Connect your phone to learn more about the air around you with the

AirBeam Air Monitor

Edmonton

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Follow the instructions in this guide to use the AirBeam3* to learn more about fine particulate matter and air quality in your neighbourhood.

This guide is also available at: **edmonton.ca/airquality**

* The AirBeam3 air sensor is iOS and Android compatible.

Disclaimer

The data collected using the AirBeam is not verified, and the City takes no responsibility for the results, including their quality, completeness, or accuracy. The results on the AirCasting CrowdMap are intended for informational and educational purposes only and should not be relied upon for health advice.

Updated: February 2025

Air Quality in Edmonton

Every living thing depends on the air to survive. When we breathe in, air brings oxygen into our lungs and bloodstream, nourishing our body and brain.

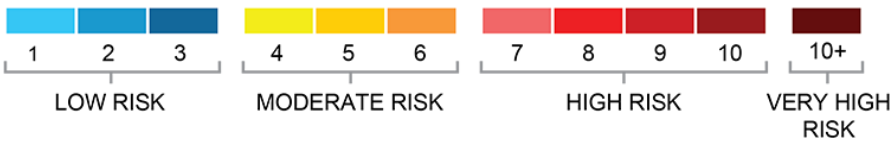
When we breathe out, we release carbon dioxide and other gases, which plants use for energy. However, the air around us contains more than just gases like oxygen and carbon dioxide–it also carries solid and liquid particles. Some of these particles can enter our lungs and cause health issues.

Air quality varies across Edmonton. Factors such as air temperature, wind, and landforms influence the quality of the air we breathe.

Air quality in Edmonton is monitored by the provincial government and industrial organizations. These groups maintain and calibrate monitoring stations to ensure accurate readings. The Alberta Capital Airshed live streams air quality data from these stations at **capitalairshed.ca**.

While these monitoring stations provide the most accurate and up-to-date air quality information for our city, the AirBeam empowers you to explore the air quality in your neighbourhood and understand the factors that affect it.

Air Quality Health Index

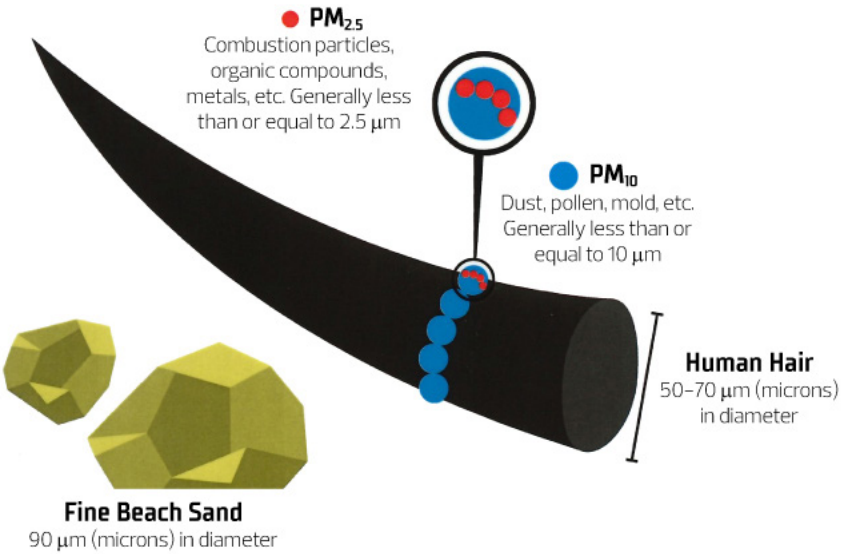


alberta.ca/air-quality-health-index

What is Fine Particulate Matter ($PM_{2.5}$)?

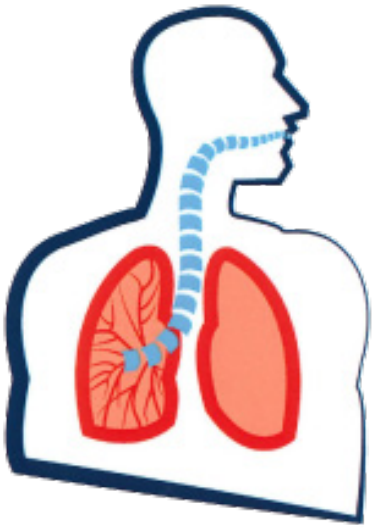
Particulate matter (PM) refers to the solid and liquid particles in the air around us–dust, soot, smoke, droplets of water, and other liquids. Some particles are large enough to see, while others are microscopic. Fine particulate matter (called $PM_{2.5}$) is less than 2.5 micrometres (μm) in diameter–about 30 times smaller than a human hair.

There are many sources of $PM_{2.5}$ in our city including combustion (industrial facilities, vehicles, and fires) and dust (unpaved roads and trails and construction sites). Complex physical and chemical reactions in the air can change or create particulate matter, adding to its presence in the air we breathe.



What are the Harmful Effects of $PM_{2.5}$?

Particulate matter enters our body when we inhale air through our nose and mouth. While larger particles are trapped by mucus, $PM_{2.5}$ can travel deeper into our lungs. Some particles are even small enough to enter our bloodstream.



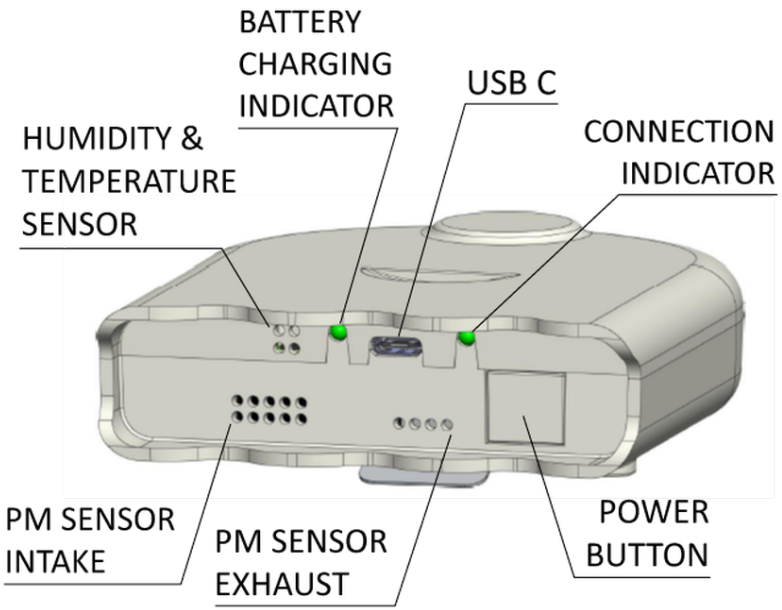
Fine particulate matter can cause or worsen cardiac and respiratory diseases. Conditions such as asthma, bronchitis, emphysema, heart disease, and lung cancer have been linked to $PM_{2.5}$ exposure.

Older adults and children are especially vulnerable to health issues caused by inhaling $PM_{2.5}$.

AirBeam: $PM_{2.5}$ Handheld Device

The AirBeam turns your compatible mobile device (e.g. cell phone, tablet) into a portable air quality monitor through the AirCasting app. The AirBeam measures $PM_{2.5}$ levels and transmits the data to your mobile device.

Using light scattering technology, the AirBeam detects fine particulate matter in the air. Each measurement is transmitted to your mobile device via Bluetooth and is stored along with your location using your device's GPS.



AirCasting is a platform that enables users to record, map, and share health and environmental data using their compatible mobile devices. With each *AirCasting* session, you can capture real-world measurements, tell your story, and contribute to the global CrowdMap.

The *AirCasting* mobile application is available from Google Play for Android devices and the App Store for iOS devices. Data uploaded to **AirCasting.org** may be viewed online or within the app.

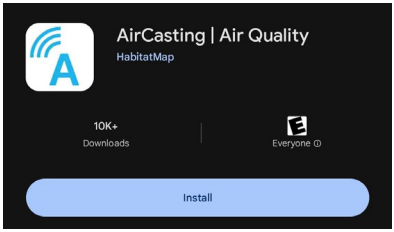
Live air quality data stream for Alberta is found at:

» **airquality.alberta.ca/map**

» **capitalairshed.ca**

Discover more information about air quality on the City of Edmonton's webpage: **edmonton.ca/airquality**

Get Started!



STEP 1

Download the AirCasting app from Google Play or Apple App Store.

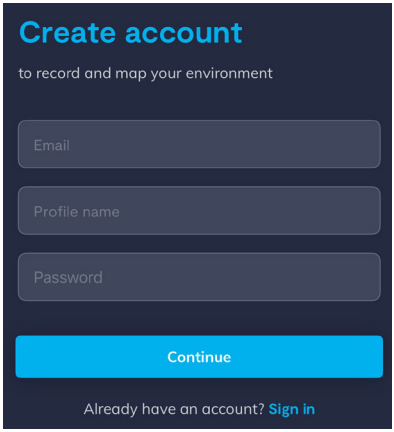
STEP 2

Remove the AirBeam from its protective carrying case.

If required, charge the AirBeam with the included charging cable. A green indicator light will come on while charging and will turn off when the AirBeam is fully charged or unplugged.

STEP 3

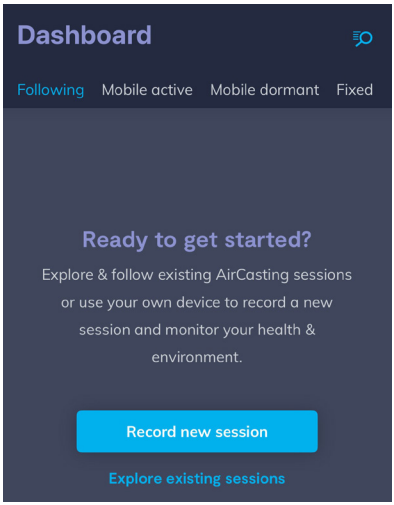
Ensure Bluetooth is turned on for your Android or iPhone mobile device.



STEP 4

Open the AirCasting app and create a profile, or if you already have a profile, sign in to your account.

Next, go to Settings and ensure **Contribute to CrowdMap** is turned on to share your session data to the CrowdMap at **aircasting.org**.

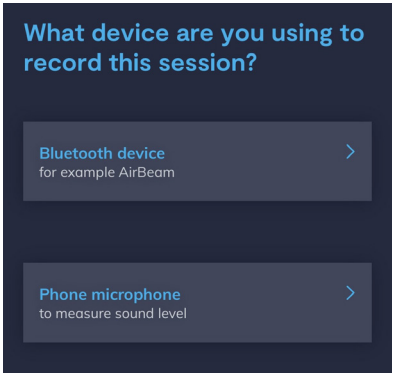


STEP 5

Start a recording session: From the home dashboard, select **Record new session**, or tap the "+" button at the bottom of the screen and select the type of session you want to record.

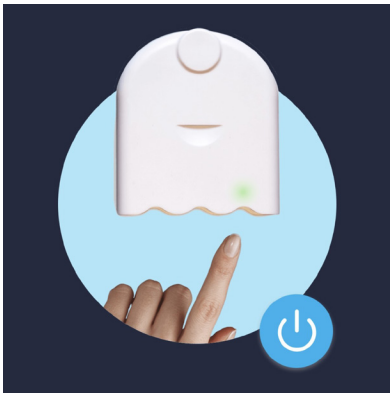
If you plan on moving around while recording, choose **Mobile session**.

If you will leave the AirBeam in one place, choose **Fixed session**.



STEP 6

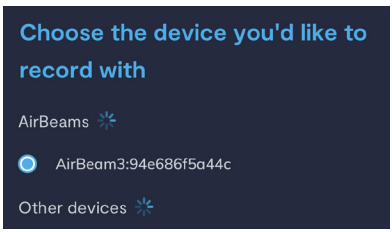
Select **Bluetooth devices**.



STEP 7

Turn on the AirBeam. (Refer to the diagram on page 4 for help.)

If charged, the light will turn solid green, indicating it is ready to connect via Bluetooth.



STEP 8

Choose the AirBeam device from the list and select **Connect**. If you do not see the device, click "Don't see the device? Refresh scanning".

Once connected, the AirBeam light will turn solid blue.

STEP 9

Enter a session name and optional tags, then select Continue.

Tap **Start recording** when ready.

The light will turn solid white for 120 seconds indicating it is connected and recording.

Note: Besides particulate matter (PM), the AirBeam also measures:

- **Temperature**, labeled as C or F (Celsius or Fahrenheit), depending on your app setting
- **Relative Humidity** (RH)

STEP 10A: Fixed Sessions

Note: For fixed sessions, you can connect to a WiFi network instead of using cellular data.

Place the AirBeam where you want to measure the air quality, ensuring nothing is blocking the AirBeam vents.

Measurements are recorded once per minute.

Troubleshooting: If you are not seeing a live data stream on the app, check to see if your WiFi connection is in 2.4 GHz. Also, try refreshing the app by pressing and dragging down on the Dashboard/Home screen until the refresh icon appears. If neither of these steps work, force close the app, turn off the air quality device and start a new session (Step 5).

Photo Credit: HabitatMap

Photo Credit: HabitatMap

STEP 10B: Mobile Sessions

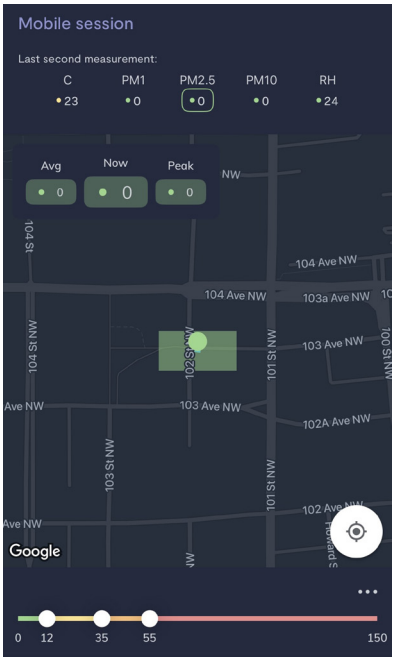
Note: For mobile sessions, you will require cellular data.

When prompted, allow the device to use your location. If location is turned off, data will not be recorded on the AirCasting website.

Using your hands to hold the AirBeam or the provided clip to fasten it, secure the AirBeam without covering the vents and walk or bike around the area you want to measure.

Keep your mobile device within 3 metres of the AirBeam to maintain connection.

The light will blink white every 10 seconds, indicating it is connected and sending data.



STEP 11

To view your data on a map (Mobile Sessions only), tap **Map** on the AirCasting session to see your location, the particulate matter, temperature and humidity readings on the map.

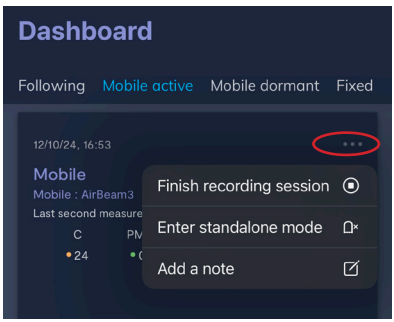
STEP 12

When you are finished:

For Fixed Sessions:

» Turn off the AirBeam.

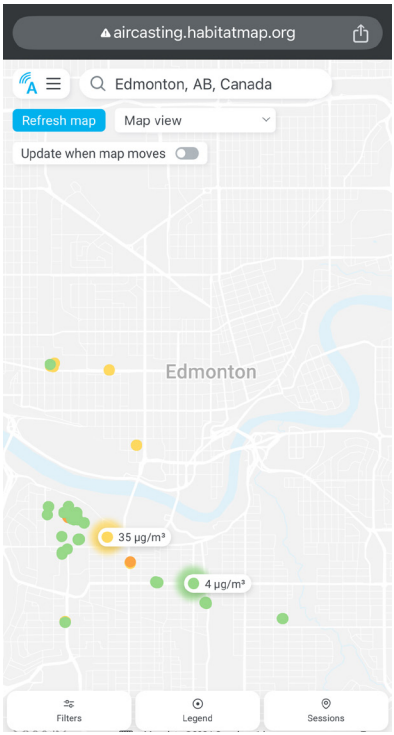
» To continue a previously stopped recording session with the same sensor at the same fixed location, just power the sensor back on.



For Mobile Sessions:

» Tap the three dots in the top-right corner of the AirCasting session.

» Select Finish recording session.



STEP 13

Now view your results and explore other recorded sessions on the AirCasting CrowdMap at:

aircasting.habitatmap.org

Review & Reflect

Now you can review the data you collected! Use the following questions to reflect on your experience with the AirBeam device:

» Why did you choose your location to measure $PM_{2.5}$?

» What potential sources of fine particulate matter did you encounter?

» Was it a windy or calm day? Consider the time of year and how weather conditions impact the dispersion of particles in the air.

» Where were the concentrations of $PM_{2.5}$ the highest? The lowest?

» How do your readings compare to your expectations?

» Why do you think the concentrations of $PM_{2.5}$ change in different areas?

» Did you take measurements at different times of the day? If so, what variations in $PM_{2.5}$ levels did you encounter throughout the day?

» Were higher or lower $PM_{2.5}$ levels observed during specific temperature and humidity ranges? Why do you think this might be?

» How do you think the combination of temperature, humidity, and wind conditions influenced your $PM_{2.5}$ readings?

» How might **urban heat islands** or other temperature-related occurrences in your area influence air quality?

What Can I Do?

Improving air quality and reducing PM2.5 levels requires individual and collective action. Here are steps you can take to make a positive impact:

Commuting

» **Drive less:** Reduce your reliance on personal vehicles by carpooling, walking, cycling, or using public transit.

» **Be idle-free:** When warming up your vehicle, one minute or less is best.

» **Consider electric vehicles:** For your next vehicle purchase, explore electric options to reduce emissions.

» **Maintain your vehicle:** Regular tune-ups and maintenance can minimize emissions from your car.

Around the house

» **Improve energy efficiency:** Seal windows and doors, insulate properly, and invest in energy-efficient appliances to reduce energy consumption.

» **Conserve electricity:** Turn off lights and unplug devices when not in use. Opt for LED lighting and energy-saving devices.

» **Choose eco-friendly products:** Use non-aerosol and low-VOC (volatile organic compound) products to minimize harmful emissions.

» **Control dust:** When digging, gardening, or moving earth, keep the area damp to prevent dust from becoming airborne.

» **Limit use of wood-burning appliances:** Reduce the frequency of using fireplaces, wood stoves, or fire pits to decrease particulate emissions.

» **Plant trees:** Trees help filter pollutants and provide natural cooling, improving both air quality and urban environments.

» **Switch to renewable energy:** Consider installing solar panel energy systems for your home. Also, consider installing a heat pump as your primary heat source, using a gas furnace as backup on the coldest days.

Around the neighbourhood

» **Talk about it:** Bring your neighbours together to talk about air quality and how you might maintain or improve your local conditions.

» **Become a Climate Connector:** If you are ready to work with your neighbours to take other environmental actions, consider signing up as a Climate Connector in the Neighbouring for Climate program (**edmonton.ca/climateneighbours**).

Visit edmonton.ca/airquality to learn more about what the City of Edmonton is doing.

What is an Urban Heat Island?

An urban heat island (UHI) occurs when a city becomes significantly warmer than surrounding rural areas due to human activities. The heat is absorbed and retained by buildings, roads, and other infrastructure, which lack the cooling effects of vegetation and open spaces. Air quality is shown to worsen in UHIs.

Shine a Light on Air Quality

To keep air quality in your sights, the City of Edmonton has made it possible to create your own AQHI Light. This WiFi-connected light bulb changes colour automatically to indicate the current outdoor Air Quality Health Index (AQHI) for your selected community, pulling readings directly from the Alberta AQHI map at **airquality.alberta.ca/map**.

The light's colour spectrum mirrors the AQHI scale, ranging from blue (good air quality) to dark red (poor air quality). With just a WiFi connection, a compatible smart bulb, and a standard lamp socket, you're ready to get started.

Visit **edmonton.ca/airquality** for a step-by-step online setup guide. Follow the user-friendly tutorial, which will walk you through the simple installation process. You can even customize your AQHI Light to display air quality readings from any community in Alberta listed on the AQHI map.

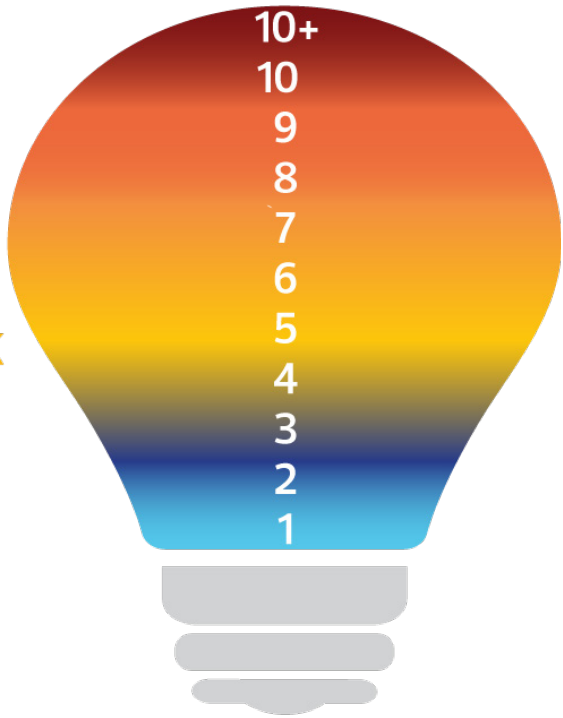
Bring air quality awareness into your daily life with this fun and practical project!

VERY HIGH RISK

HIGH RISK

MODERATE RISK

LOW RISK



Share your thoughts with the City of Edmonton

changeforclimate@edmonton.ca

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