# Second Maintenance Plan for the 1987 24-hour $PM_{10}$ NAAQS in the Las Vegas Valley Maintenance Area of Clark County, Nevada

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# EXECUTIVE SUMMARY

The Clark County Department of Environment and Sustainability, Division of Air Quality (DAQ) submits this *Second Maintenance Plan for the 1987 24-hour $PM_{10}$ NAAQS: Las Vegas Valley Maintenance Area* to the U.S. Environmental Protection Agency (EPA) to fulfill requirements related to maintenance plans for the 1987 24-hour National Ambient Air Quality Standard (NAAQS) for particulate matter less than 10 microns in diameter ($PM_{10}$). The plan demonstrates continued maintenance of the NAAQS in the Las Vegas Valley (Hydrographic Area 212) during the first maintenance period (2014–2023) and over the next 10 years using permanent and enforceable control measures.

This plan uses the most recently adopted planning variables (e.g., vehicle miles traveled projections, population forecasts) approved by the designated Metropolitan Planning Organization for the Las Vegas urban area, the Regional Transportation Commission of Southern Nevada. It provides emissions inventories for 2019, 2026, and 2035 derived from the 2017 National Emissions Inventory and EPA's 2016v3 Emissions Modeling Platform using methods applied for developing the first maintenance plan (DAQ 2012). As part of this state implementation plan revision, DAQ shows continued maintenance of the NAAQS using the currently approved $PM_{10}$ motor vehicle emissions budget.

This plan outlines how DAQ will maintain compliance with the $PM_{10}$ NAAQS through 2035. Upon EPA approval, the plan will become federally enforceable, and the motor vehicle emission budgets included will serve as the projected budgets that the Regional Transportation Commission of Southern Nevada will use for future transportation conformity determinations.

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| Act | Clean Air Act |
| AQR | Clark County Air Quality Regulation |
| BCC | Clark County Board of County Commissioners |
| BLM | Bureau of Land Management |
| BMP | best management practice |
| CFR | Code of Federal Regulations |
| DAQ | Division of Air Quality |
| EI | emissions inventory |
| EMP | Emissions Modeling Platform |
| EPA | U.S. Environmental Protection Agency |
| ERC | Emissions Reduction Credit |
| FR | *Federal Register* |
| GAF | growth adjustment factor |
| HA | hydrographic area |
| HAP | hazardous air pollutants |
| HYSPLIT | Hybrid Single-Particle Lagrangian Integrated Trajectory |
| INI | initial notification |
| LVV | Las Vegas Valley |
| MOVES4 | Motor Vehicle Emissions Simulator Version 4 |
| MVEB | motor vehicle emissions budget |
| NAAQS | National Ambient Air Quality Standards |
| NDEP | Nevada Division of Environmental Protection |
| NEI | National Emissions Inventory |
| $NO_x$ | nitrogen oxides |
| $PM_{2.5}$ | particulate matter with an aerodynamic mean diameter smaller than 2.5 µm |
| $PM_{10}$, PM-10 | particulate matter with an aerodynamic mean diameter smaller than 10 µm |
| RTC | Regional Transportation Commission of Southern Nevada |
| SIP | state implementation plan |
| SLAMS | State and Local Air Monitoring Stations |
| SPM | special purpose monitor |
| tpd | tons per day |
| tpy | tons per year |
| U.S.C. | United States Code |
| VOC | volatile organic compound |

# 1.0 PLAN OVERVIEW

## 1.1 INTRODUCTION

The Clean Air Act (the Act) established a framework of cooperative federalism wherein the U.S. Environmental Protection Agency (EPA) set forth minimum requirements for state air quality programs (Title 42, Section 7410 of the U.S. Code (42 U.S.C § 7410)). Title 40, Part 51 of the Code of Federal Regulations (40 CFR Part 51) requires each state to submit state implementation plans (SIPs) to carry out air pollution control measures required by the Act. SIP requirements include the development of maintenance plans for areas redesignated from nonattainment to attainment of a National Ambient Air Quality Standard (NAAQS).

Chapter 445B.500 of the Nevada Revised Statutes requires that the board of county commissioners of each county with a population of 100,000 or more establish and implement an air pollution control program. In June 2001, the governor designated the Clark County Board of County Commissioners (BCC) as the air pollution control agency for Clark County and delegated state responsibilities for meeting the Act's requirements, including the development and submittal of SIPs, to the BCC. The BCC formally accepted this designation in July 2001 and delegated air quality responsibilities to the newly formed Department of Air Quality Management, approved by EPA at 40 CFR Part 52.1470. (Between 2001 and 2020, the department also functioned under the names "Department of Air Quality and Environmental Management" and "Department of Air Quality.")

In 2020, the Department of Air Quality became the Department of Environment and Sustain-ability, consisting of three divisions: Air Quality, Desert Conservation, and Sustainability. The Division of Air Quality (DAQ) is now responsible for administering the air pollution control program for Clark County under the provisions of the Clark County Air Quality Regulations (AQRs) (Sections 0–94, as adopted in 40 CFR Part 52, Subpart DD).

The mission of DAQ is to develop and implement high-quality, effective local programs to fulfill air quality regulatory requirements and address community concerns, protecting the region's quality of life while facilitating orderly growth. In furtherance of this mission, DAQ prepared this second maintenance plan to fulfill Clark County's SIP obligations. This plan demonstrates that ambient air quality in the Hydrographic Area (HA) 212 maintenance area will continue to remain below the $PM_{10}$ NAAQS throughout the second maintenance period.

The rest of this section provides an overview of $PM_{10}$ health effects and the history of $PM_{10}$ nonattainment in Clark County.

## 1.2 CHARACTERISTICS AND HEALTH EFFECTS OF PARTICULATE MATTER

"Particulate matter" is a general term that describes a complex group of airborne solid, liquid, and semi-volatile materials of many sizes and compositions. Primary PM is emitted directly into the atmosphere from anthropogenic (human) activities—such as agricultural operations, industrial processes, construction and demolition activities, and entrainment of road dust into the air—and from nonanthropogenic activities, such as windblown dust and ash from forest fires. Secondary PM forms in the atmosphere from (predominantly gaseous) combustion by-products, such as nitrogen oxides

($NO_x$) and volatile organic compounds (VOCs). The overwhelming majority of airborne PM in Clark County is primary PM from fugitive windblown dust.

Particulate size is a critical characteristic of PM that primarily determines the location of its deposition along the respiratory system. EPA has established two standards based on the aerodynamic mean diameter of the particle: one for $PM_{10}$ and one for $PM_{2.5}$ (a subset of PM with an aerodynamic mean diameter of 2.5 µm or less.)

$PM_{10}$ has a detrimental effect on human health because it can accumulate in the respiratory system. Larger particles deposit in the upper respiratory tract; smaller particles travel deep into the lungs and are retained longer.

Short-term exposure can irritate the lungs and may cause immune system responses, resulting in lung constriction that produces shortness of breath and coughing. Long-term, low-level $PM_{10}$ exposure may cause cancer and premature death. Those with a history of asthma or chronic lung disease are especially sensitive to these effects. The elderly or those with heart conditions may also have severe reactions resulting from a lack of oxygen.

## 1.3 HISTORY OF THE CLARK COUNTY NONATTAINMENT AREA

On July 1, 1987, EPA revised the PM NAAQS (52 FR 24634). The previous standards had addressed total suspended particulates without regard to size; the revised standards addressed only particles having an aerodynamic mean diameter of 10 µg or less. EPA established standards based on an annual average and a 24-hour average as part of the $PM_{10}$ NAAQS. In August 1987, EPA categorized areas in the U.S. "into three groups based on the likelihood that the existing State implementation plan (SIP) must be revised to protect the $PM_{10}$ NAAQS" (52 FR 29383). At that time, EPA designated the Las Vegas Vally (LVV) planning area as a Group I nonattainment area because it found a high probability that DAQ would have to make significant changes to the SIP to bring the area into attainment.

When Congress passed the 1990 Clean Air Act Amendments, it designated all Group I areas as "moderate" $PM_{10}$ nonattainment areas, including HA 212 (42 U.S.C. 7407(d)(4)(B)). EPA required these areas to submit a SIP by November 1991 that either demonstrated attainment of the $PM_{10}$ NAAQS by December 1994 or showed that attainment by that date was impracticable (56 FR 11101). Because of unprecedented growth, high-wind events, and other factors, Clark County could not demonstrate attainment by the required date, so EPA reclassified HA 212 as a "serious" nonattainment area on January 8, 1993, and established an attainment deadline of December 31, 2001 (58 FR 3334).

In 1997, DAQ submitted a $PM_{10}$ SIP revision and requested an attainment deadline extension, but EPA proposed to disapprove the SIP for failing to meet the Act's nonattainment area requirements (65 FR 37324). In December 2000, the BCC requested that the state formally withdraw all previously submitted SIPs and addenda because none demonstrated attainment of the $PM_{10}$ NAAQS.

After completing comprehensive research and work programs to address the problems identified in the 1997 $PM_{10}$ SIP revision, DAQ submitted a new SIP to EPA in June 2001 that met federal requirements (DAQ 2001). The new SIP demonstrated that adoption and implementation of Best

Available Control Measures (BACM) for fugitive sources and continuation of controls for stationary sources would result in attainment of the annual average $PM_{10}$ NAAQS by 2001 and of the 24-hour NAAQS by December 31, 2006. Consistent with the projected attainment date, DAQ requested a five-year extension of the 2001 attainment deadline; it supported the request with a Most Stringent Measure control analysis that showed the proposed emissions control programs were at least as stringent as control programs implemented in other nonattainment areas. In June 2004, EPA granted HA 212 a five-year extension of the December 21, 2001 attainment date and published its final approval of the $PM_{10}$ SIP (69 FR 32273).

In 2006, as part of its periodic review of the $PM_{10}$ NAAQS, EPA revoked the annual-average standard, but retained the 24-hour averaging time at a level of 150 micrograms per cubic meter ($\mu g/m^3$) (71 FR 61144).

In June 2007, Clark County submitted a milestone achievement report that described the county's progress in implementing the SIP (DAQ 2007). In August 2010, EPA determined that the $PM_{10}$ ambient air concentrations in HA 212 met the $PM_{10}$ standards (75 FR 45485). In 2012, DAQ submitted to EPA a request for redesignation together with its first maintenance plan (DAQ 2012). This plan showed continued maintenance of the 1987 24-hour $PM_{10}$ NAAQS for at least 10 years, through 2023. EPA approved the submittal and redesignated HA 212 to attainment in October 2014 (79 FR 60078).

The first maintenance period has now ended, so DAQ is submitting its second maintenance plan for the second 10-year maintenance period.

## 1.4 MAINTENANCE AREA

More than 80% of the land in Nevada is managed by the Bureau of Land Management (BLM). In 1998, Congress passed the Southern Nevada Public Land Management Act, which allows BLM to sell, trade, or lease public land within a specific area around Las Vegas ("BLM disposal area"). Congress amended the area's boundary in 2003, and minor adjustments were subsequently made such that the area currently comprises 327,047 acres. Lands controlled by the federal government outside this area remain in a native or managed state.

In the first maintenance plan, DAQ used an emissions inventory (EI) specific to the BLM disposal area to demonstrate continued maintenance because it contained most of the anthropogenic sources and sensitive receptors within the maintenance area. However, DAQ decided to use the HA 212 boundary for the second maintenance plan; this boundary aligns with assessments DAQ performed for other NAAQS and with the domain DAQ uses to track motor vehicle emissions budgets (MVEBs). Moreover, the HA 212 boundary aligns with the previous nonattainment area boundary and encompasses the entirety of the maintenance area. This second maintenance plan relies on the EI for the entire HA 212 maintenance area (Figure 1).

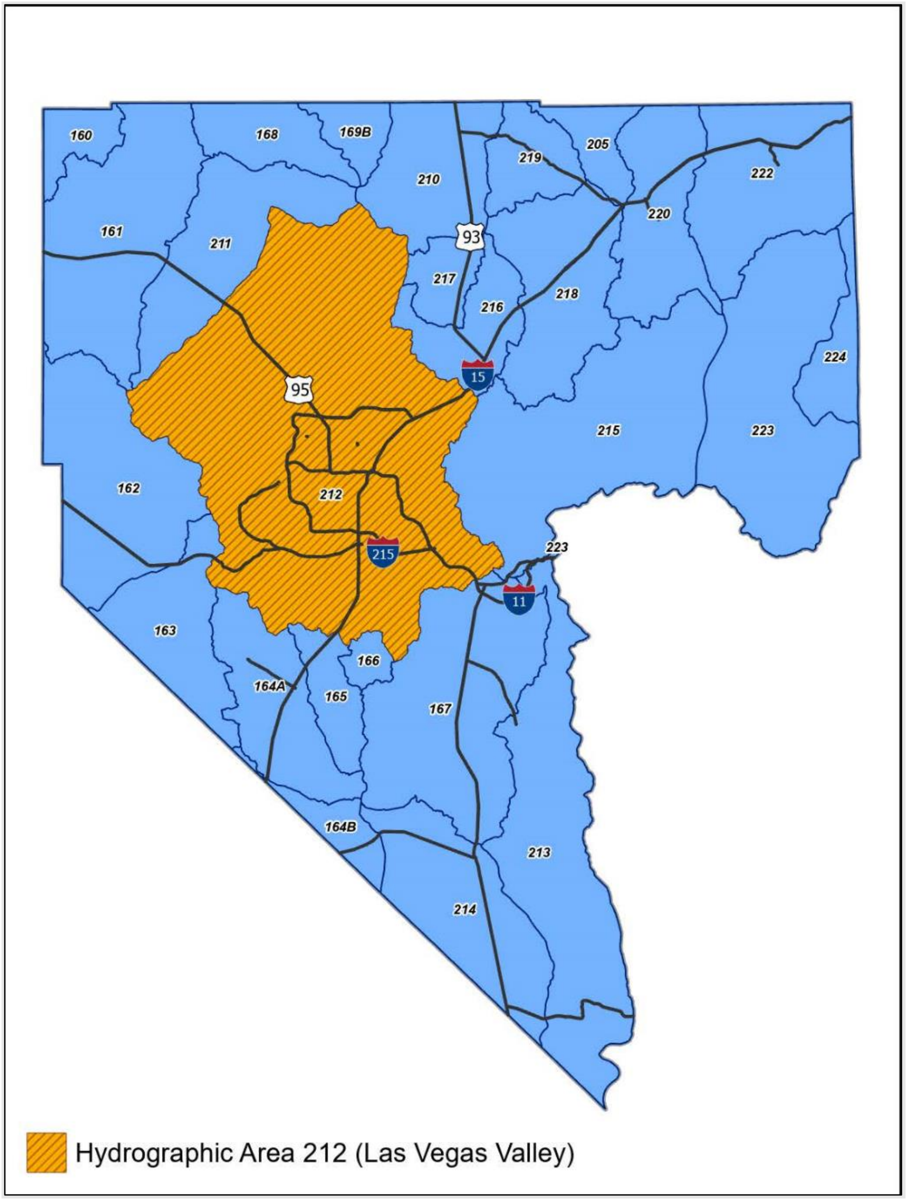


**Figure 1. 1987 $PM_{10}$ NAAQS Maintenance Area.**

The $PM_{10}$ maintenance area depicted in Figure 1 includes all of HA 212. This area is roughly 1,500 square miles, largely under federal control, and includes:

- City of Las Vegas
- City of North Las Vegas
- City of Henderson
- Unincorporated urban areas of Clark County
- Desert National Wildlife Refuge lands
- Humboldt-Toiyabe National Forest

- Red Rock Canyon National Conservation Area
- Nellis Air Force Base
- Nellis Bombing and Gunnery Range
- Nellis Small Arms Range
- Clark County Shooting Range
- Las Vegas Paiute Indian Reservation
- Spring Mountain State Park
- Lake Mead National Recreational Area.

## 1.5 PLAN REQUIREMENTS

Section 175A of the Act addresses maintenance plan requirements. Once EPA redesignates a nonattainment area, the state must submit a SIP revision detailing measures to maintain the NAAQS for at least 10 years after the effective date of the redesignation. Eight years after the redesignation, the state must submit a second maintenance plan demonstrating how ambient air quality in the area will continue to meet the NAAQS for an additional 10 years following the first maintenance period (42 U.S.C. 7505a).

The Act does not specify requirements for a maintenance plan, only directs that it contain additional control measures as necessary to ensure continued attainment (42 U.S.C. 7505a). EPA addressed the contents of a maintenance plan in guidance issued in 1992 ("1992 Calcagni Guidance"), which recommends a maintenance plan provide:

1. Attainment emissions inventories;
2. Demonstration showing continued attainment for the 10-year maintenance period;
3. Commitment to maintain a monitoring network;
4. Verification of attainment of the NAAQS; and
5. Contingency plan that provides measures to bring an area back into attainment if it exceeds the NAAQS in the future.

The 1992 Calcagni Guidance uses the terms "contingency measures" and "contingency plan," explaining their difference from the contingency measures required by Section 172(c)(9) of the Act. Under Section 172(c)(9) of the Act, the maintenance plan must identify possible contingency measures and the procedures for implementation if the state is forced to adopt such measures, including specific triggering indicators and a timeline for adoption.

In 2018, EPA issued guidance reiterating the continued relevance of the 1992 Calcagni Guidance for states required to submit a second maintenance plan. While this guidance addressed maintenance plans for the 1997 8-hour ozone NAAQS, it demonstrated the continued relevance of the 1992 Calcagni Guidance. In 2001, EPA issued guidance for submitting limited maintenance plans for $PM_{10}$

(EPA 2001). HA 212 does not meet the criteria for submitting a limited maintenance plan, which requires that the average $PM_{10}$ design value for the area should be at or below 98 $\mu g/m^3$ based on the most recent years of air quality data at all monitors in the area. Therefore, this plan follows the 1992 Calcagni Guidance.

# 2.0 PERMANENT AND ENFORCEABLE CONTROL MEASURES

In order for EPA to approve a SIP, a state must show that "the improvement in air quality is related to permanent and enforceable" emissions reductions (EPA 1992, Section 3; Clean Air Act, Section 107(d)(3)(E)(iii)).

To achieve attainment of the 1987 24-hour $PM_{10}$ NAAQS, DAQ implemented emissions control measures that led to the required permanent and enforceable improvement in air quality. For its first maintenance plan, DAQ adopted comprehensive fugitive dust controls via the Section 90 series of the AQRs, implementing and enforcing regulations to control $PM_{10}$ emissions from point and non-point sources.

## 2.1 CONTINUATION OF FIRST MAINTENANCE PLAN MEASURES

The emissions control measures in this section, as identified in the first maintenance plan, will remain in place through the second maintenance period.

**Sections 12.0–12.5, Permitting Programs.** These sections implement the federally mandated New Source Review program for attainment, unclassifiable, and nonattainment areas. New major sources and existing major sources undertaking a modification that results in a significant increase in $PM_{10}$ emissions or its precursors must install and operate Best Available Control Technology or Lowest Achievable Control Technology.

- Section 12.0, originally adopted on November 3, 2009; last amended on February 20, 2024; and awaiting SIP approval.
- Section 12.1, originally adopted November 3, 2009; last amended on December 3, 2024; and awaiting SIP approval.
- Section 12.2, originally adopted on May 18, 2010; last amended on March 18, 2014; and approved for inclusion in the SIP on October 17, 2014.
- Sections 12.3 and 12.4, originally adopted on May 18, 2010; last amended on July 20, 2021; and awaiting SIP approval.
- Section 12.5, originally adopted on May 18, 2010, and awaiting SIP approval.

Section 12.1 requires all minor stationary sources to obtain a permit to construct and operate if they have the potential to emit five tons or more of $PM_{10}$ per year. Sections 12.2–12.5 require all major stationary sources to obtain a permit to construct and operate. In addition, some emissions units must comply with case-by-case RACT requirements when they increase emissions of $PM_{10}$ or its precursors in an amount that meets or exceeds the minor New Source Review significance thresholds.

**Section 90, "Fugitive Dust from Open Areas and Vacant Lots."** Originally adopted on June 22, 2000; last amended on January 21, 2020; and approved for inclusion in the SIP on May 19, 2022. This rule requires certain owners of land to take measures to prevent fugitive emissions from being entrained into the ambient air by limiting access of trespassers operating motor vehicles on the land. Owners must also create a stable surface area by employing mitigation measures, including installation of gravel that provides a 20% non-erodible cover. Owners of large parcels must develop and submit a dust mitigation plan.

**Section 91, "Fugitive Dust from Unpaved Roads, Unpaved Alleys, and Unpaved Easement Roads."** Originally adopted on June 22, 2000; last amended on April 15, 2014; and approved for inclusion in the SIP on October 6, 2014. This rule applies to unpaved roads, including unpaved alleys, unpaved road easements, and unpaved access roads for utilities and railroads. It requires PM emissions control measures, including paving or application of dust palliatives.

**Section 92, "Fugitive Dust Control Requirements for Unpaved Parking Lots and Storage Areas."** (formerly titled "Fugitive Dust from Unpaved Parking Lots and Storage Areas"). Originally adopted on June 22, 2000; amended on April 15, 2014; approved for inclusion in the SIP on October 6, 2014; last amended on December 17, 2024; and will be submitted again for SIP approval in 2025. This rule applies to lot and storage areas greater than 5,000 $ft^2$. It requires owners of a lot or storage area to pave the area, apply alternative asphalt paving, or cover it in two inches of clean gravel. It also prohibits visible dust plumes from crossing property boundaries.

**Section 93, "Fugitive Dust from Paved Roads and Street Sweeping Equipment."** Originally adopted on June 22, 2000; last amended on January 21, 2020; and approved for inclusion in the SIP on May 19, 2022. This rule requires construction and reconstruction of roads in accordance with road shoulder width and drivable median stabilization requirements. It also establishes an opacity standard for unpaved shoulders and medians, and for use of road cleaning equipment. The rule requires road wetting/dust control when using rotary brushes and blowers to clean roads, and allows only vacuum-type crack cleaning seal equipment.

**Section 94, "Permitting and Dust Control for Construction and Temporary Commercial Activities and Fugitive Dust Control at Stationary Sources"** (formerly titled "Permitting and Dust Control for Construction Activities"). Originally adopted on June 22, 2000; amended on January 21, 2020; approved for inclusion in the SIP on May 19, 2022; last amended on December 17, 2024; and will be submitted for SIP approval in 2025. This rule applies to all construction and temporary commercial activities that disturb or have the potential to disturb soil, thus causing emission of PM to the atmosphere. It requires the owners or operators of sources of these activities to obtain a Dust Control Operating Permit, which is issued by DAQ.

**"Nevada Regional Haze State Implementation Plan" (NDEP 2009).** Originally adopted by NDEP on April 23, 2009; approved for inclusion in the SIP on March 26, 2012; revised in August 2022; and awaiting SIP approval. This SIP requires reductions in visibility-impairing pollutants, thereby reducing the potential for $PM_{10}$ formation. It specifically requires the Reid Gardner Power Station (a coal-fired point source in Clark County) to meet PM emissions control requirements by June 30, 2016, or shut down Units 1, 2, and 3 by then. The 2022 SIP revision, which will be effective during the second maintenance period, requires installation of low-$NO_x$ burners and selective non-catalytic reduction control equipment to reduce visibility-impairing pollution from lime kilns operating in Clark County. Section 12.14, "Regional Haze Requirements," codifies DAQ's authority to enforce the requirements of this SIP.

**Section 14, "New Source Performance Standards."** Originally adopted on September 3, 1981; last amended on February 4, 2025. This section requires compliance with EPA's federal PM and total suspended particulate emissions limitations in 40 CFR Part 60, "Standards of Performance for New Stationary Sources." As reflected in Table 12 of 40 CFR Part 60.4(d)(4), EPA has delegated implementation and enforcement of the federal standards to DAQ. The Act does not require states to submit new source performance standards control measures for SIP approval.

**Section 13," National Emissions Standards for Hazardous Air Pollutants."** Originally adopted on September 3, 1981; last amended on September 17, 2024. This section requires compliance with federal HAP emissions limitations in 40 CFR Parts 61 and 63, which apply to a variety of stationary sources with particulate emissions in the form of metal HAPs. These standards are based on Maximum Achievable Control Technology. As reflected in Table 11 of 40 CFR Part 63.99(a)(29)(i), EPA has delegated implementation and enforcement of the standards to DAQ. The Act does not require states to submit HAP control measures for SIP approval.

**Transportation Conformity.** Clark County works closely with the Regional Transportation Commission of Southern Nevada (RTC) to assure that regional transportation plans and transportation improvement programs in HA 212 are consistent with and conform to Clark County's air quality program requirements, including the $PM_{10}$ SIP and corresponding motor vehicle emissions budget (MVEB).

## 2.2 ADDITIONAL CONTROL MEASURES

In addition to the control measures specifically identified in the first maintenance plan, DAQ implements and enforces $PM_{10}$ control measures already incorporated into the SIP. These measures serve to further maintain $PM_{10}$ air quality concentrations below the 1987 24-hour $PM_{10}$ NAAQS during the second 10-year maintenance period.

**Section 26, "Emissions of Visible Air Contaminants."** Last amended on May 5, 2015, and approved for inclusion in the SIP on June 16, 2017. This rule requires all sources to generally maintain average opacity below 20%, with certain sources subject to a lower 10% average opacity standard.

**Section 27, "Particulate Matter from Process Weight Rate."** Originally adopted on September 3, 1981; approved for inclusion in the SIP on June 18, 1982; last amended on July 1, 2004, when it was reformatted with no substantive changes. This rule establishes process weight restrictions for PM emissions for all operations.

**Section 28, "Fuel Burning Equipment."** Originally adopted on December 28, 1978; approved for inclusion into the SIP on August 27, 1981; last amended on July 1, 2004, when it was reformatted with no substantive changes. This rule applies to fuel burned for the primary purpose of producing heat or power by indirect heat transfer. It regulates the burning of coke, coal, lignite, coke breeze, fuel oil, and wood, but not refuse, targeting reductions in $PM_{10}$ emissions through good combustion practices. It also establishes PM emission rates based on heat input.

**Section 42, "Open Burning."** Originally adopted on December 28, 1978; approved for inclusion in the SIP on August 27, 1981; last amended on July 1, 2004, when it was reformatted with no substantive changes. This rule requires preauthorization to burn any combustible material, and prohibits open burning during air pollution episodes consistent with the Nevada Emergency Episode Plan.

**Section 41, "Fugitive Dust**." Originally adopted on June 25, 1992; last amended on January 21, 2020; and approved for inclusion in the SIP on May 19, 2022. This rule requires fugitive emissions abatement to prevent airborne PM during construction and deconstruction activities, and during use of unpaved parking lots, agricultural operations, and raceways. The rule includes notice, registration, and permitting requirements.

**Exceptional Events Plan.** The first $PM_{10}$ maintenance plan identified the *Natural Events Action Plan for High-Wind Events: Clark County, Nevada* (DAQ 2005) as a control measure. DAQ replaced this with the *Clark County Mitigation Plan for Exceptional Events* (DAQ 2018), developed in response to EPA's 2016 Exceptional Events Rule (81 FR 68216), which required areas with historically documented or known seasonal exceptional events to develop mitigation plans (40 CFR Part 51.930(b)). EPA does not require that this plan be incorporated into the SIP or be federally enforceable; however, it reviewed both plans to ensure they included all required elements. The mitigation plan includes the following practices from the *Natural Events Action Plan*:

- A high-wind event notification system that includes an early warning procedure;
- Education and outreach programs;
- Enhanced enforcement and compliance programs to reduce emissions; and
- Submittal of required documentation to EPA in the event of an exceedance where data should be excluded from the dataset.

The new plan includes more sophisticated air quality advisories and alerts, and commits to maintaining an open line of communication with areas around Clark County that may be involved in high $PM_{10}$ ambient air concentration events. The new plan also references the Clark County flood control system (Clark County 2018) and the HA 212 street-sweeping schedule in the 2001 $PM_{10}$ SIP (DAQ 2001, Appendix J). This system minimizes silt deposition from flood waters onto roads, parking areas, and undeveloped lands. It undergoes continuous expansion to accommodate new development in the Las Vegas Valley, including these recent additions:

- Duck Creek–Gillespie System, March 2023;
- Harry Reid Airport Peaking Basin Outfall and Van Buskirk System, Feb. 2022;
- Monson Channel: Jimmy Durant to Boulder Highway, Apr. 2022;
- Blue Diamond 02 Channel: Decatur-Le Baron to Richmar, July 2020;
- Gowan Outfall Facilities: Simmons to Clayton, May 2021; and
- Pittman Wash Interstate Channel, June 2020.[1]

The Nevada Department of Transportation, Clark County, the City of Las Vegas, the City of North Las Vegas, and the City of Henderson maintain policies requiring rapid removal of silt deposits from paved roads after storm events.

[1] Flood plan and updates available at https://www.regionalflood.org/programs-services/document-library/master-plan-documents.

# 3.0 MONITORING NETWORK

The 1992 Calcagni Guidance states that a maintenance plan should "provide for continued operation of air quality monitors that will provide [some] verification" of maintenance with the NAAQS (EPA 1992, Section 5.c). DAQ will continue characterizing ambient air quality in HA 212 via a network of ambient air monitoring stations that comply with EPA requirements and guidance. 40 CFR Part 58 (including Appendices A–E) defines the requirements for ambient air quality monitoring programs mandated by the Act. Under these rules, every state must establish a monitoring network for criteria air pollutants that meets location and operation specifications. Monitors used to satisfy these requirements are called State and Local Air Monitoring Stations (SLAMS). DAQ operates multiple SLAMS in its network to monitor ambient air concentrations of $PM_{10}$.

DAQ may also operate Special Purpose Monitors (SPMs) as needed to meet short-term or specific monitoring goals. As outlined in 40 CFR Part 58.20, SPMs do not have to meet the same requirements as SLAMS monitors, but must comply with Appendix A of 40 CFR Part 58.

DAQ is required to submit an annual network plan to EPA for approval. The most recent plan was submitted to EPA in June 2024 (DAQ 2024) and is awaiting EPA approval. Table 1 lists monitoring sites currently active in HA 212.

**Table 1. $PM_{10}$ SLAMS Monitoring Sites in HA 212**

| EPA AQS Site ID | Site Name | Street Address | City | Monitoring Start Date | Method Status |
|---|---|---|---|---|---|
| 32-003-0561 | Sunrise Acres | 2501 Sunrise Ave | Las Vegas | 4/4/2004 | Active as of 9/25/2017 |
| 32-003-0540 | Jerome Mack | 4250 Karen Ave | Las Vegas | 1/25/2018 | Active as of 1/20/2018 |
| 32-003-0043 | Paul Meyer | 4525 New Forest Dr | Las Vegas | 1/1/1998 | Active as of 9/12/2017 |
| 32-003-0071 | Walter Johnson | 7701 Ducharme Dr | Las Vegas | 7/1/1995 | Active as of 9/12/2017 |
| 32-003-0073 | Palo Verde | 126 S. Pavilion Center Dr | Las Vegas | 7/1/1998 | Active as of 9/12/2017 |
| 32-003-0075 | Joe Neal | 6076 Rebecca | Las Vegas | 1/1/2001 | Active as of 9/19/2017 |
| 32-003-0298 | Green Valley | 298 North Arroyo Grande | Henderson | 1/1/1998 | Active as of 6/2/2015 |
| 32-003-0044 | Mountains Edge | 8101 Mountains Edge Pkwy | Las Vegas | 10/1/2020 | Active as of 10/1/2020 |
| 32-003-0299 | Liberty High School | 3700 Liberty Heights Ave | Henderson | 5/1/2021 | Active as of 5/1/2021 |
| 32-003-2003 | Walnut | 3075 N Walnut Rd | Las Vegas | 6/1/2021 | Active as of 6/1/2021 |

Figure 2 shows the locations of all Clark County $PM_{10}$ monitoring stations in HA 212, including those listed in Table 1.

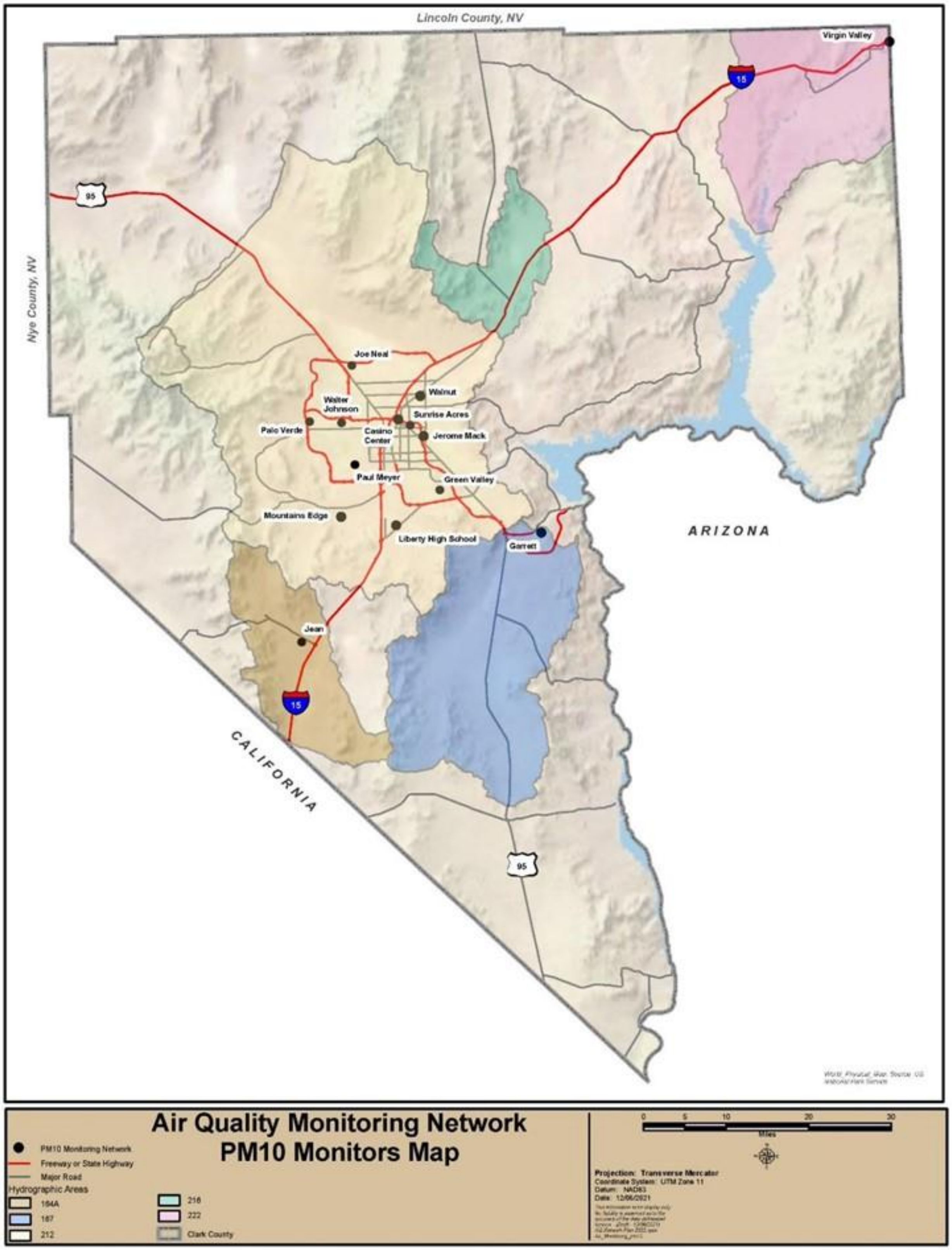


**Figure 2. Clark County $PM_{10}$ Monitoring Stations.**

The Casino Center monitoring site (AQS Site ID 32-003-1502) operated as a nonregulatory SPM monitoring site between August 1, 2021, and June 30, 2022, as a short-term monitor to provide data for use in an Environmental Impact Statement related to the expansion of US-95. As described in the 2023 annual network plan, this monitor was not intended for monitoring NAAQS concentrations.

DAQ stores data from the SLAMs monitors electronically on a data logger at each monitoring site, then retrieves the data wirelessly for electronic storage on department servers. DAQ transmits the data to EPA's AQS database after checking the following quality control and quality assurance requirements:

- Above 75% completeness for scheduled sampling days in a calendar year and calendar quarter.
- At least 18 hours in 24 for continuous federal equivalent method monitoring.
- At least 23 hours in 24 for filter-based federal reference method sampling.

Data are available on EPA's Air Data website (https://www.epa.gov/outdoor-air-quality-data). Real-time data available on DAQ's monitoring website have not yet been reviewed to determine whether they meet air quality assurance requirements.

DAQ collects and verifies $PM_{10}$ monitoring data under an EPA-approved Quality Management Plan and a Quality Assurance Project Plan for criteria pollutant and NCore monitoring. DAQ also follows the guidance of the *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II* (EPA 2017a). Formal quality assessments are an integral part of the DAQ monitoring plan and assure the monitoring network produces an acceptable level of data quality.

# 4.0 EMISSIONS INVENTORY

One recommended element of a maintenance plan is an attainment EI, which identifies the level of emissions in the area that is sufficient to attain the NAAQS (EPA 1992, Section 5.a). For this maintenance plan, DAQ selected 2019 as the base year for the attainment EI; it is the last year for which DAQ has verified design value concentrations, since 2020–2023 data is still under EPA review, it corresponds with the design-day concentration used to verify continued attainment (Section 5.3). Using the base year inventory, DAQ projected forward to estimate emissions for 2026 (the interim year) and 2035 (the final year) to verify continued attainment of the NAAQS. The year 2026 represents the approximate midpoint of the maintenance period and aligns the interim year with a projection year for EPA's 2016v3 EMP, which DAQ used to develop the EI.

Section 4 demonstrates that attainment EI estimates show a decline in $PM_{10}$ emissions throughout the second maintenance period.

## 4.1 EMISSIONS INVENTORY DOMAIN

In its first $PM_{10}$ maintenance plan, DAQ used the BLM disposal area rather than the HA 212 boundary for the inventory domain. Although EPA generally requires an EI for the entire maintenance area, air control agencies can use a larger or smaller area if there are compelling reasons: for instance, using smaller areas can focus the demonstration on key anthropogenic sources that affect high-concentration monitors in population areas.

For its second maintenance plan, DAQ  developed EIs for the entire HA 212 boundary. Using this boundary aligns with assessments DAQ performed for other NAAQS and the domain DAQ uses to track MVEBs. Moreover, the HA 212 boundary aligns with that of the previous nonattainment area and encompasses all of the maintenance area.

## 4.2 METHODOLOGY

DAQ principally derived the $PM_{10}$ EIs for most point, nonpoint, and banked emissions reductions from the 2017 National Emissions Inventory (NEI) using growth adjustment factors (GAFs), with variations for individual source types. Mobile source emissions (on-road and non-road) were determined using EPA's MOVES4 model.

DAQ developed the inventory using the total $PM_{10}$ emissions values reported in the 2017 NEI. This EI satisfies the requirements of 40 CFR Part 51.114 and the 1992 Calcagni Guidance for maintenance plans (EPA 1992, Section 5.a), including a total $PM_{10}$ estimate that includes both filterable and condensable fractions. 40 CFR Part 51.114(a) requires an implementation plan to include "a detailed inventory of emissions from point and area sources"; however, neither the Calcagni Guidance nor 40 CFR Part 51 direct the use of fractionated $PM_{10}$ inventories or a specific inventory year in the SIP submittal.

In its 2001 attainment demonstration, DAQ determined that condensable particulate matter contributes less than significant amounts to ambient $PM_{10}$ concentrations (DAQ 2001); therefore, it did not develop a separate fractionated $PM_{10}$ filterable or condensable EI for its attainment plan or first maintenance plan. There have been no significant changes in the nature of contributions to the EI and $PM_{10}$ ambient air concentrations since. This maintenance demonstration uses the EI to predict future $PM_{10}$ ambient air concentration (estimated as the predicted total mass of collected particles in the $PM_{10}$ size range) using the rollback method.

Although DAQ submitted an inventory for the 2020 NEI, it is considered unrepresentative due to the economic impacts of the COVID-19 pandemic. With EPA Region 9 concurrence, the 2017 NEI was used to establish the base year inventory; 2017 aligns most closely with the base year in the 2016v3 EMP, and allows for better alignment with the application of GAFs derived from it. Since 2020–2023 air quality data is still under review, DAQ used a design concentration based on the design value for 2017–2019 in the attainment analysis (with Region 9 concurrence). Using the 2017 NEI also aligns closely with the attainment data, in accordance with the 1992 Calcagni Guidance recommendation that the EI "include[s] emissions during the time period associated with the monitoring data showing attainment" (EPA 1992, Section 5.a).[2]

To develop base year emissions for categories for which the 2017 NEI was used to estimate emissions, the difference between 2016 actual emissions and 2023 predicted emissions was determined using 2016v3 EMP data. This modeling platform is a collaborative effort between EPA, state/local emission inventory staff, multijurisdictional organizations, and others to develop a tool to predict changes for various regulatory actions. EPA encourages air agencies to use the data and documented approaches in the emissions modeling platform in making their own projections. EPA's modeling platform includes a base year of 2016 emissions and projected emissions for 2023 and 2026.

Starting with 2016v3 EMP data, DAQ assumed a proportional change over the first seven-year period (2016–2023) and calculated two years of changes to 2017 NEI emissions in each category to estimate annual emissions for 2019. These values were then adjusted for monthly and weekly temporal variability to produce an October 29, 2019, design day inventory. (The design day is the date on which the highest daily value for $PM_{10}$ was measured in 2017–2019.) Sections 5.1 and 5.3.3 discuss design day values and concentrations.

Temporal variability factors for most subcategories in the 2016v3 EMP were based on Source Classification Codes (SCCs) for nonpoint source categories and North American Industry Classification System (NAICS) codes for point source categories. The platform can provide temporal adjustment factors at the county, state, and federal level, depending on SCC or NAICS code. DAQ prioritized temporal adjustments based on county- and then state-level data where available.

Except in the "Unpaved Roads" subcategory, emissions estimates that relied on countywide data were scaled to HA 212 based on a Clark County-to-HA 212 population ratio. Emissions associated with the "Unpaved Roads" subcategory were downscaled based on estimates of total unpaved road lengths within HA 212 and Clark County.

[2] State and local air pollution control agencies do not always elect the most recent NEI year to predict future emissions, e.g., Region 9's approval of a second $PM_{10}$ maintenance plan for Sacramento County using a 2017 EI to predict future inventories from 2024 through 2033 (89 FR 14548) and approval of a 2010 EI to predict future inventories for Coso Junction from 2020 to 2030 (88 FR 44707). In addition, EPA Region 10 approved a 2014 base year inventory to forecast emissions for Wallula County from 2020 through 2030 (85 FR 25303).

For most nonpoint source subcategories, 2026 and 2035 emissions estimates were determined using growth factors derived from the 2016v3 EMP (Appendix A, Section 1.4.1). 2026 and 2035 estimates for structure and vehicle fires were based on projected population increases. 2026 and 2035 estimates for vacant land wind erosion used projected emissions growth based on estimated vacant land consumption rate and population growth.

For point source subcategories, 2026 and 2035 emissions estimates for electric generating units were based on annual growth factors developed using EPA's Integrated Planning Model estimates for 2023, 2025, and 2030. Projected emissions for commercial airports were based on a Clark County Department of Aviation study; those for federal airports were based on a study conducted for the U.S. Air Force and growth rates from the first maintenance plan. Projected emissions for all other point sources were calculated based on growth factors derived from Energy Information Administration industrial sector growth data based on applicable NAICS code.

The following sections briefly discuss each category and the methodology used to estimate 2019, 2026, and 2035 emissions (consult Appendix A for detailed explanations).

### 4.2.1 Point Sources

The point source EI includes all stationary sources within HA 212 with the potential to emit more than 25 tons of $PM_{10}$ per year; emissions from all minor stationary sources below this threshold are included in the nonpoint category. All point source EIs for the baseline year (2019) were obtained from reports submitted by individual facilities and reviewed by DAQ staff. The point source inventory uses the same subcategories as the first maintenance plan: airports, electric generating units, and so forth. This section outlines the methodology for each subcategory.

#### 4.2.1.1 Airports

This subcategory includes a single federal airport (Nellis Air Force Base and a contracted close-air support project involving the base) and four commercial airports: Harry Reid (previously McCarran) International Airport, North Las Vegas Airport, Henderson Executive Airport, and a proposed Sloan Regional Heliport. Baseline emissions associated with Nellis were obtained from DAQ point source inventory data; projected emissions were based on growth factors used in the first maintenance plan. Projected emissions for the close-air support project were based on estimates provided by the U.S. Air Force. Baseline emissions estimates, GAFs, and temporal variability adjustment factors for commercial airports were obtained from a 2020 study conducted by the Clark County Department of Aviation.

#### 4.2.1.2 Electric Generating Units

The point source EI includes the following electric generating units within HA 212:

- Clark Generating Station
- Las Vegas Generating Station
- Saguaro Power Company

- Sun Peak Generating Station

Projected emissions are based on EPA's Integrated Planning Model ("Summer 2021 Reference Case"). Temporal adjustments are based on monthly fuel consumption data from the U.S. Energy Information Administration.

4.2.1.3 Other Sources

This subcategory includes all point sources that are not otherwise classified as an electric generating unit or airport facility, such as gypsum manufacturing, sand and gravel mining, solid waste collection, landfills, and petroleum terminals. Estimated 2019 emissions are based on the 2017 NEI, with future projected emissions using GAFs and temporal adjustments based on the 2016v3 EMP.

### 4.2.2 Nonpoint Sources

Nonpoint sources fall below point-source reporting levels and are too numerous or small to identify individually. In the first maintenance plan, fugitive dust emissions were the largest contributor to overall emissions within HA 212; therefore, nonpoint sources in the current EI have been grouped into the subcategories "Fugitive Dust" and "Other Nonpoint Sources," outlined below.

4.2.2.1 Fugitive Dust

Fugitive dust refers to small particles from disturbed soil that are suspended in the air. This subcategory includes dust emissions from building, road, and rail construction activities; agricultural operations; vehicular traffic on paved and unpaved roads; and wind erosion on vacant lands.

DAQ estimated wind erosion and construction-related emissions using the methodologies from the first maintenance plan. Baseline and projected emissions from vacant land wind erosion were calculated from estimates of vacant land within HA 212, historical vacant land consumption rate, regional wind speed data, and wind speed-dependent emissions factors.

Construction-related emissions are those from residential and commercial building construction, road construction, and rail construction. Construction estimates include emissions related to the construction activity directly, vehicle trackout, and vacant land wind erosion. Baseline emissions were calculated using construction acreage obtained from DAQ permit data; AP-42 emission factors; and DAQ estimates of construction duration, rule penetration, and control efficiency. Projected emissions estimates used GAFs and temporal adjustments from the 2016v3 EMP.

Paved road dust emissions were taken from the air quality conformity analysis in the RTC's regional transportation plan (RTP 2024). Unpaved road dust and emissions from agricultural activities were estimated countywide: base year estimates used the 2017 NEI, and future year estimates used GAFs and temporal adjustments from the 2016v3 EMP. DAQ prorated all estimates for HA 212 based on population except in the "Unpaved Roads" category, which it based on the length of unpaved roads.

#### 4.2.2.2 Other Nonpoint Sources

This subcategory includes emissions from such nonpoint sources as residential wood combustion, commercial cooking, structural and vehicle fires, locomotives, and fuel combustion from various industrial operations.

Other nonpoint source emissions were estimated on a countywide basis, using the 2017 NEI for base year emissions and 2016v3 EMP growth factor and temporal adjustments for future year emissions. These estimates were then prorated for HA 212 based on population.

### 4.2.3 Mobile Sources

The mobile sources category consists of on-road and non-road sources.

#### 4.2.3.1 On-Road Emissions

On-road mobile sources consist of cars, trucks, motorcycles, and other vehicles traveling on public roadways. Emissions from this category are vehicle exhaust, brake wear, and tire wear, which were calculated using EPA's MOVES4 model. Re-entrained road dust emissions were based on the 2017 NEI, using growth factors and temporal adjustments from EPA's 2016v3 EMP.

#### 4.2.3.2 Non-Road Emissions

Non-road mobile sources consist of a wide variety of equipment types that move under their own power or can be moved from site to site, such as construction equipment, lawn and garden equipment, off-road recreational vehicles, and other industrial/commercial equipment. The primary sources of $PM_{10}$ emissions for this subcategory are running exhaust (i.e., exhaust from startup and normal operations that exits the tailpipe) and crankcase exhaust (i.e., exhaust that escapes the combustion chamber and exits directly to the atmosphere). Non-road emissions were calculated using the MOVES4 nonroad algorithm.

### 4.2.4 Banked Emission Reduction Credits

If a source voluntarily reduces emissions, it may apply for emission reduction credits (ERCs) under AQR Section 12.7. If DAQ approves the ERCs, they will be banked for future use in accordance with the AQRs. DAQ included all banked ERCs in the final year inventory (2035) because they can be used in nonattainment areas to offset emissions increases from both new major sources and major modifications at existing major sources. Although some of these increases are accounted for in the point source emissions growth estimated for 2035, DAQ is not considering the potential overlap, so it included all ERCs in the EI projection.

## 4.3 SUMMARY OF EMISSIONS INVENTORIES

Section 4.2 explained how DAQ's EIs satisfy the requirements of 40 CFR Part 51.114 and the 1992 Calcagni Guidance. Table 2 summarizes the 2019, 2026, and 2035 $PM_{10}$ EIs for HA 212 for five source categories on the design day. Emissions from wind erosion of vacant lands show a significant decrease over time as construction within HA 212 consumes vacant lands.

**Table 2. Summary of Estimated Design Day Total Daily $PM_{10}$ Emissions in Tons per Day**

| Category/Subcategory/Sector | 2019 | 2026 | 2035 |
|---|---|---|---|
| **POINT EMISSIONS** | | | |
| Emissions generating units | 0.206 | 0.288 | 2.17 |
| Airports | 0.455 | 0.545 | 0.586 |
| Non-emissions generating units | 2.97 | 3.31 | 4.04 |
| **Subtotal:** | **3.63** | **4.14** | **6.80** |
| | | | |
| **NONPOINT EMISSIONS** | | | |
| Fugitive Dust: | 818 | 798 | 778 |
| • Construction | 221 | 237 | 261 |
| • Wind erosion from vacant lands | 556 | 519 | 468 |
| • Paved roads | 38.2 | 39.6 | 46.0 |
| • Unpaved roads | 2.61 | 2.61 | 2.61 |
| • Agricultural operations | 0.235 | 0.23 | 0.23 |
| Other Nonpoint Sources: | 4.3 | 4.8 | 5.2 |
| • Fuel combustion | 0.714 | 0.727 | 0.754 |
| • Commercial cooking | 2.92 | 3.31 | 3.73 |
| • Residential wood combustion | 0.469 | 0.486 | 0.495 |
| • Structure fires | 0.032 | 0.035 | 0.045 |
| • Vehicle fires | 0.027 | 0.031 | 0.039 |
| • Locomotives | 0.041 | 0.033 | 0.026 |
| • Miscellaneous non-industrial (Not Elsewhere Classified) | 0.12 | 0.131 | 0.148 |
| **Subtotal:** | **822** | **803** | **783** |
| | | | |
| On-road Emissions Subtotal: | 2.97 | 3.01 | 3.15 |
| Nonroad Emissions Subtotal: | 3.25 | 2.22 | 1.73 |
| Emission Reduction Credits Subtotal: | 0.31 | 0.31 | 0.31 |
| **TOTAL:** | **833** | **813** | **795** |

As the table shows, total $PM_{10}$ emissions decrease approximately 38 tons per day (5%) between 2019 and 2035.

Figures 3 and 4 show emissions distributions in 2019 and 2035, respectively, and Figure 5 shows the nonpoint source category EIs for each of the three demonstration years. Appendix A provides detailed information on the methodologies used to estimate these EIs.

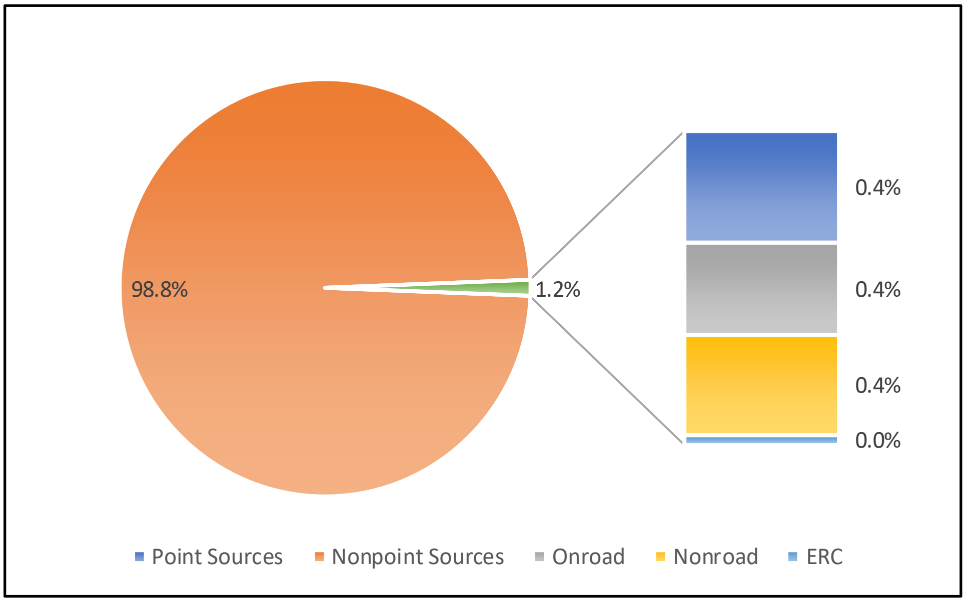


**Figure 3. HA 212 Design Day Emissions by Category (2019).**

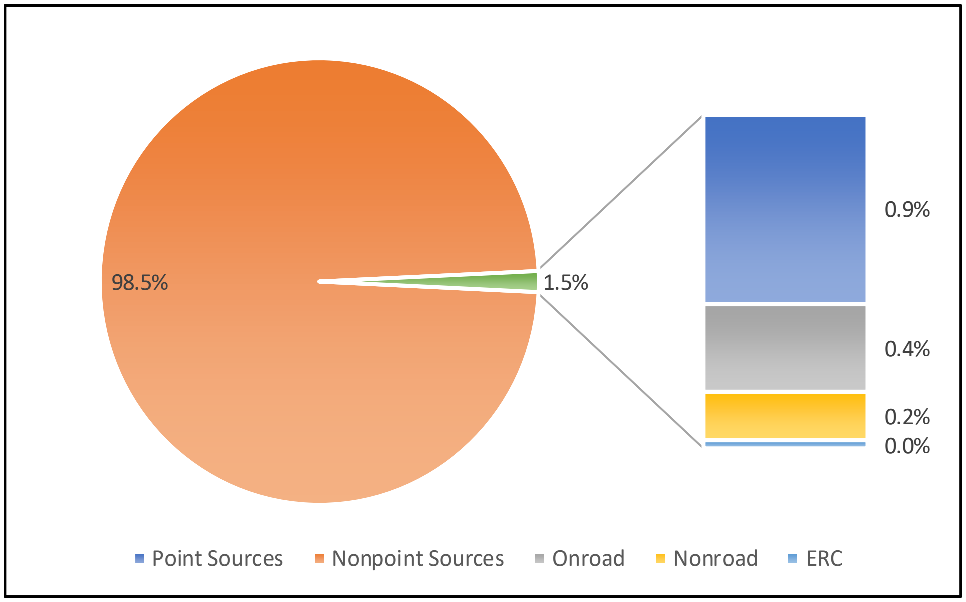


**Figure 4. HA 212 Design Day Emissions by Category (2035).**

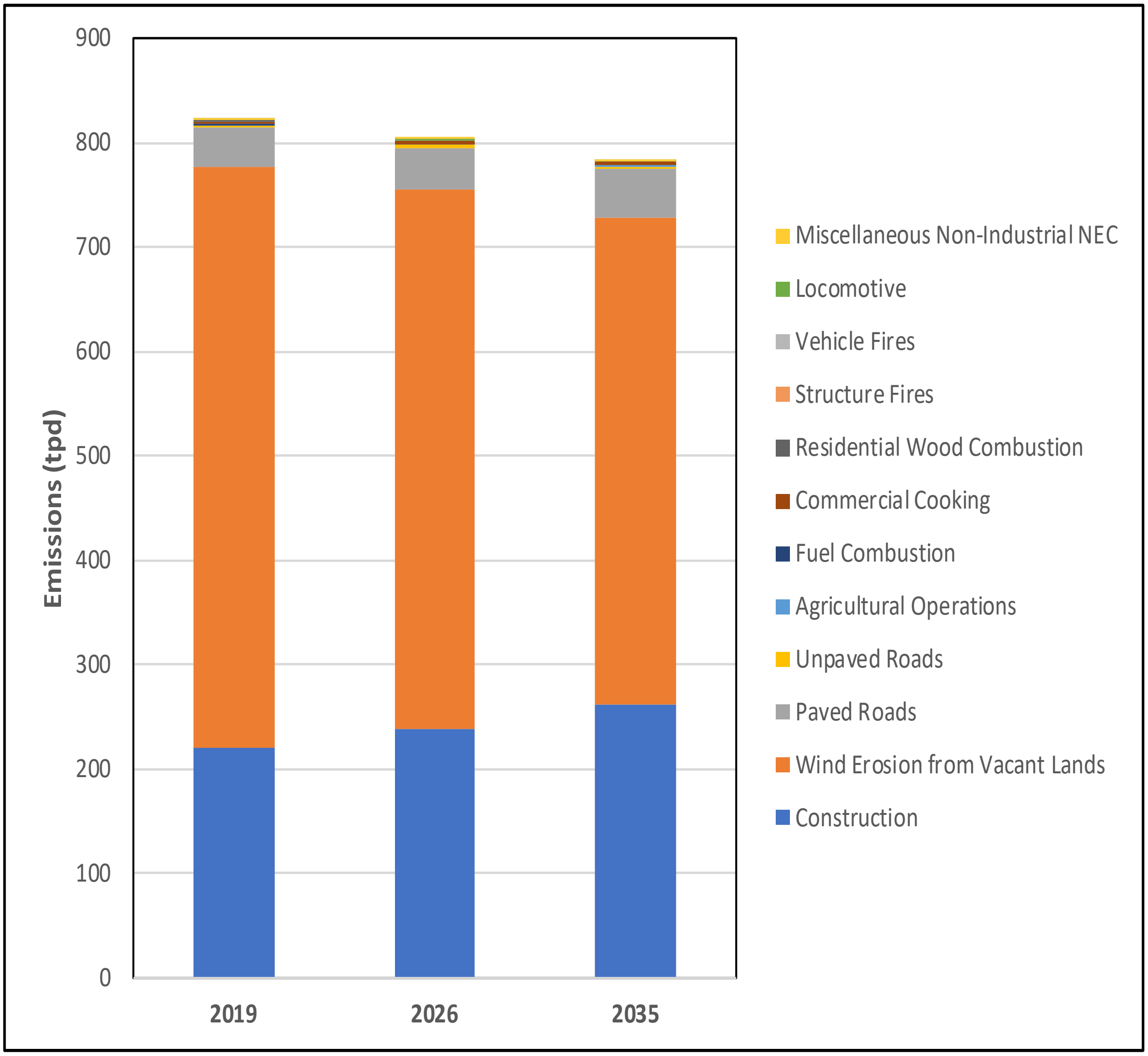


**Figure 5. HA 212 Design Day Nonpoint Source Emissions.**

# 5.0 MAINTENANCE DEMONSTRATION

EPA requires the use of either three years of data under stable conditions or specified mathematical techniques based on long-term trends to demonstrate attainment with the 24-hour $PM_{10}$ NAAQS (40 CFR 50 Part, Appendix K). The 1992 Calcagni Guidance recommends demonstrating continued maintenance by showing that the "future year inventory will not exceed the attainment inventory" or by modeling "to show that the future mix of sources and emissions rates will not cause a violation of the NAAQS" (EPA 1992).

This section discusses current air quality, long-term trends, and the rollback method used to estimate future $PM_{10}$ ambient concentrations and demonstrate continued maintenance. As shown in Section 4.3, the EI projection demonstrates that HA 212 will continue to maintain the NAAQS. DAQ used the rollback method to demonstrate maintenance in the first maintenance plan; for continuity, used the same method is used here to demonstrate continued maintenance. Section 7.2 applies the rollback method to show that inclusion of a safety margin in the MVEB will not jeopardize continued maintenance.

## 5.1 2017–2019 DESIGN VALUE

The Clark County $PM_{10}$ maintenance area design value for the 1987 24-hour $PM_{10}$ NAAQS is 127 $\mu g/m^3$ for the three-year period 2017–2019, based on available data. The design value is the concentration (in $\mu g/m^3$) derived from a statistical approach to monitoring data that describes the air quality status relative to the NAAQS of a given area during a specific period. It is based on daily values for $PM_{10}$, i.e., calculated or measured 24-hour average $PM_{10}$ ambient air concentrations (40 CFR 50 Part, Appendix K). EPA's *$PM_{10}$ SIP Development Guideline* (1987) describes the process for defining an area's design value based on available data, although $PM_{10}$ regulations do not refer to calculating a "design value" or "design concentration" relative to the $PM_{10}$ NAAQS. The 1987 SIP development guide uses the terms "design value" and "design concentration" interchangeably, but now EPA generally uses "design value" to refer to the fourth-highest concentration of $PM_{10}$ over three consecutive years (though it has also referred to the expected number of exceedances in an area as a "design value"). In this maintenance plan, "design value" means a measured air quality concentration over a three-year period and "design (or design-day) concentration" means a specific value used to estimate air quality concentrations in a future year. Attainment is based on determining an expected (average) number of exceedances using design values; an exceedance is a daily value that exceeds the NAAQS. The expected number of exceedances for an area is generally obtained by calculating the number of expected exceedances in each calendar year and averaging that over three consecutive years.

To calculate the design value for HA 212, DAQ reviewed the ambient air quality monitoring data available from all monitors operating in HA 212 from 2017 to 2019 (the most recent three-year period with a design value, since EPA is still reviewing data for 2020-2023), including the 2017 NEI data used to develop the base year EI. The four highest daily mean $PM_{10}$ monitored concentrations for each monitoring site were identified using Table 6-1 of the *$PM_{10}$ SIP Development Guideline*, which provides an adjusting scale for determining the design value based on the number of daily values for $PM_{10}$ recorded by a monitor over a three-year period. In 2024, EPA revised its calculation methodology to compute design values on a site-level basis, rather than for an individual monitor. (40 CFR 50 Part, Appendix K).

From 2017 to 2019, all sites recorded at least 1,043 data points, which means that the fourth highest monitoring value for each site determines the design value for that site over the three-year period; however, monitors for Palo Verde and Sunrise Acres had incomplete data in one quarter of 2017, so EPA does not consider design values for these sites valid. Regardless, EPA asked DAQ to use the computed design value based on available data to express the 2017–2019 design value and to determine the design-day concentration used in the rollback model discussed in Section 5.3.2.

While the design value is a numerical expression of the ambient air concentration that is helpful in characterizing air quality status, attainment of the 1987 24-hour $PM_{10}$ NAAQS is not expressed directly in the form of a concentration limit. Instead, attainment of the NAAQS is based on an expected number of exceedances of a daily value for $PM_{10}$ above 150 $\mu g/m^3$. With EPA's rounding convention, an exceedance is a daily value of 155 $\mu g/m^3$ or more. EPA considers an area in attainment when the expected number of exceedances at each monitoring site is one or less, averaged over three years (40 CFR 50 Part, Appendix K).

Table 3 shows 2017–2019 design values, based on available data, for each monitoring site operating in HA 212 during that time. It does not include Mountains Edge, Liberty High School, and Walnut because those sites started operating after 2019. The last column shows the 3-year average number of exceedances for each monitoring site.

**Table 3. HA 212 $PM_{10}$ Monitoring Data and Design Value (2017–2019)**

| Site ID | Site Name | Number of Daily Values of $PM_{10}$ | Highest 3-Year $PM_{10}$ | | | | Site Design Value | HA 212 Design Value ($\mu g/m^3$) | Expected Avg. No. of Exceedances |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1st | 2nd | 3rd | 4th | | | |
| 43 | Paul Meyer | 1087 | 106 | 93 | 90 | 87 | 87 | 127 | 0 |
| 71 | Walter Johnson | 1089 | 82 | 79 | 73 | 73 | 73 | | 0 |
| 73 | Palo Verde | 1043 | 80 | 78 | 72 | 72 | 72[1] | | 0 |
| 75 | Joe Neal | 1084 | 99 | 98 | 90 | 85 | 85 | | 0 |
| 298 | Green Valley | 1079 | **187** | 132 | 128 | 103 | 103 | | 0.3 |
| 540 | Jerome Mack | 1048 | **172** | **170** | 133 | 127 | 127 | | 0.8[2] |
| 561 | Sunrise Acres | 1050 | 133 | 115 | 98 | 86 | 86[1] | | 0 |

**Note:** Bolded values occurred on nontypical days that might have qualified for exclusion from the design-day dataset based on the occurrence of an exceptional event, but exclusion was not needed to demonstrate NAAQS compliance.
[1] The monitor did not meet data completeness criteria for one quarter of 2017, so EPA does not consider this design value valid.
[2] EPA's design value report shows 0.7; however, EPA revised 40 CFR Part 50, Appendix K in 2024 and its updated calculations changed the expected number of exceedances for this site.

The design value concentration is 127 $\mu g/m^3$ based on the fourth highest reading at Jerome Mack, occurring on October 29, 2019, and the expected number of exceedances for HA 212 is 0.8, demonstrating that ambient air quality in HA 212 was not above the NAAQS.

## 5.2 HISTORIC TREND ANALYSIS

Using data available from seven monitors operating in HA 212 from 2013 to 2023, DAQ conducted a 10-year trend analysis of the fourth highest daily average $PM_{10}$ concentrations during each three-year period. Unrepresentative data were excluded pending an exclusion request; Appendix B describes the exceptional event demonstrations submitted to EPA on June 17, 2024, to serve as that request. Figure 6 demonstrates the fourth highest daily average $PM_{10}$ concentration over a three-year period falls below the exceedance concentration. Figure 7 shows the expected number of exceedances falls below the $PM_{10}$ NAAQS for the 10-year period using representative data from Paul Meyer, Walter Johnson, Palo Verde, Joe Neal, Green Valley, Jerome Mack, and Sunrise Acres, the only monitors operating in HA 212 for the entire 10-year period. Data from Liberty High School, Mountains Edge, and Walnut were excluded because those monitors did not operate for the entire 10-year period.

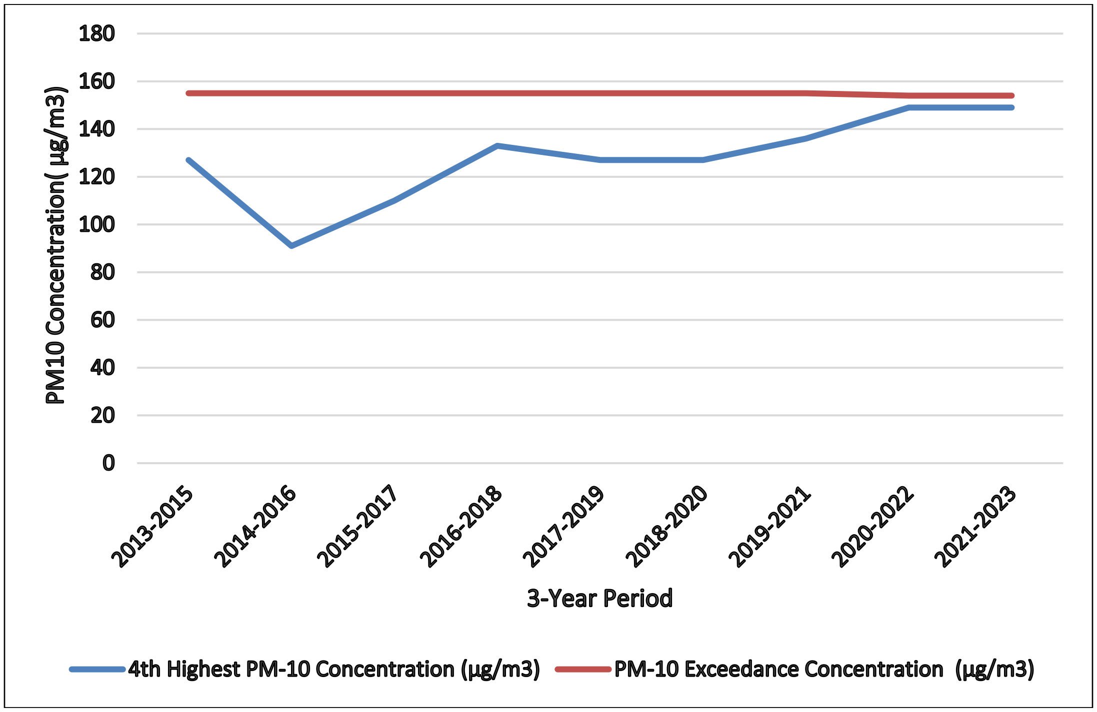


**Figure 6. 10-year Trend in Daily Values for $PM_{10}$ Using 4th Highest Measurement From 7 Monitors in HA 212 Over 3-Year Periods.**

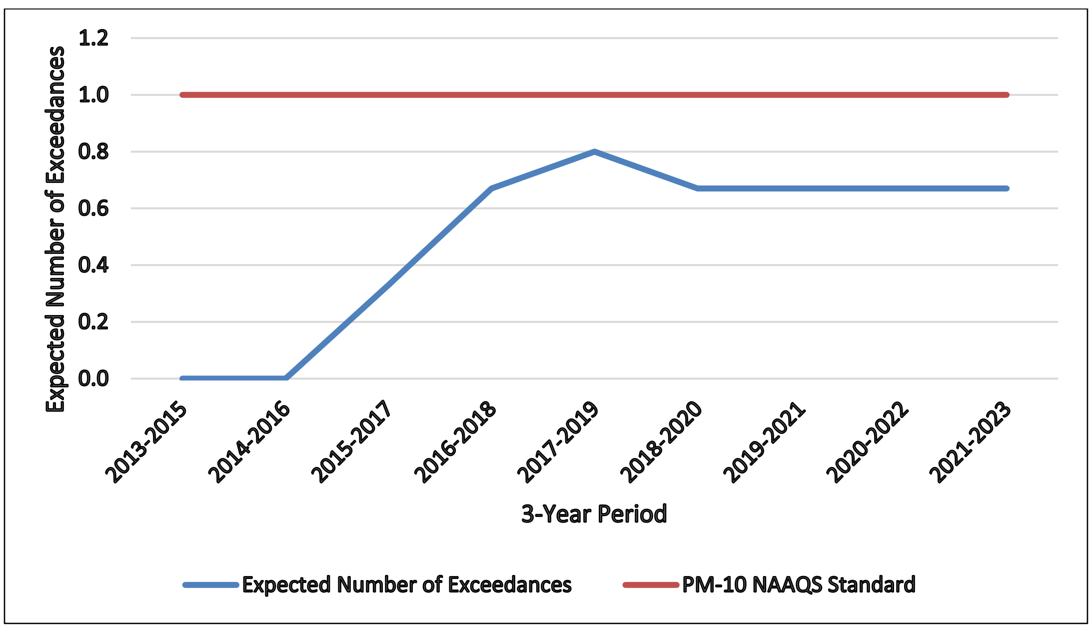


**Figure 7. 10-Year Trend in Expected Number of Exceedances Using Representative Data from 7 Monitors in HA 212.**

The historical trend, outside of the data for which DAQ requested exclusion on June 17, 2024, shows that three-year average $PM_{10}$ ambient air quality concentrations in HA 212 remained below the NAAQS exceedance concentration throughout the first 10-year maintenance period, with an expected number of exceedances of 1.0 or less.

## 5.3 VERIFICATION OF CONTINUED MAINTENANCE

### 5.3.1 First Maintenance Plan

As part of this maintenance demonstration, DAQ must show that HA 212 will continue to attain the 1987 $PM_{10}$ NAAQS throughout the second 10-year maintenance period. EPA recommends using one of two approaches for this demonstration. The first, called the emissions projections approach, compares a projected EI with an attainment EI. The second is a complex analysis using gridded dispersion modeling (EPA 1992).

DAQ chose the emissions projection approach for the first maintenance plan, employing the proportional rollback model. This rollback method used the EIs for the baseline year (2008) and maintenance year (2023) to predict future ambient concentrations in proportion to the corresponding change in EIs.

DAQ selected the rollback method in the first maintenance plan because receptor and dispersion models cannot quantify absolute $PM_{10}$ emissions estimates in some circumstances, e.g. urban locations, where a large fraction of particulate emissions come from nontraditional sources (such as construction operations or wind-blown fugitive dust). Dispersion models also have limitations that make modeling fugitive dust difficult; uncertainties regarding emissions rates, deposition rates, and plume characteristics of coarse fraction crustal particulates pose problems in obtaining valid results.

In the first maintenance plan, DAQ used a design value concentration of 98 $\mu g/m^3$, occurring on the design day of April 15, 2008, to project that $PM_{10}$ levels would remain below the base year concentration throughout the maintenance period. DAQ projected concentrations of 90 $\mu g/m^3$ for 2015 and 80 $\mu g/m^3$ for 2023, which demonstrated maintenance of the $PM_{10}$ NAAQS through 2023. The same approach was used to demonstrate continued attainment during the second maintenance period.

### 5.3.2 Rollback Method

The rollback model assumes a linear relationship between $PM_{10}$ emissions from sources and their contribution to measured $PM_{10}$ levels in ambient air: for example, if 25% of emissions in an area come from wind erosion of vacant lands, the model assumes that 25% of the ambient concentration measured by a monitor in that area (minus background concentration, which remains constant) came from wind-entrained soil. The rollback model assumes that any reduction or increase in emissions will correspondingly reduce or increase the ambient concentration measured at the monitoring station. The basic steps are:

1. Determine the representative monitoring station(s) and design day concentration.

2. Define the background concentration as the lowest $PM_{10}$ value recorded at an upwind monitoring station on the same day or during the same time.

3. Estimate the anticipated increase or decrease in emissions from each source in the base year EI.

4. Apply the same percentage of increase or decrease from emissions to the design concentration. Calculate the anticipated ambient concentration for an interim and final year of the maintenance period based on the emissions changes.

### 5.3.3 Design-day Concentration

Since the $PM_{10}$ NAAQS is based on the number of exceedances of a maximum daily value of $PM_{10}$, it is necessary to convert an annual EI into a representative daily value. However, EPA has no established methodology for this adjustment: the Sacramento Metropolitan Air Quality Management District used an average winter day in its 2021 $PM_{10}$ maintenance plan submission, but the South Coast Air Quality Management District used an average annual day in its 2021 $PM_{10}$ maintenance plan submission.

The first maintenance plan computed a “design day” by ranking values from the nine $PM_{10}$ monitoring sites operating from 2008 to 2010 and eliminating unrepresentative or “nontypical” days. A nontypical day is when wind speed in the maintenance area measures 25 miles per hour (mph) or more, or ambient conditions otherwise qualify the day as a potential exceptional event, and the measured $PM_{10}$ concentration is above the exceedance threshold. DAQ selected the highest ambient air concentration among the remaining values as the design-day $PM_{10}$ concentration used to develop the EI and demonstrate future attainment.

In this plan, DAQ demonstrates continued maintenance with the 24-hour $PM_{10}$ NAAQS without adjusting the design day concentration for nontypical days. DAQ determined that using the higher value that results from not excluding data for nontypical days would not affect DAQ’s ability to demonstrate continued maintenance of the NAAQS for the second maintenance period.

Section 5.1 stated that the highest design value from all monitoring sites was 127 $\mu g/m^3$, occurring on October 29, 2019, at the Jerome Mack monitoring station. DAQ selected this unadjusted value as the design-day concentration to demonstrate continued attainment with the 1987 24-hour $PM_{10}$ NAAQS for the second maintenance period.

### 5.3.4 Projection Years

DAQ projected future $PM_{10}$ ambient air concentrations for 2026 (the interim year) and 2035 (the final year) using the EI estimates described in Section 4. The year 2026 represents an approximate midpoint of the maintenance period and aligns the interim year with a projection year for the 2016v3 EMP, which DAQ used to develop the EI. While 2034 represents the outermost year for the second maintenance period, DAQ conservatively included another year in the projection period because it will submit the plan in 2025, not 2023.

### 5.3.5 Future Concentration Prediction

In the first maintenance plan, DAQ used the Jean monitoring station to establish a background concentration for the design day. Jean is located upwind of HA 212 and designated as the monitor to establish background concentrations for Clark County in the 2023 monitoring network plan. For the 2019 design day, Jean recorded a $PM_{10}$ ambient air concentration of 47 µg/m$^3$.

Design-day and future-year emission calculations do not include contributions from the secondary formation of particulates, and the rollback method does not account for nonlinear secondary particulate formation. Both the $PM_{10}$ SIP and the first maintenance plan accounted for this by adding 3.5 µg/m$^3$ to the background concentration based on past chemical mass balance studies (Chow 1999). The studies remain appropriate for use in this maintenance plan because the number of sources in Clark County's $PM_{10}$ EI has declined in recent years as more land has been developed, lowering fugitive dust emissions from vacant land. The previous estimate in the Chow study is thus conservative and appropriate for use in this demonstration.

Adding 3.5 µg/m$^3$ in this maintenance plan gives a total background concentration of 50.5 µg/m$^3$ on the design day. Subtracting that from the design value yields a concentration on the design day from anthropogenic emissions (AE) of 76.5 µg/m$^3$ (127 µg/m$^3$ – 50.5 µg/m$^3$).

Predicted AE concentrations for 2026 were calculated as follows:

**Eq. 1:**

$$AE(2026)\frac{\mu g}{m3} = AE(design\ day)\frac{\mu g}{m3} * \left(\frac{HA212\ Emissions\ (2026)}{HA212\ Emissions\ (2019)}\right)$$

**Eq. 2:**

$$AE(2026)\frac{\mu g}{m3} = 76.5\frac{\mu g}{m3} * \left(\frac{813 tpd}{833\ tpd}\right) = 74.7\ \frac{\mu g}{m3}$$

Predicted AE concentrations for 2035 were calculated as follows:

**Eq. 3:**

$$AE(2035)\frac{\mu g}{m3} = AE(design\ day)\frac{\mu g}{m3} * \left(\frac{HA212\ Emissions\ (2035)}{HA212\ Emissions\ (2019)}\right)$$

**Eq .4:**

$$AE(2035)\frac{\mu g}{m3} = 76.5\frac{\mu g}{m3} * \left(\frac{795\ tpd}{833\ tpd}\right) = 73.0\ \frac{\mu g}{m3}$$

Adding the background concentration (50.5 µg/m$^3$) back into these values yields maximum projected future $PM_{10}$ daily values of 125.2 µg/m$^3$ for 2026 and 123.5 µg/m$^3$ for 2035. These predicted concentrations are below the exceedance concentration of 155 µg/m$^3$, which suggests that HA 212 will continue to attain the 1987 $PM_{10}$ NAAQS through 2035.

### 5.3.6 Validation of Rollback Method

In the first maintenance plan, DAQ projected maximum $PM_{10}$ daily values on the design day of 90 µg/m$^3$ for 2015 and 80 µg/m$^3$ for 2023. The actual design value for 2015 was 127 µg/m$^3$. The design value for 2023 has not yet been determined because 2020–2023 data is still under EPA review due to DAQ's June 17, 2024, exceptional events request.

Because of the discrepancies between predicted and actual $PM_{10}$ concentration values, DAQ analyzed $PM_{10}$ trends over the last 10 years and performed mathematical and statistical analyses to determine that the rollback method remains a valid approach for demonstrating future attainment. The following paragraphs describe the assumptions and conclusions of this analysis.

DAQ began by examining $PM_{10}$ concentrations for the maintenance area, reviewing concentration trends at monitors that have operated in HA 212 for the past 10 years and excluding data that qualified for an exclusion request. In some cases, DAQ did not submit exclusion requests or exceptional events demonstrations, or EPA deferred action on a submission, because of a lack of regulatory significance. Excluding these data from the design day determination resulted in an adjusted 2015 design day of 97 $\mu g/m^3$, only a 7% deviation from the predicted value in the first maintenance plan using the rollback method.

Then DAQ developed a trend analysis, excluding data—whether or not the recorded $PM_{10}$ daily value resulted in an exceedance—if DAQ could have or in fact submitted an exclusion request or exceptional event demonstration for any measurements collected on that date. As an example, DAQ submitted an exceptional events request for May 29, 2022, when Joel Neal recorded a daily measured $PM_{10}$ concentration of 145 $\mu g/m^3$. Since this is below the NAAQS, the data were not included in the June 17, 2024, exceptional events request, but were likely influenced by the event. DAQ thus excluded the value from its analysis and computed an adjusted design value with the remaining data, following the protocol in 40 CFR Part 50, Appendix K, Section 2.1(a).

EPA will typically consider data exclusion requests only for an exceedance (1) that occurred during an exceptional event, (2) when the exceedance would affect the design value for the nonattainment area, and (3) when exclusion of the data has regulatory significance. Regionwide dust events will often elevate $PM_{10}$ concentrations at monitors in HA 212. Although it may not cause an exceedance or impact NAAQS compliance, such an event may still affect design value calculations by causing measurements that are among the top $PM_{10}$ values at one or more monitoring sites. EPA directs that: "...where long-term trends in emissions and air quality are evident, mathematical techniques should be applied to account for the trends to ensure that the expected annual values are not inappropriately biased by unrepresentative data" (40 CFR Part 50, Appendix K, Section 2.4). DAQ interprets this as meaning that excluding data recorded on such nontypical days (i.e., with sustained winds ≥25 mph), whether or not the measurement qualifies as an exceedance, allows for an evaluation with more representative, unbiased data.

Table 4 lists adjusted $PM_{10}$ design values when unrepresentative data are excluded. Paul Meyer recorded only 907 daily value concentrations in 2014–2016, so the third (rather than fourth) highest value was used. Ultimately, the fourth highest daily value from Jerome Mack determined the adjusted $PM_{10}$ design value for HA 212 for all 3-year periods when unrepresentative data were excluded.

**Table 4. Adjusted $PM_{10}$ Design Values (2015–2023) for HA 212 After Excluding Unrepresentative Data**

| 3-Year Period | Monitoring Station | $PM_{10}$ Concentration ($\mu g/m^3$) |
|---|---|---|
| 2013-2015 | Jerome Mack | 97 |
| 2014-2016 | Jerome Mack | 88 |
| 2015-2017 | Jerome Mack | 96 |
| 2016-2018 | Jerome Mack | 119 |
| 2017–2019 | Jerome Mack | 119 |
| 2018-2020 | Jerome Mack | 127 |
| 2019-2021 | Jerome Mack | 116 |

| 3-Year Period | Monitoring Station | $PM_{10}$ Concentration (µg/m$^3$) |
|---|---|---|
| 2020-2022 | Jerome Mack | 116 |
| 2021-2023 | Jerome Mack | 105 |

Figure 8 provides a visual comparison of the values in the table.

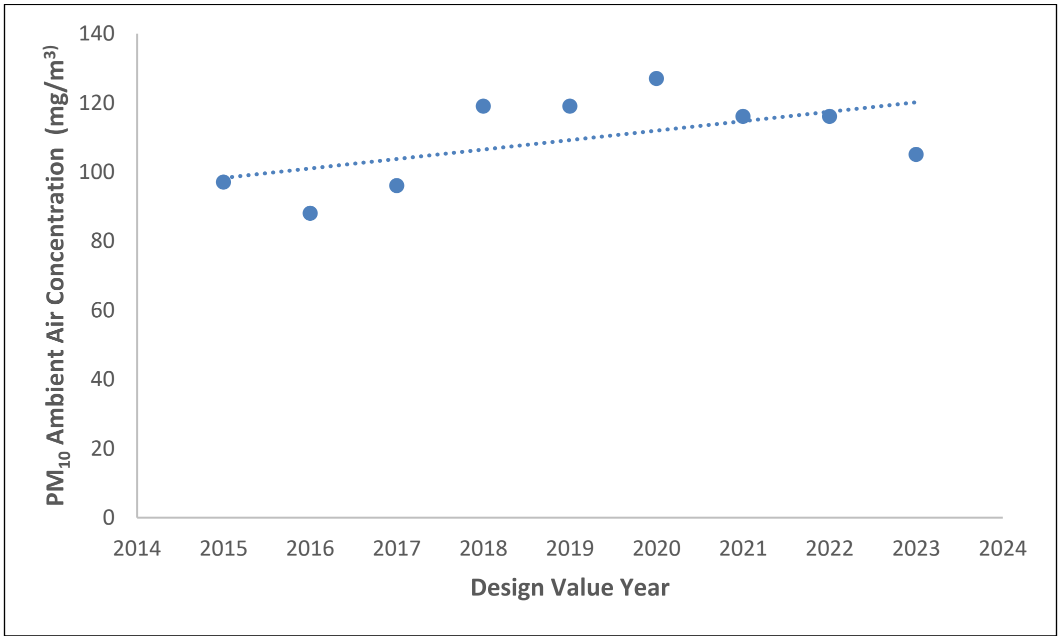


**Figure 8. Adjusted $PM_{10}$ Design Value for HA 212 After Excluding Unrepresentative Data.**

The figure shows that, when excluding all daily values for $PM_{10}$ recorded on nontypical days from the design value calculation, the data display only a slightly increasing trend in the adjusted $PM_{10}$ design value for HA 212 over the past 10 years. DAQ believes this trend relates to increases in background concentrations, and possibly population growth influences. A noticeable downward trend begins in 2020, which results from enhanced mobile source and fugitive emissions control measures. Jerome Mack becomes the controlling monitor for adjusted design day concentrations, since the adjusted design value for all years occurs there exclusively.

The adjusted design value for 2023 is 105 µg/m$^3$, but the first maintenance plan's prediction using the rollback method is lower (80 µg/m$^3$). The discrepancy results from differences between projected and actual background concentrations: the actual background level that helped establish the 2023 adjusted design value was 24 µg/m$^3$ higher than the projection used in the first maintenance plan's rollback model. If the 2023 adjusted design value is reduced by the increased background concentration, the measured value is 81 µg/m$^3$—almost precisely the value predicted by the rollback method in the first maintenance plan.

DAQ conducted an additional trend analysis, using the "forecast" function in Microsoft Excel, to predict daily values for $PM_{10}$ through the end of the second maintenance period. Excel uses a default value of 95% to compute confidence intervals, meaning that at least 95% of values are expected to fall within the boundaries of the interval. Predicted average daily values of $PM_{10}$ were expected to be slightly higher than actual design day values because the Excel forecast is based on an average of four values, rather than just the lowest. This approach is conservative compared to actual design value calculations, since it projects a daily concentration for each individual year rather than computing an average over three years. The study focused on Jerome Mack because it had the highest $PM_{10}$ concentrations (excluding nontypical days) during the design value period. The fourth highest daily $PM_{10}$ concentrations measured at Jerome Mack each year (after excluding specific exceedance data) were used to develop a long-term yearly forecast model.

In developing the dataset for the Excel forecast model, DAQ removed all exceedances from 2020–2023 included in the June 17, 2024, exceptional event exclusion request submitted to EPA. The final dataset included six exceedances between 2013–2021 for which DAQ did not request exclusion or EPA deferred review due to a lack of regulatory significance. Ten years (2013–2023) of the remaining fourth highest recorded values were entered into the model to forecast future ambient air concentrations for each year. Figure 9 shows the results.

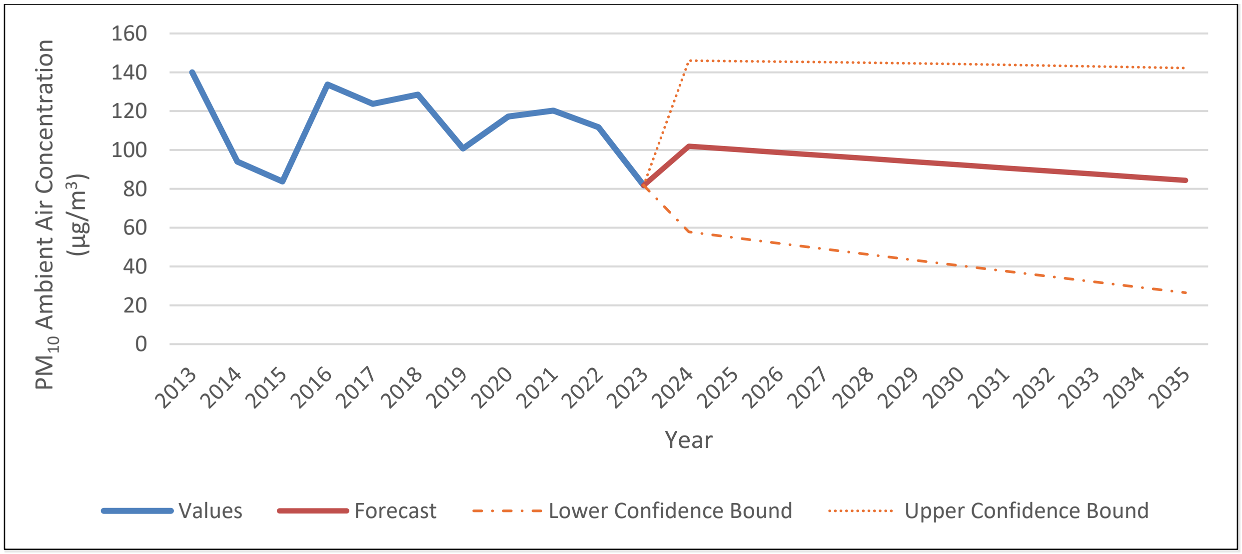


**Figure 9. Jerome Mack Forecasted Maximum Yearly $PM_{10}$ Ambient Air Concentrations**

All future forecasted average values in Figure 9 are below the exceedance concentration, including values that fall within the upper confidence interval. The data also show a noticeable downward trend, consistent with rollback predictions and recent trends in the adjusted $PM_{10}$ design values (Table 4). The 2023 annual value (82 $\mu g/m^3$) aligns well with predicted values (80 $\mu g/m^3$) in the first maintenance plan, and the second maintenance plan's prediction for 2035 is below the upper confidence boundary of this forecast. The lower annual value of 84 $\mu g/m^3$ forecast for 2035 suggests that HA 212 should have a relatively stable $PM_{10}$ ambient air concentration profile through the two maintenance periods.

This analysis shows that unrepresentative data recorded on nontypical days affects predicted $PM_{10}$ ambient concentrations, and supports the conclusion that the rollback method remains a reliable method for predicting continued maintenance.

### 5.3.7 Continued Attainment During Second Maintenance Period

DAQ used the emissions projections discussed in Section 4 and the rollback method calculations discussed in Section 5.3.2 to show that projected interim and final year $PM_{10}$ EIs and highest projected daily values for $PM_{10}$ concentrations are less than the base year EI and design day concentration (Figure 10). The lower projected emissions and design value concentrations for 2026 and 2035 demonstrate continued maintenance of the NAAQS.

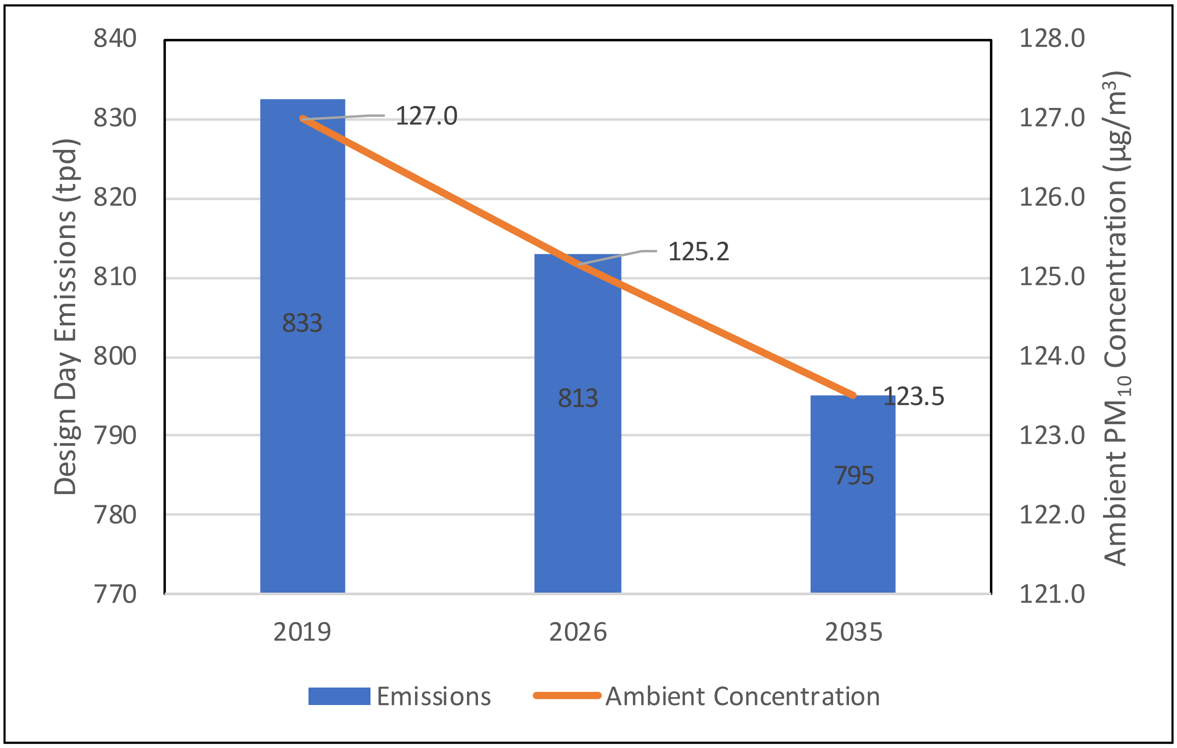


**Figure 10. Comparison of Base Year (2019) and Projected Emissions Inventories to the Design Day Concentration and Predicted Maximum Daily Values of $PM_{10}$ in 2026 and 2035 to Projected Emissions Inventories for 2026 and 2035.**

Figure 10 shows a downward trend in both $PM_{10}$ emissions and maximum projected daily values of $PM_{10}$ ambient air concentrations, primarily due to reduction in vacant land wind erosion as construction activity consumes vacant land. DAQ does not expect new emissions increases to threaten the demonstration of attainment; even if new sources emerge, the projected 2035 EI is well below the 2019 EI.

# 6.0 CONTINGENCY PLAN

Section 175A of the Act requires that maintenance plans include "such contingency provisions as the Administrator deems necessary to assure that the State will promptly correct any violation of the standard which occurs after the redesignation of the area as an attainment area" (42 U.S.C. 7505a). Air pollution control agencies typically implement contingency provisions only if air quality deteriorates beyond a specific threshold, such as increased or continued NAAQS exceedances. Per EPA's 1992 Calcagni Guidance, contingency plans should include:

- Clearly identified contingency measures;
- An established threshold that triggers the measures;
- A time limit within which to take action; and
- A schedule and procedure for adoption and implementation.

The contingency plan process outlined in this section includes data tracking, established triggers, schedules, time limits, and specific measures.

## 6.1 TRACKING AND TRIGGERING MECHANISMS

### 6.1.1 Tracking

The primary tracking mechanism will be DAQ's continuous $PM_{10}$ monitoring network (Section 3). DAQ will examine ambient air quality monitoring data within 90 days of the end of each quarter to determine if the $PM_{10}$ NAAQS has been violated. The RTC's ongoing regional transportation planning process will serve to track mobile source emissions, since the RTC revises its regional transportation plan and transportation improvement plan every four years and the revisions are subject to a transportation conformity finding. That process will serve as a periodic check on the vehicle miles traveled and mobile source emissions projections in this plan.

### 6.1.2 Contingency Plan Trigger

Contingency measures are triggered if air quality in an area deteriorates beyond a specific level, generally by a violation of the NAAQS. DAQ will implement its contingency measures when the number of representative daily values of $PM_{10}$ above 154 $\mu g/m^3$, recorded at the same monitor and averaged over three consecutive years, is higher than 1.05. The triggering process allows exclusion of data from certain exceptional events and unrepresentative data, as discussed in Section 5.3.6 and provided for in 40 CFR Part 50, Appendix K, Section 2.4.

DAQ will evaluate monitored PM levels, as well as meteorological conditions and long-term trends, for indications of exceptional events. Design value concentrations that are high for reasons beyond DAQ's control, or potentially excludable as unrepresentative data under 40 CFR Part 50, Appendix K, Section 2.4, would not be used in calculations on whether to trigger the contingency plan. DAQ would process such exclusions in conjunction with the Initial Notification of Potential Exceptional Event process in 40 CFR Part 50.14(c)(2).

DAQ will work with EPA to determine whether potentially excludable data is representative. If the data is representative, and the projected number of exceedances is greater than 1.05, DAQ will proceed to the Contingency Action stage outlined in Section 6.2. If DAQ considers an exceedance unrepresentative due to an exceptional event or other reason:

1. DAQ notifies EPA that it plans to exclude the data from the triggering process if including it would result in a three-year average number of exceedances above the NAAQS.[3]

    a. DAQ will notify EPA within 90 days of the end of the quarter recording the high concentration.

    b. DAQ will submit additional event-related information, including an Initial Notification or a long-term trends analysis. This will include the screening data identified in Table 5. EPA may request supplemental documentation under Step 2b.

2. DAQ submits supplemental documentation to EPA.

    a. EPA reviews the event information and concurs the data is not representative (e.g., was caused by an exceptional event), thus should not count toward the contingency action trigger; or

    b. EPA reviews the information and either does not concur or does not have enough information to determine the data is unrepresentative (e.g. was caused by an exceptional event). DAQ must then provide additional documentation/analysis (#3 below) or include the data in determining whether the contingency plan should be triggered.

3. DAQ submits additional documentation, as needed or requested.

    a. EPA reviews the additional information and concurs the data should not count toward the contingency action trigger; or

    b. EPA reviews the additional information and does not concur. DAQ would then count the data toward the contingency action trigger.

4. If DAQ disagrees with EPA's decision (#3b), it can submit an exceptional event demonstration or other supporting information to support exclusion of the data.

    a. EPA reviews and concurs the data does not count toward the contingency action trigger; [4] or

    b. EPA reviews and determines the data counts toward the contingency action trigger. DAQ would then proceed to the Contingency Action stage in Section 6.2.

[3] If including a monitored concentration in calculations of the three-year average does not result in a violation of the 24-hour $PM_{10}$ NAAQS, the contingency plan will not be triggered.
[4] If the process ends at #4a, Air Quality System data will not be affected. A full exceptional event demonstration and concurrence would be required to exclude data from the design value calculations.

**Table 5. Data Exclusion Screening Criteria**

| | |
|---|---|
| 1. | High pollutant levels (hourly and/or 24-hr average) at multiple monitors in the specified area, potentially indicating a regional event (e.g., ≥ 2 monitors with levels above a 24-hour average of 154 μg/m$^3$). |
| 2. | Sustained wind speeds ≥ 25 mph in the vicinity of the exceeding monitors and/or in the source area if the source area is sufficiently distant from the area of exceeding monitors, along with concurrent increases in hourly $PM_{10}$. This can be supported with:<br>a. Wind speed/direction data and Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model showing dust transported to the monitor.<br>b. National Oceanic and Atmospheric Administration hourly observation tables (Local Climatological Data & National Weather Service).<br>c. DAQ monitoring network met data (wind speeds will be averaged at intervals ≥ 2 minutes). |
| 3. | Spatial/temporal consistency between reduced visibility (< 10 miles) and elevated $PM_{10}$ levels. |
| 4. | National Weather Service advisories/warnings in the specified area consistent with elevated hourly $PM_{10}$ levels. |
| 5. | Lack of anthropogenic dust complaints (e.g., those that do not involve anthropogenic source(s) upwind of an exceeding monitor) and/or notices of violation. |

If any of the criteria in Table 5 are not met, or if available data contradict the determination, DAQ will discuss with EPA whether to include additional information and analysis before submitting the exclusion request. Such items may include:

- Detailed analysis of upwind wind speed and direction;
- Additional $PM_{10}$ and/or $PM_{2.5}$ concentrations from nonregulatory monitors in the area;
- Additional HYSPLIT back-trajectory analysis;
- Satellite image or remote sensing analysis;
- Evaluation of the upwind source area, including further evaluation of dust complaints, notices of violation, or known contributing anthropogenic sources;
- PM speciation or $PM_{10}/PM_{2.5}$ ratio analysis;
- Ground-based images and/or reports;
- Other event-specific analyses to determine potential causes of high PM levels; and
- Long-term trends analysis with representative data.

The exclusion process allows DAQ to decide whether to avoid triggering contingency actions because one or more values may be unrepresentative or the result of exceptional events, or to trigger contingency actions and evaluate the need for additional control measures (Section 6.2).

Triggering the contingency plan does not automatically require revising the $PM_{10}$ SIP, nor does it automatically mean redesignation of HA 212 (or portions thereof) to nonattainment. The Act allows time to correct the violation by implementing one or more contingency measures “deem[ed] necessary to assure that the [County] will promptly correct any violation of the standard” (42 U.S.C. 7505a).

## 6.2 ACTION RESULTING FROM TRIGGER ACTIVATION

If contingency measures are triggered, DAQ will analyze exceedances to determine the probable cause(s) and evaluate future emissions reductions from already adopted measures to determine if they are sufficient to prevent future exceedances. DAQ will also assess whether implementation of new rules and/or modification of existing ones will reduce emissions enough to bring the region back into maintenance; if not, DAQ will determine additional measures needed. The specific rules and measures proposed will depend on the cause of the exceedances.

DAQ expects to complete its analysis and identify appropriate control measures within six months of triggering contingency actions, and to adopt and implement the identified measures within 12 months. This provides a time frame of 18 months after action is triggered to evaluate, develop (if necessary), adopt, and implement control measures (Figure 11).

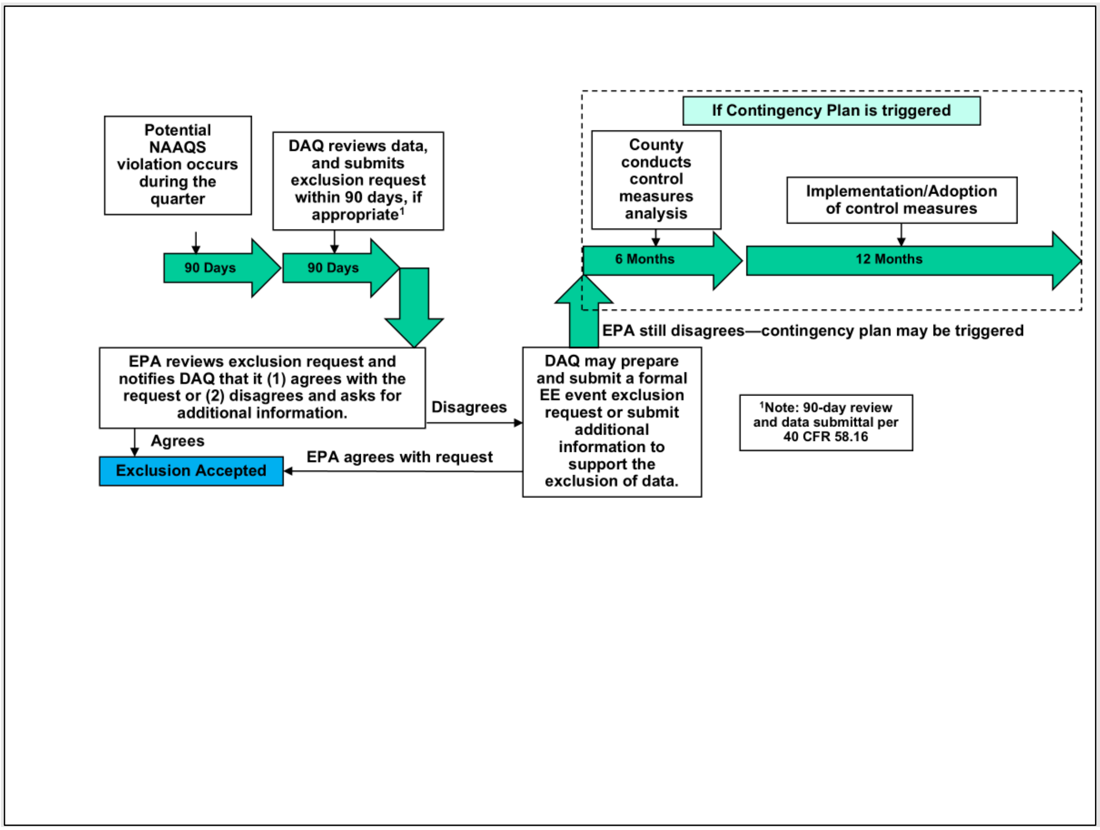


**Figure 11. Timeline of Implementation of Contingency Plan.**

## 6.3 POTENTIAL CONTINGENCY MEASURES

DAQ proposes the following potential contingency measures as part of this maintenance plan, but adoption of any specific control measure will depend on the cause of a NAAQS violation.

- Review and update best management practices (BMPs) to increase the effectiveness of existing practices and develop new ones (AQR Section 94, Appendix 1). Updated BMPs may include management practices for soil-disturbing activities not currently covered; new BMPs may incorporate practices for roadway and detention basin maintenance.

- Review dust mitigation plan requirements (AQR Section 90) to evaluate reducing the acre-age-trigger thresholds and incorporating additional mitigation plan criteria; also, reviewing applicability thresholds for unpaved parking lots to evaluate the feasibility of lowering them (AQR Section 92).
- Reassign staff to provide additional field enforcement of the AQRs that control sources of fugitive dust emissions.
- Review and update control measures for off-highway vehicles and unpaved parking facilities (AQR Section 41).
- Map construction activities during inspections to collect $PM_{10}$ data to improve accuracy in calculating actual emissions from construction projects.
- Amend fugitive dust regulations to incorporate new technologies and add measures for controlling emissions and preventing them from crossing property lines or causing a nuisance.
- Implement inspection and mitigation measures for unpaved storage and parking lots that were grandfathered in (without a land use agreement) before 2003.

DAQ may use additional strategies to address future violations in the most appropriate and effective manner.

## 6.4 CONTINGENCY PLAN CONCLUSION

This contingency plan will ensure prompt correction of any violation of the $PM_{10}$ NAAQS during the second 10-year maintenance period. The contingency plan identifies a specific indicator and trigger to determine when to activate contingency actions for evaluating, selecting, developing, adopting, and implementing appropriate control measures to correct the violation within 18 months of triggering the contingency plan.

# 7.0 MOTOR VEHICLE EMISSIONS BUDGET

## 7.1 REQUIREMENTS

Under Section 176(c) of the Act, transportation plans, programs, and projects in maintenance areas funded or approved under Title 23 of the U.S. Code or the Federal Transit Act must conform to the on-road MVEBs specified in the applicable SIP. Criteria and procedures for MVEBs are delineated in 40 CFR Part 93.118.

MVEBs establish a cap on motor vehicle-related emissions that an area cannot exceed while taking into consideration predicted transportation system emissions. They place a ceiling on emissions for a projected year, and for all subsequent years until DAQ submits a different budget to EPA or a SIP revision modifies the budget. This SIP demonstrates that DAQ can maintain its currently approved budget of 141.41 tons per day (tpd) $PM_{10}$ (69 FR 32273) and still maintain compliance through the end of the second maintenance period.

## 7.2 BUDGET

Table 6 presents estimated 2019, 2026, and 2035 $PM_{10}$ mobile source emissions for HA 212.

**Table 6. HA 212 $PM_{10}$ Mobile Source Emissions (tpd)**

| Source | 2019 | 2026 | 2035 |
|---|---|---|---|
| Paved road dust | 38.16 | 39.61 | 46.01 |
| Unpaved road dust | 2.61 | 2.61 | 2.61 |
| Vehicle emissions (e.g., exhaust, brake/tire wear) | 2.97 | 3.01 | 3.15 |
| Road construction | 1.06 | 1.14 | 1.25 |
| Construction trackout (all construction activities) | 0.13 | 0.14 | 0.16 |
| Wind erosion due to road construction | 4.79 | 5.15 | 5.67 |
| **TOTAL** | **49.71** | **51.67** | **58.86** |

EPA's conformity regulation (40 CFR Part 93.124) allows a SIP to quantify the amount by which motor vehicle emissions could increase while still demonstrating compliance with the maintenance requirement. The plan can then allocate this additional "safety margin" to the MVEB for transportation conformity purposes.

DAQ calculated the safety margin at 27.9 $\mu g/m^3$ using the anthropogenic portion of the $PM_{10}$ ambient concentrations in this maintenance plan:

$$\text{Safety margin} = (\text{NAAQS} - \text{background}) - (\text{design day} - \text{background})$$

$$\text{Safety margin} = (154.9 - 50.5) - (127 - 50.5) = 104.4 - 76.5 = 27.9\ \mu g/m^3.$$

Using the rollback method, DAQ calculated that the EI value corresponding to a 27.9 $\mu g/m^3$ $PM_{10}$ concentration increase was 1,138 tpd using the following equation:

**Eq. 5** *Maximum Attainment Inventory* (tpd) =

$$\frac{\text{Attainment concentration } (\mu g/m^3) \text{ (anthropogenic portion) * base year EI (tpd)}}{\text{Design day concentration } (\mu g/m^3) \text{ (anthropogenic portion)}}$$

$$Maximum\ Attainment\ Inventory\ (tpd) = \frac{104.5 * 833}{76.5} = 1{,}138$$

This provides a safety margin of 305 tpd in 2019, 325 tpd in 2026, and 343 tpd in 2035. To adjust the mobile source EI to the current EPA-approved MVEB (141.41 tpd), DAQ added 91.70 tpd in 2019, 89.74 tpd in 2026, and 82.55 tpd in 2035. This equates to using 30% of the safety margin for 2019, 28% in 2026, and 24% for 2035. Table 7 details the safety adjustments for the baseline year and the two projection years used in the maintenance demonstration (Section 5).

**Table 7. $PM_{10}$ MVEBs for Second 10-Year Maintenance Period (tpd)**

| | 2019 | 2026 | 2035 |
|---|---|---|---|
| Original | 49.71 | 51.67 | 58.86 |
| Adjustment | 91.70 | 89.74 | 82.55 |
| Proposed MVEB | 141.41 | 141.41 | 141.41 |
| Safety Margin | 304.89 | 324.6 | 342.63 |
| Adjustment as % of Safety Margin | 30% | 28% | 24% |

To confirm continued attainment with the adjusted mobile emissions values, DAQ recalculated the design values for each year using the rollback method, resulting in estimated maximum $PM_{10}$ concentrations of 135.4 $\mu g/m^3$ in 2019, 133.5$\mu g/m^3$ in 2026, and 131.2 µg/m3 in 2035. The following bullets outline the rollback method calculations; Table 8 shows the final values.

- Adjusted 2019 emissions:
  - Pre-adjusted total 2019 emissions = 833 tpd (Section 4.3)
  - Desired mobile source emissions budget = 141.41 tpd
  - Pre-adjusted 2019 mobile source emissions budget = 49.7 tpd
  - Adjusted total 2019 EI = 833 tpd - 49.7 tpd + 141.41 tpd = 925 tpd
- Adjusted 2019 design value:
  - Pre-adjusted anthropogenic 2019 concentration = 76.5 $\mu g/m^3$ (Section 5.3.5)
  - Pre-adjusted total 2019 EI = 833 tpd (Section 4.3)
  - Adjusted 2019 EI = 925 tpd
  - Background concentration = 50.5 $\mu g/m^3$ (Section 5.3.5)
  - To determine the adjusted 2019 anthropogenic concentration, the pre-adjusted 2019 concentration is multiplied by the ratio of adjusted 2019 emissions to pre-adjusted 2019 emissions: 76.5 $\mu g/m^3$ • (925 tpd / 833 tpd) = 84.9 $\mu g/m^3$

  - The background concentration, although constant, is not part of the anthropogenic concentration, so it is added to the adjusted 2019 anthropogenic concentration to determine the adjusted 2019 design concentration: 84.9 µg/m$^3$ + 50.5 µg/m$^3$ = 135.4 µg/m$^3$.

- Adjusted 2026 data:
  - Pre-adjusted total 2026 emissions = 813 tpd (Section 5.3.5)
  - Pre-adjusted 2026 mobile source emissions budget = 51.7 tpd
  - Adjusted total 2026 EI = 813 tpd - 51.7 tpd + 141.41 tpd = 903 tpd

- Adjusted 2026 concentration:
  - Pre-adjusted anthropogenic 2019 concentration = 74.7 µg/m$^3$ (Section 6.3.3)
  - Adjusted 2026 EI = 903 tpd
  - Pre-adjusted total 2019 emissions = 833 tpd (Section 5.3.5)
  - Background concentration = 50.5 µg/m$^3$ (Section 5.3.5)
  - To determine the adjusted 2026 anthropogenic concentration, the pre-adjusted 2019 anthropogenic concentration is multiplied by the ratio of adjusted 2026 emissions to pre-adjusted 2019 emissions: 76.5 µg/m$^3$ • (903 tpd / 833 tpd) = 82.9 µg/m$^3$
  - The background concentration, although constant, is not part of the anthropogenic concentration, so it is added to the adjusted 2026 anthropogenic concentration to determine the adjusted 2026 design concentration: 82.9 µg/m$^3$ + 50.5 µg/m$^3$ = 133.4 µg/m$^3$.

- Adjusted 2035 data:
  - Adjusted 2035 EI = 795 tpd - 58.9 tpd + 141.41 tpd = 878 tpd
  - To determine the adjusted 2035 anthropogenic concentration, the pre-adjusted 2019 anthropogenic concentration is multiplied by the ratio of adjusted 2035 emissions to pre-adjusted 2019 emissions: 76.5 µg/m$^3$ • (878 tpd / 833 tpd) = 80.6µg/m$^3$
  - The background concentration, although constant, is not part of the anthropogenic concentration, so it is added to the adjusted 2035 anthropogenic concentration to determine the adjusted 2035 design concentration: 80.6 µg/m$^3$ + 50.5 µg/m$^3$ = 131.1 µg/m$^3$.

**Table 8. Revised Maintenance Demonstration Using MVEB and Rollback Method**

| Parameter | Units | 2019 | 2026 | 2035 |
|---|---|---|---|---|
| Concentration before adjustment | µg/m$^3$ | 127 | 125 | 124 |
| Background | µg/m$^3$ | 50.5 | 50.5 | 50.5 |
| EI | tpd | 833 | 813 | 795 |
| Mobile emissions | tpd | 49.7 | 51.7 | 58.9 |
| Adjusted EI | tpd | 925 | 903 | 878 |
| **Estimated concentrations after adjustment** | **µg/m$^3$** | **135.4** | **133.4** | **131.1** |

In addition to public and state engagement requirements, conformity regulations provide that EPA can approve an MVEB if (1) it is "consistent with applicable requirements for… maintenance"; (2)

it is “consistent and clearly related to the EI and the control measures in the submitted…maintenance plan”; and (3) the maintenance plan explains any changes to established safety margins and the reasons for them (40 CFR Part 93.118(e)(4)(iv)–(vi)).

EPA originally approved a 141.41 tpd $PM_{10}$ MVEB in 2004 as part of DAQ’s attainment plan for the 1987 $PM_{10}$ NAAQS (69 FR 32273) in the $PM_{10}$ SIP. At that time, the MVEB consumed 100% of the safety margin because 141.41 tpd constituted the maximum emissions level for DAQ to demonstrate attainment by 2006. DAQ kept this MVEB in the first maintenance plan, stating, “Clark County’s request for the same PM10 budget figure is both for consistency and for RTC’s familiarity with it in transportation planning,” although it did not compute a safety margin on a tpd basis (DAQ 2012).

For this second maintenance plan, DAQ reviewed its previous calculations and determined that additional emissions (beyond those in the mobile source EI) used 14% of the safety margin. However, the safety margin in this plan is not directly comparable to the one in the first maintenance plan, at least on a percentage basis, because the EI boundary areas are not the same (i.e., all of HA 212 in this plan instead of just the BLM disposal area in the first one).

One can, however, compare the two MVEBs as percentages of total projected emissions: 141.41 tpd is 25% of the 2023 EI in the first maintenance plan, but would be only 18% of the projected EI in 2035. Mobile source emissions have declined, so are a smaller part of the EI, an indication that mobile source control programs are working. On a per capita basis, the original 2005 MVEB provided 8 tpd per 100,000 people; in 2023, that dropped to 6 tpd per 100,000 people; and by 2035, it would provide only 5 tpd per 100,000 people. This shows that current programs are reducing mobile source emissions effectively.

Accordingly, the existing MVEB should be retained to accommodate future population growth, and for the same reasons approved by EPA in the first maintenance plan: “for consistency and for RTC’s familiarity with it in transportation planning.” This budget continues to meet the criteria for approval because:

1. The MVEB is consistent with maintenance, since $PM_{10}$ concentrations in ambient air are predicted to remain below the NAAQS exceedance concentration;

2. The MVEB provides a declining per-capita allocation despite a growing population, assuring that mobile source emissions programs must remain effective in reducing emissions; and

3. The MVEB would not change, since the safety margin is smaller due in part to a larger geographic area for projecting the EI and higher emissions in other population-related source categories.

Therefore, until EPA approves the $PM_{10}$ MVEB for the second maintenance period, conformity determinations in future regional transportation plans will continue to use the existing MVEB.

# 8.0 REFERENCES

52 FR 24634. Revisions to the National Ambient Air Quality Standards for Particulate Matter.

52 FR 29383. $PM_{10}$ Group 1 and Group II Areas.

56 FR 11101. Designations and Classifications for Initial PM-10 Nonattainment Areas.

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