

To: John Vasquez, Chair
and Members of the Board of Directors

From: Mat Ehrhardt, P.E., Executive Director/APCO *me*

Date: October 14, 2020

Subject: Informational Report on 2019-20 PM 2.5 Season

Recommended Action

This is an informational report only.

Background

Fine particulate pollution (PM 2.5) is one of two main criteria pollutants of concern for the District. Fine particulates are less than 2.5 microns in diameter, and as such can bypass the body's natural defenses and get lodged deep in the lungs or enter the bloodstream. Science-based standards determine at what concentration PM 2.5 causes health effects in both sensitive and healthy groups.

According to the U.S. Environmental Protection Agency, the health effects of PM 2.5 exposure include premature death in people with heart or lung disease, non-fatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

Most PM 2.5 is produced by the combustion of fuels. Sources that contribute PM 2.5 primarily through fuel combustion include motor vehicles, wood burning, diesel engines, construction, emergency generators, manufacturing, farming, agricultural burning, mineral operations, and food processing.

The peak PM 2.5 period is typically November through February due to increased residential wood burning and the presence of inversion layers, which prevent dispersion of particulate pollution.

The District operates three PM 2.5 monitors: in Woodland, Rio Vista and Vacaville. There are 10 additional monitors throughout the region, including one operated by the Air Resources Board in Davis and several Purple Air real-time sensors.

The Standards

There are two federal standards for PM 2.5 attainment: an annual standard and a 24-hour standard. The annual standard is exceeded when the annual average concentration of PM 2.5 in the ambient air is 12 micrograms per cubic meter. The District and its regional partners remain well below this standard.

The 24-hour standard is exceeded when the concentration of PM 2.5 is 35 micrograms per cubic meter or greater. The EPA determines attainment of this standard by using the 98th percentile of the daily PM 2.5 values reported, averaged over three years.

2019-20 Season Data

In 2009, the EPA determined that most of the Yolo-Solano AQMD (excluding the portion of Yolo County west of Esparto) would be included in the greater Sacramento Federal Non-Attainment Area (SFNA) for PM 2.5. Despite regional attainment requirements, the impacts of PM 2.5 are typically felt nearest the source.

Yolo-Solano and the broader Sacramento region experienced better air quality during the 2019-20 winter season than in 2018-19. The improvement from the prior year can be largely attributed to the lack of any large wildfires in the region during this season. The District saw 58% of days in the Good AQI category, 42% in the Moderate AQI category.

The highest PM2.5 AQI levels were observed on November 18, 2019, when a strong temperature inversion trapped pollutants near the surface and an upper-level ridge of high pressure reduced atmospheric mixing over Northern California, leading to an AQI of 83.

Attainment of the 24-Hour Standard

The region originally attained the federal 24-hour standard for PM 2.5 during the 2009-2011 period. EPA subsequently made a “clean data finding” for the region at the request of the air districts and the Air Resources Board (ARB). However, the region recorded high PM2.5 concentrations in 2013 and narrowly missed attaining the federal standard for the 2011-2013 time period. Consequently, no action was taken on the official redesignation request and maintenance plan submitted by the air districts to the ARB. Recent data shows that the region is once again in attainment of the standard. An updated redesignation request and maintenance plan will need to be submitted, provided the region can demonstrate that it continues to achieve the federal standard in future years.

Don't Light Tonight

Don't Light Tonight is Yolo-Solano AQMD's voluntary wood smoke curtailment program. On days in which higher PM 2.5 levels are forecast, the District calls a Don't Light Tonight advisory and asks residents to refrain from burning wood. It was launched in 1990.

The current threshold for a Don't Light Tonight advisory is a forecast of 25 micrograms per cubic meter or greater. This threshold allows the District to effectively limit the number of days in which local air quality is unhealthy for sensitive groups. Every idle fireplace on those days helps reduce local PM 2.5 concentrations.

The District called 5 advisories during the 2019-20 season, twelve (12) lower than in 2018-19 due to temperature and precipitation anomalies and lack of wildfires during the 2019-20 winter season.