June 15, 2022

Mr. Randall Semagin
State Implementation Plan Revision Advisory Committee (SIPRAC)
CT Department of Energy & Environmental Protection (DEEP) Bureau of Air Management
Via email

Re: DEEP 2022 Annual Air Monitoring Network Plan

Dear Randall,

The Sierra Club is committed to defending everyone's right to a healthy world by tackling the serious challenges of a warming climate and unprecedented levels of pollution. On behalf of the Sierra Club and our more than 40,000 members and supporters in Connecticut, thank you for the opportunity to provide comments on DEEP's 2022 Annual Air Monitoring Network Plan.

In response to the May 18, 2022 request for comments to the subject plan, we respectfully submit the following.

Connecticut has the dirtiest air in New England and has been called the "tailpipe" of the northeastern United States. In New England, Connecticut had the highest number of unhealthy air days recorded in 2021.[1] The American Lung Association's 2022 State of the Air report found that 4 counties in Connecticut learn failing grades for ozone pollution; the other 4 counties receiving Ds and Cs.[2] Connecticut should do more comprehensive monitoring at all of its monitoring stations, should monitor all the major health damaging air pollutants at each station, should expand its monitoring base, should report elevated findings to the public in a timely way, and should craft policy to limit human health destroying air pollutants from all sectors including transportation and the industrial and energy sectors.

Comments Specific to the Plan

Monitoring Site Information: Table1 - Regardless of EPA regulations, for the benefit of Connecticut residents, it seems reasonable that each monitor should measure every metric, or a fulsome explanation be provided why monitoring is different by area of the state. Perhaps the explanation is that certain pollutants are prevalent in some parts of the state and not others. This should be clarified. Moreover, more monitors are needed, optimally located to provide maximum coverage and potentially making use of non-reference grade sensors now available online throughout the state. Lastly, it should be explained why state monitors are not run continuously (or nearly so) and not 1-in-3 or 1-in-6 days.

[1] https://www.epa.gov/newsreleases/new-england-experienced-increase-number-unhealthy-air-quality-days-during-2021-ozone#:~:text=In%201983%2C%20New%20England%20had,the%20emissions%20that%20form%20ozone.
[2] https://www.lung.org/research/sota/city-rankings/states/connecticut

National Ambient Air Quality Standards (NAAQS): Table 2 - In addition to compliance with NAAQS, Connecticut residents would benefit from publicly available real-time data, not just averages or averages of averages, which tend to dampen air quality spikes most harmful to human health.

$PM_{2.5}$ Annual & Daily Design Values (2021): The concept of the National Ambient Air Quality Standards "design values" needs to be further explained / clarified for the public benefit. It appears daily values are the *average* 98th percentiles of *average* daily values over 3 years. It would be beneficial for readers to understand what actions are taken when daily values surpass the 98th percentile, and why the 98th percentile was chosen instead of the 25th or 10th. One could conclude that if the 3-year average is increasing and the 98th percentile is increasing (i.e., the statistical distribution is widening over time), then the daily "tolerance" level *would also increase*. It is concerning that when designing target values for air pollutants, DEEP takes these 98 percentile of values. High levels of air pollution should not be treated as normal, or literally normalized by referring to high values as "averages".

$PM_{2.5}$ Monitoring: it seems odd that 1-in-6 and 1-in-3 day frequency monitors (FRM) are used as *primary* monitors and not continuous (FEM) monitors; perhaps this is budgetary limitation, but from the document it appears arbitrary. It would be preferable to have *supplemental* continuous monitors be designated as primary instead. DEEP refers to budgetary constraints which limit the number of monitoring stations, and it is worrisome that DEEP might consider closing any stations, as air pollution is worsening. Sierra Club Connecticut's Air Quality Research Team is a group of citizen scientists engaged in monitoring air quality with low cost sensors in Connecticut. Low cost sensors such as the PurpleAir monitor show a high level of correlation with (i.e., can be calibrated to) DEEP/EPA monitors, and are offline much less frequently. They require very little maintenance, unlike DEEP sensors that may go offline many times per day, leaving large gaps in air monitoring data. DEEP should consider increasing the number of monitoring stations, and using PurpleAir sensors to limit expense, broaden air quality monitoring reach, and potentially increase accuracy. For example, The Waterbury - Bank Street $PM_{2.5}$ monitor could be supplemented with nearby private PurpleAir monitors to more comprehensively gauge air quality particulate matter in the area. Figure 1 below is a screenshot of open source, online low-cost monitors (chiefly PurpleAir) throughout Connecticut by location obtained from Open AQ (www.openaq.org), each one of which produces real-time PM2.5 data available to be harvested, compiled and used to refine air quality monitoring.

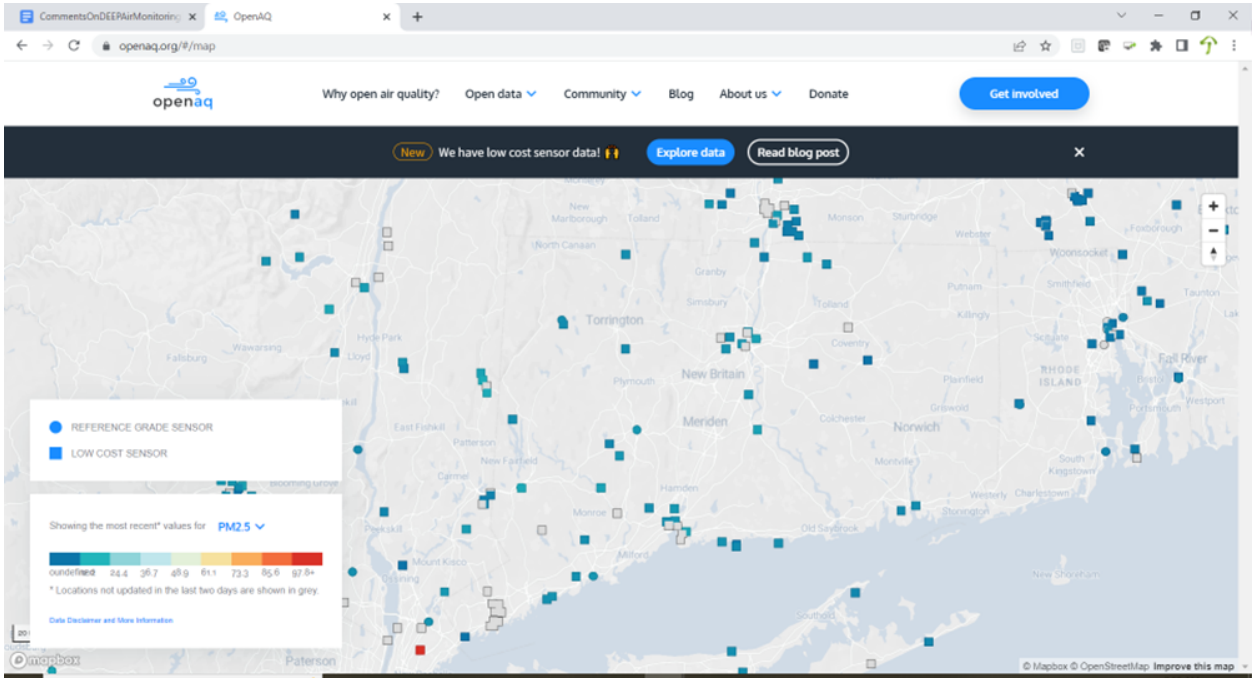

Figure 1: Locations of air quality monitors in the state of Connecticut (source: www.openaq.org)

In conclusion, air pollution is a public health crisis responsible for 100,000 deaths each year in the United States.[3] People are dying right now because of poor air in Connecticut, and much more can be done to monitor and manage air quality in the state.

Respectfully yours,

Samantha Dynowski, State Director
Sierra Club Connecticut

[3] https://pubs.acs.org/doi/10.1021/acs.estlett.0c00424?ref=pdf