948>.

III. PurpleAir air monitors installed by MCAP in the South Memphis area have documented concerning concentrations of PM_{2.5} that warrant further data collection.

The federal Clean Air Act (CAA) establishes NAAQS for criteria pollutants, like PM_{2.5}, ozone, and carbon monoxide, to allow an “adequate margin of safety” to protect the public health and welfare, including that of sensitive populations.²⁵ Under state and local implementation plans, agencies enforcing the Clean Air Act within their jurisdiction must monitor ambient air quality and criteria pollutants such as PM_{2.5}.²⁶ In 2024, EPA strengthened NAAQS for PM_{2.5} to 9 µg/m³ in order to fulfill the CAA’s mandate to protect the public health and welfare.²⁷ At the same time, EPA also modified the PM_{2.5} network design criteria to require certain PM_{2.5} monitors be sited specifically in at-risk communities, recognizing the higher risk of harm that sensitive populations faced.²⁸

But despite the concentration of sensitive populations in South Memphis, and despite the “large point and area sources” present, SCHD does not currently operate a PM_{2.5} air monitor in this area.²⁹ This represents a significant gap in SCHD’s available data used to address air pollution.

To address this gap, in November 2025, MCAP worked with the Center for Engagement, Environmental Justice and Health (CEEJH) to calibrate (including through co-location with SCHD monitors) and install three PurpleAir PM_{2.5} air monitors in South Memphis. In a four-month span, these PM_{2.5} monitors show levels regularly above the 9 µg/m³ NAAQS.³⁰ A fourth

²⁵ 42 USC § 7409(b)(1-2); *see Am. Lung Ass’n v. E.P.A.*, 134 F.3d 388, 389 (D.C. Cir. 1998) (“NAAQS must protect not only average healthy individuals, but also “sensitive citizens”—children... or people with asthma, emphysema, or other conditions rendering them particularly vulnerable to air pollution. ... If a pollutant adversely affects the health of these sensitive individuals, EPA must strengthen the entire national standard.”); *see also Coal. of Battery Recyclers Ass’n v. E.P.A.*, 604 F.3d 613, 617-618 (D.C. Cir. 2010) (affirming that EPA must consider the impact of criteria pollutants on sensitive populations when establishing NAAQS).

²⁶ 42 USC § 7410(a)(1) (“Each State shall... adopt and submit... a plan which provides for the implementation, maintenance, and enforcement of such [NAAQS] in each air quality control region (or portion thereof) within such State”); *id.* § 7410(a)(2)(B)(i) (“Each implementation plan... shall... provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to—monitor, compile, and analyze data on ambient air quality[.]”); *id.* § 7410(a)(2)(K)(i-ii) (“Each plan shall... provide for – the performance of such air quality modeling as the Administrator may prescribe for the purpose of predicting the effect on ambient air quality of any emissions of any air pollutant for which the Administrator has established a national ambient air quality standard, and the submission... of data related to such air quality modeling”).

²⁷ EPA, *EPA finalizes stronger standards for harmful soot pollution, significantly increasing health and clean air protections for families, workers, and communities*, NEWS RELEASES (Feb. 7, 2024), <https://www.epa.gov/newsreleases/epa-finalizes-stronger-standards-harmful-soot-pollution-significantly-increasing>.

²⁸ EPA, *Air Monitoring for Fine Particle Pollution (PM_{2.5}) Fact Sheet* at 1, 2 (last accessed Apr. 15, 2026), https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewjznYvn4e-TAxVLMdAFHWtCGgsQFnoECBYQAQ&url=https%3A%2F%2Fwww.epa.gov%2Fsystem%2Ffiles%2Fdocuments%2F2024-02%2Fpm-naaqs-monitoring-fact-sheet.pdf&usq=AOvVaw3KhKHg4CthdtD6sHyxA1D_&opi=89978449.

²⁹ 2025 Ambient Air Monitoring Network Plan, *supra* note 1, at 53.

³⁰ **Attachment 1**, PDF file of PurpleAir PM_{2.5} air monitor data (Excel spreadsheet data is on file with author and available upon request).

monitor, installed close to the SCHD proposed air monitor and in near-continuous operation since November 2024, indicates PM_{2.5} levels higher than the NAAQS for more than a quarter of hourly samples collected.³¹ All PM_{2.5} readings collected from these PurpleAir monitors have been adjusted to account for humidity in accordance with EPA recommendations.³²

While we acknowledge that these monitors have not been in place for the three-year period used for average annual NAAQS, this citizen science data demonstrates the serious and urgent need for SCHD to establish a PM_{2.5} air monitor in the South Memphis area.

Conclusion

As stated above, we strongly support SCHD's proposal to install ozone and carbon monoxide monitors in South Memphis. However, there remains a dire need for PM_{2.5} monitors in this area in order to monitor this serious threat to the health of residents, particularly residents belonging to sensitive populations. Data collected by PurpleAir PM_{2.5} monitors, installed by MCAP and CEEJH, indicates a persistent and troubling presence of PM_{2.5} in excess of the NAAQS. PM_{2.5} can cause severe and even fatal health complications, particularly in sensitive populations.

Given South Memphis's concentration of residents belonging to sensitive populations, and its close proximity to polluters, establishment of a PM_{2.5} air monitor is vital to provide both SCHD and impacted residents with the data necessary to understand existing risks and protect Memphians from further harm. In order to fulfill its stated mission "to promote, protect, and improve the health of *all* in Shelby County," SCHD must consider installing a PM_{2.5} monitor at the proposed air monitor site.

³¹ *Id.* **Attachment 1**, PDF file of PurpleAir PM_{2.5} air monitor data (Excel spreadsheet data is on file with author and available upon request).

³² See Karoline K. Barkjohn et al., *Development and application of a United States-wide correction for PM_{2.5} data collected with the PurpleAir sensor*, 14 Atmospheric Measurement Tech. 4617 (2021).

Respectfully submitted,

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