

Regional District of Nanaimo Community Air Quality Monitoring Network Frequently Asked Questions

What do PurpleAir sensors measure?

These sensors are primarily used for measuring PM2.5 (particulate matter that is 2.5 micrometers wide and smaller). They also measure the temperature, humidity, and pressure of the sensor. PM2.5 is a concern for human health and is one of the parameters used to develop the [Air Quality Health Index \(AQHI\)](#) in Canada.

PurpleAir sensors use laser particle counters to count the number of particles by size and the count data to calculate mass concentrations of PM1.0, PM2.5 and PM10. PM10 refers to inhalable particles with diameters that are generally 10 micrometers and smaller; and PM2.5 refers to fine inhalable particles with diameters that are generally 2.5 micrometers and smaller.

A Note on Temperature and Humidity: The temperature and humidity data are for the sensor itself and are not meant to reflect environmental readings. Heat generated by the WiFi module causes an increase in temperature and a decrease in humidity within the housing. PurpleAir found that a correction of -8°F correlates closely to the ambient temperature, while a 4% correction correlates closely to the ambient humidity, and they have adjusted these values on the PurpleAir map to reflect this.

What is the difference between PurpleAir monitors and the air quality monitors used by the BC Ministry of Environment & Climate Change Strategy?

The RDN Community Air Monitoring Network measures air quality at additional locations throughout the region. These differ from government monitors as they **cannot determine legal limits and are not necessarily a good indicator of potential health risks**. PurpleAir monitors offer crucial information on current air quality at specific locations and helps us understand overall air quality trends and localized areas beyond provincial monitor coverage.

Air monitors operated by the Ministry of Environment & Climate Change Strategy (MoE) are used to measure air quality to see if pollution levels meet federal air quality standards. There are currently two government monitors in the RDN used for regulation.

How can I acquire a PurpleAir sensor for my community?

You can purchase a sensor directly from [PurpleAir](#) and register the sensor to have it appear on the live map. During the initial installation of the PurpleAir sensor at your residence/business, you must make the data public, specify the location of the sensor by choosing a location for the Map Marker, and provide a publicly visible name for the sensor. The location and sensor name will be visible to the public but will not include an address. When naming your sensor, it is advised to use a general name like a street or Intersection name.

If you are interested in participating in the RDN Community Air Quality Monitoring Network, please contact sustainability@rdn.bc.ca.

How much power does the PurpleAir sensor use?

The power usage is small. The power supply is a 5V at a max of 1.5 A, or 7.5 W. This means the power consumption of a sensor is approximately 1 watt. The daily consumption would be 0.0216 kWh. A PurpleAir sensor's power supply will work with an AC input of 100-240V.

How much data does the PurpleAir use?

PurpleAir devices send roughly 8 Kilobytes of data to our servers every two minutes. Thus, if a device were connected to WiFi for 30 days without interruption, it would send approximately 173 Megabytes of data.

Where can I view PurpleAir sensor information?

PurpleAir sensors that have been made public can be viewed on the [PurpleAir Live Map](#).

Low-cost sensor data are useful for providing information about air quality, but the sensor data are not as accurate as that produced by the traditional monitoring network. The PurpleAir sensors may overestimate or underestimate the actual concentrations but do tend to follow the trend of the particulate matter concentrations. To account for these factors, the UNBC developed an augmented map that applies a correction factor to improve data accuracy, found here:

<https://cyclone.unbc.ca/aqmap>.

How can I download data collected from PurpleAir sensors?

Data collected from sensors can be downloaded from the live map or using the PurpleAir API. You can learn more about downloading data by clicking the download arrow on the bottom left corner of the [PurpleAir Live Map](#).

How can I reduce my exposure to PM?

You can track air quality at [here](#). Through this map you can see that the air quality today is 'good' or 'acceptable', similar to the surrounding areas. If the sensors indicate unhealthy or hazardous air quality, residents are encouraged to take the following precautions:

- Limit outdoor activity
- Wear an N95 mask (or better) if outdoors
- Keep windows and doors closed
- If you have an air conditioner, make sure that the fresh air intake valve is closed and the filter is clean
- Consider using a portable evaporative cooler within your hours to avoid pulling air pollution in