Data Quality Record for Long-Term Performance Goals

Long-Term Performance Goal Text: By September 30, 2026, strive to ensure all people with low socio-economic status (SES) live in areas where the air quality meets the current fine particle pollution ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS).

Corresponding Annual Performance Goal: Percentage of people with low SES living in areas where the air quality meets the $PM_{2.5}$ NAAQS.

Goal Number/Objective: Goal 4/Objective 4.1

NPM Lead: Office of Air and Radiation (OAR)

1a. Purpose of Long-Term Performance Goal:
The purpose of this long-term performance goal (LTPG) is to show progress toward ensuring all people with low socio-economic status (SES) live in areas where the air quality meets the current fine particle pollution ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS). An upward trend indicates improvement.

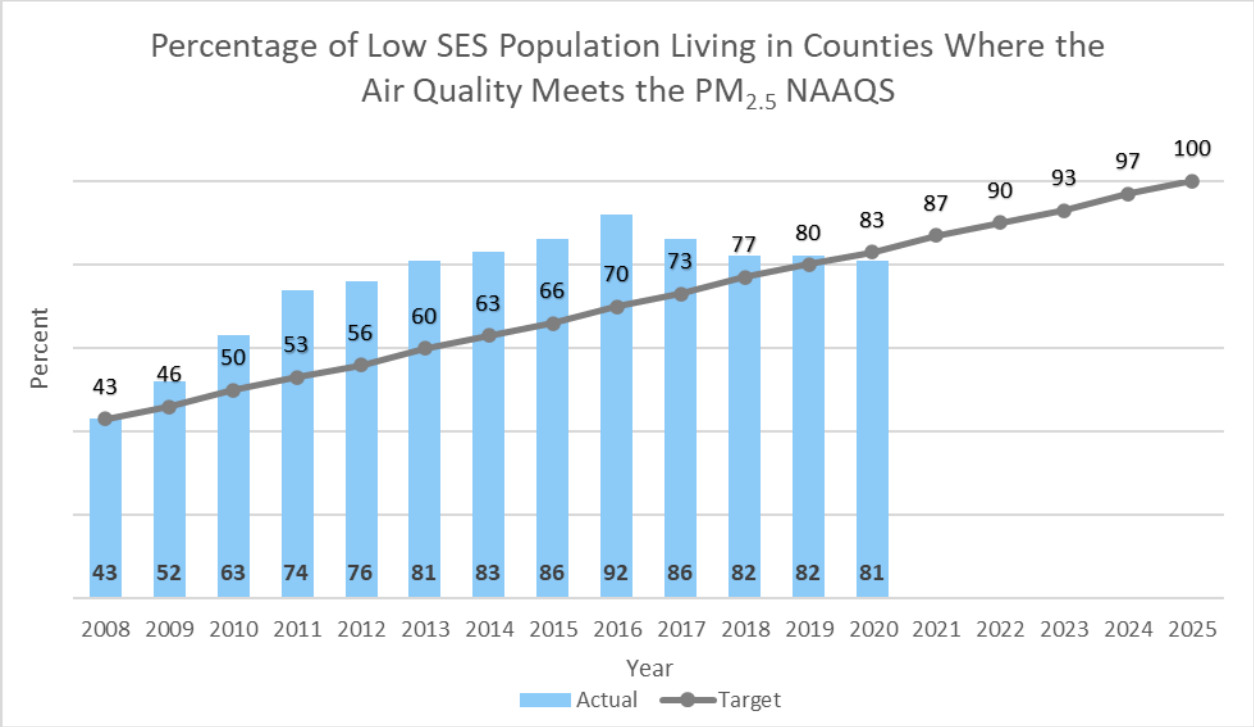
1b. Performance Measure Term Definitions:
Long and short-term exposures to fine particulate matter ($PM_{2.5}$) can harm people's health, leading to heart attacks, asthma attacks, and premature death. This LTPG tracks the percentage of people with low socio-economic status (SES), defined as two times the poverty level, living in counties with monitors measuring concentrations of $PM_{2.5}$ that meet the 2012 annual and 2006 24-hour $PM_{2.5}$ NAAQS. The baseline period for this LTPG is 2006-2008. Changes since that time reflect the effectiveness of strategies designed to reduce fine particle pollution.

1c. Unit of Measure:
The percentage of low SES population.

2a. Data Source:
- The original data source for this measure is EPA's Air Quality System (AQS).
- The Clean Air Act requires that state, local, and tribal air pollution control agencies monitor the air for ambient levels of certain pollutants. The monitoring agencies are required to report the measured data, along with metadata about the site and monitoring equipment and associated quality assurance data to AQS. The requirements for the monitoring program are codified in 40 CFR Part 58.
- Air quality monitors typically measure ambient concentrations hourly or daily, depending on the type of monitor and the criteria pollutant.
- EPA regulations give reporting organizations (states, tribes, and local agencies) 90 days following the end of a calendar quarter to submit their data to AQS. For Quarter 4 data, reporting organizations have until the end of Quarter 1 (March 31) in the next year to submit to AQS. Agencies also have until May 1 to certify their data for the previous year.

- This LTPG uses design value concentrations – a statistic that describes the air quality status of a given location relative to the NAAQS – which are computed using data retrieved from AQS following May 1 to allow time for data to be submitted and certified.
- Following review by EPA Regional offices, the design value concentrations are posted on the Air Quality Design Values page on EPA's Air Trends website.

2b. Data needed for interpretation of (calculated) Performance Result:



3. Calculation Methodology:

Overview:

The following section describes how the baseline and targets were established, as well as how the annual updates are calculated.

In the baseline period of 2006-2008, 43% of low SES population lived in counties that met both $PM_{2.5}$ NAAQS. The goal is to reach 100% by the end of 2025, with annual targets representing a linear improvement for in-between years. Those targets are reflected in section 2b.

The data for the baseline period comes from the historical county-level design values found in the official 2014 design value reports on the Air Quality Design Values page. Counties meeting both the annual and 24-hour $PM_{2.5}$ standards were a subset and the percentage of low SES people living in those counties was computed.

Target Development:

- The percentage in the baseline period was 43%. Since the goal for 2025 is 100%, annual targets represent linear improvement for in-between years.

For Annual Updates, EPA will:

- When the annual design value reports become available, retrieve the county-level design values for both $PM_{2.5}$ standards from the Air Quality Design Values page.
- Determine which counties meet both standards and compute the percentage of low SES people living in those counties.

Additional Notes:

- The design value concentrations do not include data that have been flagged for exceptional events (e.g., wildfires, dust storms, volcanic eruptions, etc.) and concurred by the EPA Regional office.
- For consistency across years, population data based on the 2010 census is used for all years.

4. Quality Assurance/Quality Controls:

The quality assurance/quality control (QA/QC) of the national air monitoring data submitted to AQS has several major components: (1) the data quality objective (DQO) process; (2) reference and equivalent methods program; (3) EPA's National Performance Audit Program (NPAP); (4) system audits; and (5) network reviews. More details are available on the Ambient Air Monitoring Quality Assurance page. To ensure quality data, State and Local Air Monitoring Stations (SLAMS) are also required to meet the following QA/QC criteria: (1) each site must meet network design and site criteria; (2) each site must provide adequate QA assessment, control, and corrective action functions according to minimum program requirements; (3) all sampling methods and equipment must meet EPA reference or equivalent requirements; (4) acceptable data validation and record keeping procedures must be followed; and (5) data from SLAMS must be summarized and reported annually to EPA. Finally, there are system audits that regularly review the overall air quality data collection activity for any needed changes or corrections.

5. Data Limitations/Qualifications:

The primary purpose for ambient air quality monitoring is to assess compliance with National Ambient Air Quality Standards. Consequently, most monitors are sited in or near areas with high population or areas of maximum pollutant concentration. The county-level design value concentrations used for this LTPG are computed at each monitoring site and the highest one in each county is used to represent that county, effectively presuming that it is representative of the county.

Actual results for the most recent year could be impacted by exceptional events, like wildfires. As mentioned previously, the design value concentrations used in this LTPG do not include data that have been flagged for exceptional events and concurred by the EPA Regional office. Since the flagging/concurrence process can take several months, design values for the most recent year could include high values that have not yet been flagged/concurred.

A challenge with achieving the goal of 100% is that the more severe nonattainment areas contain a high population of low SES people. The proportion of low SES to non-low SES people in the remaining nonattainment counties has risen slowly, but steadily. Thus, as more counties come into attainment, the remaining (more severe) nonattainment areas highlight a disparity in health protection.

Note that the goal of 100% attainment for this metric is based on the 2012 annual and 2006 24-hour $PM_{2.5}$ standards. The PM standards will be reviewed and potentially revised again (if appropriate) before 2025. Any potential revision will not be included in this LTPG, but instead will be incorporated into potential future performance measures.

6. Technical Contact:
David Mintz (OAR)

7. Certification Statement/Signature:

I certify the information in this DQR is complete and accurate.

DAA Signature Original signed by Elizabeth (Betsy) Shaw **Date** 5/10/2022