

**J-1 Comments on the Draft EA
and FAA Responses**

**Introduction and Topical Responses
for Reference**

25. Project Scope

The comment includes a request for changes that fall outside the scope of the purpose and need for the proposed South-Central Florida Metroplex Project. The purpose of the proposed Project is to address the problem of operational inefficiency of the existing aircraft flight procedures in the South-Central Florida Metroplex airspace. Chapter 2 of the Final Environmental Assessment presents the problem being addressed and describes what the FAA is trying to achieve with the proposed South-Central Florida Metroplex Project. Consequently, the requests would not meet the purpose and need proposed South-Central Florida Metroplex Project.

26. Particulate Matter

In General, Particulate Matter consists of a mixture of solid particles and liquid droplets found in the air. While most particles form in the atmosphere as a result of complex reactions of pollutants emitted from power plants, industries and automobiles, some solid particles are also emitted as by-products of combustion. The national ambient air quality standard regulates the mass of particles less than 2.5 micrometers in diameter (1 micrometer = 1/1,000 millimeter).

Like all combustion sources, aircraft engines also produce black carbon non-volatile particles that are solid at the point of engine exhaust. These particles are present at high temperatures at the engine exhaust and they do not change as they mix and dilute in the exhaust plume behind an aircraft. Compared to traditional diesel engines, non-volatile particles emitted by gas turbine engines are typically smaller in size. Their diameter ranges roughly from 15 nanometers (nm) to 60nm (0.06 micrometers; 1nm = 1/1,000,000 of a millimeter), and are too small to be seen with the human eye. Some gaseous emissions in the engine exhaust react chemically with ambient chemical constituents in the atmosphere to produce secondary particulate matter.¹ Both non-volatile particles and secondary particulate matter contribute to the total ambient PM_{2.5} levels.

Aviation's contribution to the ambient concentrations of PM_{2.5} remains small compared to from other source sectors such as road transport and power generation. A recent study showed that aircraft contributed to 0.2% to the PM_{2.5} concentrations in the Northern Hemisphere.² Another study assessed air -quality impacts from the top 66 airports accounting for more than 80% of the total fuel burn in the U.S..³ Results from this study showed that aviation's contribution to PM_{2.5} concentrations at each of these individual airports remained well below 0.2% of the total PM_{2.5} contribution from all sectors. A 2020 study concluded that aviation landing take-off emissions contributed to 0.3% of total air quality impacts within the United States in 2018.⁴

¹ ICAO Environmental Report 2013 Page 83 (<https://www.icao.int/environmental-protection/Pages/EnvReport13.aspx>)

² Vennam et al. (2017) <https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1002/2017JD026598>

³ Penn et al. (2017) <http://dx.doi.org/10.1016/j.envres.2017.04.031>

⁴ Dedoussi et al. (2020) <https://doi.org/10.1038/s41586-020-1983-8>

