

Episode 56K G a. Part 1 of 10. EPA Airnow Maps are like one Sensor on a PurpleAir PM2.5 Monitor map.

The ten parts to this Episode 56K G

Part 1. Episode 56K G a. EPA Airnow Maps are like one Sensor on a PurpleAir PM2.5 Monitor map. $((PA \times 0.5140) + 1.8304)$

Resident user owned \$229 PurpleAir PM2.5 monitors are now placed alongside \$100,000 PM2.5 monitors on Environmental Protection Agency (EPA) maps of Smoke and Fire <https://fire.airnow.gov/> as well as on the PurpleAir PM2.5 map <https://map.purpleair.com/>

\$100,000 EPA PM2.5 monitors physically collect PM2.5 from the air and separate the PM2.5 into lighter “wood” density PM2.5 and heavier “gravel” density PM2.5, and weigh each of the two densities separately as the basis for PM2.5 data from \$100,000 monitors put on AirNow Maps of Smoke and Fire. \$229 PurpleAir PM2.5 monitors see the PM2.5 passing before a laser and count the number of PM2.5 particulates that pass before the laser within a 10 minute span of time. After ten minutes the PurpleAir PM2.5 data is put on the PurpleAir map, for each sensor. This makes PurpleAir PM2.5 data superior to EPA data because data published every 10 minutes is essentially real time data. Because the \$100,000 EPA PM2.5 monitor has to divide the PM2.5 into two densities and weigh each density, the EPA \$100,000 monitor only publishes its data every hour. To correlate the two data sets to allow the two data sets to appear alongside each other on the AirNow Maps of smoke and fire, the U S government assumes that although PurpleAir PM2.5 monitors are accurate and accepted by the U S government as accurate and reliable, the U S Government assumes that PurpleAir PM2.5 monitors read “high”. So each state of the United States has a formula that it applies to the PurpleAir PM2.5 data before the PurpleAir PM2.5 data is put on AirNow Maps of Smoke and Fire. In Wisconsin, that simple mathematical formula applied to PurpleAir PM2.5 data is $((PA \times 0.5140)+1.8304)$. For instance, if the reading on a PurpleAir Map was 28 the data for that 10 minute point would be $(28 \times 0.5140)+1.8304$ (get out your calculators or Excell Spreadsheets) equal to 16.2224

16.2224 is above the annual National Ambient Air Quality Standards of 12 micrograms per meter cubed (NAAQS) of PM2.5 but below the 24 hour NAAQS standard of 35 (and below what citizens of the United States who testified in an EPA hearing in February 2023 would like NAAQS to be, which would be 8 micrograms per cubic meter (8 ug/m³) as the annual standard and 25 as the 24 hour **standard**).

To be at or above a future 24 hour standard of 25 micrograms per cubic meter, a PurpleAir PM2.5 reading would have to be 46.8077, This is using the opposite equation 25 divided by 0.514 and then subtracting 1.8304

To be at or above the current 24 hour standard of 35 micrograms per cubic meter, a PurpleAir PM2.5 reading would have to be 66.2629, This is using the opposite equation 35 divided by 0.514 and then subtracting 1.8304

To be at or above a future annual standard of 8 micrograms per cubic meter, a PurpleAir PM2.5 reading would have to be 13.7338, This is using the opposite equation 8 divided by 0.514 and then subtracting 1.8304

To be at or above the current annual standard of 12 micrograms per cubic meter, a PurpleAir PM2.5 reading would have to be 21.5159, This is using the opposite equation 12 divided by 0.514 and then subtracting 1.8304

Conversion PA MAP to AirNow MAP data	25 ug/m ³ 2024? 24 hour standard NAAQS PM2.5	35 ug/m ³ 2023 24 hour standard NAAQS PM2.5	8 ug/m ³ 2024? annual standard NAAQS PM2.5	12 ug/m ³ 2023 annual standard NAAQS PM2.5
PA	46.8077	66.2629	13.7338	21.5159
AirNow	25	35	8	12

The World Health Organization (WHO) annual PM2.5 standard is 5 micrograms per cubic meter. Bringing the PM2.5 “safe” standard down to 8 in the United States would bring the U S “safe” standard nearer to the WHO standard.

What is the purpose of the EPA AirNow Maps of Smoke and Fire. This summer of 2023 millions of Americans had their airspace invaded by wildfire smoke from Canadian wildfires. AirNow Maps of Smoke and Fire were consulted to find if outside air was safe to exercise in or so unsafe that people were advised to stay inside their sealed homes and use air purifiers to cleanse the air which seeped into even well-sealed homes.

Welcome America in 2023 to the world of near neighbors of indoor residential wood burners, whose wood burning smoke infiltrates the yards of near neighbors, and infiltrates near neighbors’ homes, if homes are not tightly sealed or if doors or windows are opened. Up to now, PurpleAir PM2.5 monitors have been used only to inform residents of the air quality of their yards, neighborhoods, regions, states, and nation. Some United States states, and regions have chosen to use data taken directly from AirNow Maps of Smoke and Fire to issue requests that citizens stop all indoor residential wood burning or stop only certain forms of indoor residential wood burning until AirNow Maps readings reach a certain lower level of PM2.5 pollution. Residents Against Wood Smoke Emission Particulates would like PurpleAir PM2.5 monitor data to be used as evidence of the level of PM2.5 pollution entering near neighbors’ yards (location of monitors

in near neighbors' yards used as either "measurement at the stack" if near neighbor's monitors are placed very close to the wood burning stack or "fenceline measurement" if near neighbor's monitors are placed slightly farther away). Any PM2.5 monitor has to be placed hyper-locally to catch and measure the smoke from an indoor wood burner. \$100,000 EPA PM2.5 monitors are fewer in number than resident owned PurpleAir PM2.5 monitors. \$100,000 EPA PM2.5 monitors are also placed usually near industrial facilities to catch PM2.5 emissions from industry. PurpleAir PM2.5 monitors in the yards of near neighbors are usually hyper-localized near indoor residential wood burners. Residents Against Wood Smoke Emission Particulates (RAWSEPresidents) believes there need to be more, and more hyper-localized PM2.5 monitors near indoor residential wood burners.

Wood smoke is 90% PM2.5, particulate matter of 2.5 micrometer size, the perfect size to infiltrate the human lung, setting off a cascade of human health problems and early deaths. Wood burning emits more PM2.5 and CO2 than the fossil fuel coal burning. Wood burning emits 450 times the PM2.5 than the fossil fuel Natural Gas burning. Heat Pumps emit no appreciable level of PM2.5. In 2023 there are Heat Pumps that work at 40 degrees below zero Fahrenheit. Residents Against Wood Smoke Emission Particulates is writing a grant to hand of PurpleAir PM2.5 monitor to any near neighbor of an indoor residential wood burner whose smoke enters the near neighbors yard and sickens the near neighbor. If the near neighbor's PM2.5 monitor shows PM2.5 levels above NAAQS that evidence should be enough to shut down the indoor residential wood burner. Residents Against Wood Smoke Emission Particulates is writing the 2nd part of the grant to offer heavily subsidized Heat Pumps to any near neighbor who complains of the wood smoke entering their yard and would like a Heat Pump. Residents Against Wood Smoke Emission Particulates would also like to offer heavily subsidized Heat Pumps to indoor residential wood burners who end their wood burning forever in exchange for a Heat Pump. RAWSEPresidents would like this grant-funded pilot project to serve as a template for the federal government to pass laws, or state or local government pass laws to hand out PurpleAir PM2.5 monitors, use the monitors as the basis for shutting down PM2.5 polluting indoor residential wood burners, and offer heavily subsidized Heat Pumps in return for turning in indoor residential wood burners and pledging not to burn wood residentially again. The next 9 parts of this 10 part series are.

Part 2. Episode 56K G b. Ring Cameras catching "Porch Pirates" are like one Sensor on a PurpleAir PM2.5 Monitor map.

Part 3. Episode 56K G c. Radar Guns catching automobile speeders in a neighborhood with a speed limit are like one Sensor on a PurpleAir PM2.5 Monitor map.

Part 4. Episode 56K G d. Breathalyzer Tests (breath alcohol tests) catching automobile drunk drivers in a neighborhood with a speed limit are like one Sensor on a PurpleAir PM2.5 Monitor map.

Part 5. Episode 56K G e. If Episodes 56K G a through d are challenged, baseline can be established by PurpleAir Map region data.

If the above 4 tests are challenged in court, average baseline readings above zero on a PurpleAir map can serve as a baseline above zero for one PurpleAir PM2.5 Monitor's reading used to shut down an indoor wood burner, if a law has been passed (ordinance, state law or federal law) or grant project has established a program for exchange of a wood stove for a Heat Pump, and reward of a Heat Pump to the near neighbor whose PurpleAir Monitor has detected exceedance of National Ambient Air Quality Standards (NAAQS) by nearby indoor wood burning.

Part 6. Episode 56K G f. argument for use of NAAQS standards for PM2.5 for wood stove emissions rather than certification of wood stoves.

Part 7. Episode 56K G g. argument for "Parallel track" use of NAAQS standards alongside continuation of flawed EPA wood stove certification.

Part 8. Episode 56K G h. what a to g have to do with grant proposal by Residents Against Wood Smoke Emission Particulates Corporation, a 501c3 organizatio.

Part 9. Episode 56K G i. What PurpleAir Users Groups could do to support RAWSEPresidents grant.

Part 10. The unscientific myth of "carbon neutrality" of wood burning explains why wood smoke pollution is not controlled.