

Village Green Station – Measuring Air Quality from a Park Bench

EPA partners with states and local organizations to provide communities new ways to measure local air quality

[Learn more at www.epa.gov/villagegreen](http://www.epa.gov/villagegreen)

What is the Village Green Project?

The U.S. Environmental Protection Agency (EPA) has developed an innovative prototype air and weather measurement system, called the Village Green station, to provide new ways for communities to learn about local air quality.

Through partnerships with cities and other organizations, EPA is installing the stations across the country for use by the public.

The system is built into a park bench and measures two types of air pollutants – ozone and fine particle pollution – along with weather conditions. These pollutants are regulated by EPA because they can cause health problems at levels that exceed national air quality standards.

The stations can be placed in parks, near roadways, schools or other locations accessible to the public or where there is interest in local air quality.

The Village Green stations are being used for educational outreach with area schools

and the public and for research purposes. They are not intended for use as regulatory monitors.

The development and evaluation of the Village Green station is expected to provide more knowledge about how to build and operate local air quality measurement systems for use by communities. Details on how to build the station are available on the Village Green web page.

Where are Village Green stations located?

Durham, North Carolina

The prototype Village Green station is located outside South Regional Library in Durham County, NC, and has been operating since June 2013.

Since 2015, EPA has partnered with state and local organizations to expand the Village Green project to additional cities to further support communities' understanding of local air quality, and to explore additional research questions. The stations are located in:



Village Green Station in Durham, NC

Philadelphia, Pennsylvania

The station is located in Independence National Historical Park near the National Constitution Center in Philadelphia, Pa. The city of Philadelphia, Department of Public Health Air Management Services is hosting the station.

Washington, D.C.

The station is located at the Smithsonian's National Zoo in Washington, D.C. The District of Columbia's Department of Energy and

Environment is hosting the station.

Oklahoma City, Oklahoma

The station is located in the children's garden of the Myriad Botanical Gardens in Oklahoma City, Okla. The Oklahoma Department of Environmental Quality is hosting the station.

Kansas City, Kansas

The station is located outside the Kansas City South Branch Library in Kansas City, Kan. The Kansas Department of Health and Environment is hosting the station.

Hartford, Connecticut

The station is located outside the Connecticut Science Center in Hartford, Conn. The Connecticut Department of Energy and Environmental Protection is hosting the station.

Chicago, Illinois

The station is located outside the Jane Addams Elementary School in Chicago, IL. EPA's Region 5 Office is hosting the station.

Houston, Texas

The station is located outside the John P. McGovern Museum of Health and Medical Science, (The Health Museum) in Houston, TX. The Houston Health Department is hosting the station.

How does the system work?

Two solar panels charge a battery that operate the entire system. Several stations use a combination of solar and wind to power the research system

The renewable power supports a number of instruments that provide continuous, minute-by-minute measurements of air pollution and weather.

All Village Green stations measure ozone and fine particle pollution (also known as PM_{2.5}) and stream the real-time measurements to the public. In the third-generation bench design, researchers are testing sensors that measure black carbon, nitrogen dioxide (NO₂) and total volatile organic compounds (tVOCs). The data will provide insight to researchers on how well these devices perform.

Weather conditions such as wind speed and direction, temperature, and relative humidity are also measured since they are important for understanding local air quality trends.

The air pollution and weather data are automatically streamed to the Village Green Project web page. The data is reviewed instantly for quality assurance prior to being displayed online.

The public can view the current conditions or view measurements for specific dates and times. The ozone and PM_{2.5} data are also

available via an LCD display on some of the station signs and at all stations using a smartphone to connect to a mobile-friendly website.

The project is environmentally friendly, using solar and wind power to operate the low-maintenance bench instrumentation and constructed with recycled plastics.

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April 2017