

## Low Cost Particulate Matter (PM) Sensors

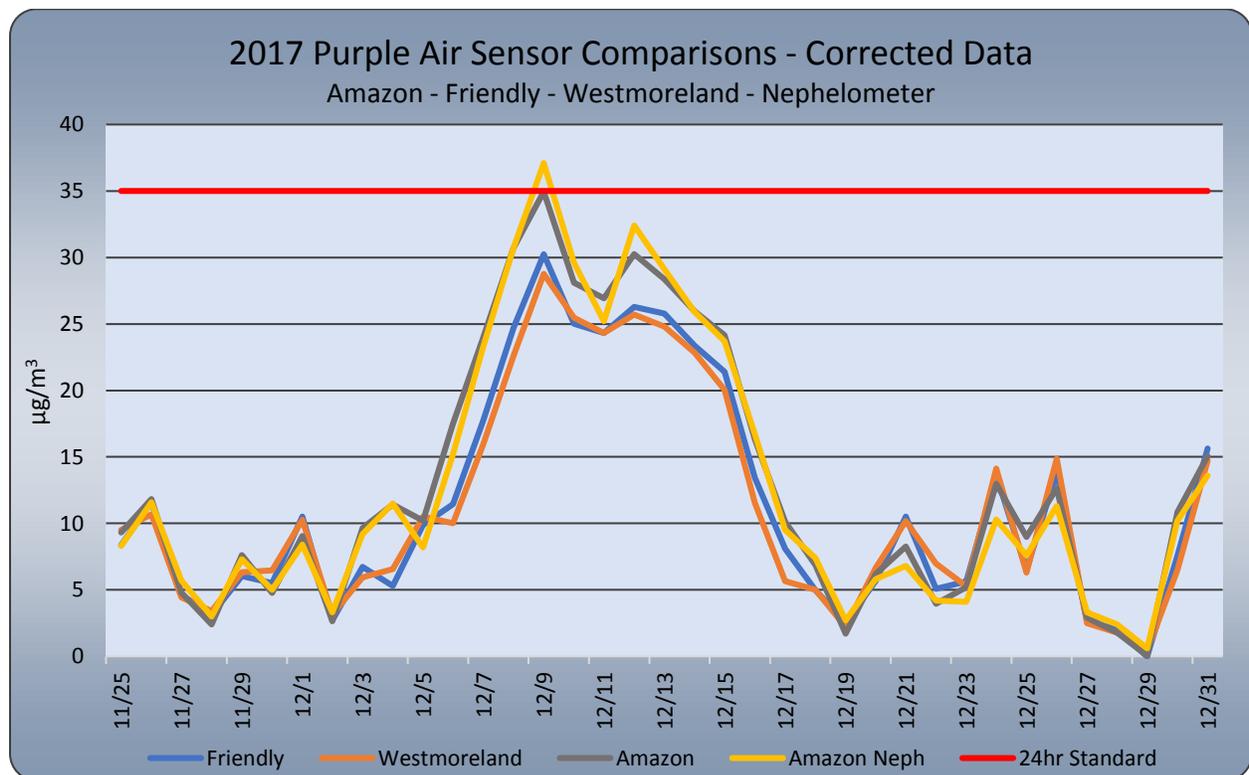
LRAPA has been experimenting with low cost Particulate Matter (PM) sensors over the last year. The sensors are small, portable, optical sensors, sold and manufactured by [Purple Air](#). The sensors work similarly to the nephelometers that LRAPA has located at 6 of its 7 monitoring sites. The nephelometers are real time PM sensing instruments that are used to report the PM Air Quality Index (AQI) for Lane County.

Both sensors operate on the principle of reflected light. In simple terms, the more PM that is present in the air the more the light is reflected. This reflected light is measured by the sensors.

The Purple Air sensors were used this summer during the wildfire episodes to help the University of Oregon assess air quality at both Autzen Stadium and inside the Moshovsky Center. The data was used to help make decisions about athletic practice schedules and locations as well as potential football game cancellations or relocation.

There are currently 18 of the sensors deployed by LRAPA in the Eugene/Springfield, Cottage Grove and Oakridge areas. This will allow us to test them for reliability and effectiveness. There are also another 4 sensors that have been purchase independently by private citizens. These can all be viewed on the [Purple Air map](#) (once there just click on the "Me" icon on the top of the page, then zoom out).

Two of the Purple Air sensors are on loan and located in the Friendly Street neighborhood. This is in response to concerns by the Friendly Area Neighbors (FAN) group that our Amazon Park monitoring site did not represent the actual PM levels in their neighborhood. The preliminary data collected shows the Amazon Park site does represent their neighborhood, as can be seen by the following chart.



The Purple Air sensors provide a useful relative indication of PM levels, but report significantly higher levels than federal reference samplers. Correction factors are needed before comparison to federal air quality standards. Data collected so far suggests that the Purple Air sensor overestimates PM by a factor of two. The previous chart is comprised of data that has been corrected by the calculated factor.

It is hoped that LRAPA may be able to use low cost sensors, like the Purple Air units, to characterize the airsheds in Lane County and validate the location of the current PM<sub>2.5</sub> monitoring sites. In the past, this required more expensive and labor-intensive methods.

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