2015 Ozone NAAQS Attainment Plan for the Las Vegas Valley Moderate Nonattainment Area

November 5, 2024

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EXECUTIVE SUMMARY

The Clark County Department of Environment and Sustainability, Division of Air Quality (DAQ) hereby submits this *2015 Ozone NAAQS Attainment Plan for the Las Vegas Valley Moderate Nonattainment Area* (attainment plan) to the U.S. Environmental Protection Agency (EPA) to fulfill its State Implementation Plan (SIP) requirements for the 2015 8-hour ozone National Ambient Air Quality Standard (NAAQS) related to the Hydrographic Area (HA) 212 moderate nonattainment area. The attainment plan demonstrates that the modeled ozone design value for HA 212 will be below the NAAQS by the attainment date. It includes such required attainment plan elements as an emissions inventory; an attainment modeling demonstration; and Reasonably Available Control Technology (RACT), Reasonably Available Control Measures (RACM), and 15% Rate-of-Progress (ROP) analyses, among other information.

This attainment plan uses the most recently adopted planning variables (e.g., vehicle miles traveled projections and population forecasts) approved by the designated Metropolitan Planning Organization for the Las Vegas urban area, the Regional Transportation Commission of Southern Nevada, and establishes a motor vehicle emissions budget (MVEB). Once approved, the Regional Transportation Commission of Southern Nevada will use the MVEB for transportation conformity determinations in future regional transportation plans.

As part of this attainment plan submission, DAQ certifies that certain existing Clark County Air Quality Regulations (AQRs) meet RACT requirements, Inspection and Maintenance (I/M) Program requirements, and Nonattainment Major New Source Review SIP requirements; submits new regulations to meet RACT, ROP, and contingency measure requirements; and replaces some existing SIP-approved rules with new ones to improve rule effectiveness by promoting consistency and thoroughness in compliance obligations. The included contingency plan sets forth a control measure that applies only if EPA finds HA 212 did not reach attainment by the moderate area attainment date (August 3, 2024).

The complete attainment plan submission will turn off EPA’s SIP sanction clock. After EPA approval, the attainment plan and the AQRs included in this submission will become federally enforceable by EPA.

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ACRONYMS AND ABBREVIATIONS

Acronyms

Act	Clean Air Act of 1970 and amendments
AIM	architectural and industrial maintenance
AQRs	Clark County Air Quality Regulations
AQS	Air Quality System (EPA)
BACT	best available control technology
BCC	Clark County Board of County Commissioners
BEIS	Biogenic Emissions Inventory System
BELD	Biogenic Emissions Landuse Database
CAA	Clean Air Act
CAMx	Comprehensive Air Quality Model
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CGS	Clark Generating Station
CI	compression ignition
CO SIP	*Carbon Monoxide State Implementation Plan: Las Vegas Valley Nonattainment Area, Clark County, Nevada*
CTG	Control Technique Guideline
DAQ	Division of Air Quality
DES	Department of Environment and Sustainability
DLNC	dry-low NO_x combustion
DMV	Department of Motor Vehicles (Nevada)
DOA	Clark County Department of Aviation
ECS	emissions control system
EMP	Emissions Modeling Platform
EPA	U.S. Environmental Protection Agency
ERC	Emissions Reduction Credit
EVR	enhanced vapor recovery
FR	*Federal Register*
GCP	good combustion practices
GDF	gasoline dispensing facility
GHG	greenhouse gas
GMP	good maintenance practices
GVWR	(manufacturer's) gross weight rating
HA	hydrographic area
HAP	hazardous air pollutant
I/M	inspection and maintenance
LAER	lowest achievable emissions rate
LNB	low NO_x burner
LNO_x	low NO_x
LVT	Las Vegas Terminal
MEGAN3.2	Model of Emissions of Gases and Aerosols from Nature (version 3.2)
MGMRI	MGM Resorts International
MMBtu/hr	Millions of British thermal units per hour

MOVES	Motor Vehicle Emissions Simulator
MVEB	motor vehicle emissions budget
NAAQS	National Ambient Air Quality Standards
NAFB	Nellis Air Force Base
NDEP	Nevada Division of Environmental Protection
NEI	National Emissions Inventory
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NNSR	Nonattainment New Source Review (major sources)
NRS	Nevada Revised Statutes
NSPS	New Source Performance Standard
NSR	New Source Review
OTC	Ozone Transport Commission
OYW	one year's worth
PSM	Performance Standard Modeling
PTE	potential to emit
RACM	reasonably available control measure
RACT	reasonably available control technology
RFP	Reasonable Further Progress
RICE	reciprocating internal combustion engine
ROP	Rate-of-Progress (plan)
SCC	Source Classification Code
SCR	selective catalytic reduction
SENS1-6	sensitivity tests 1–6
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SMOKE	Sparse Matrix Operator Kernel Emissions
SPGS	Sun Peak Generating Station
SPM	special purpose monitor
SSM	startup, shutdown, and malfunction
U.S.C.	United States Code
UST	underground storage tank
VCP	volatile chemical products
VOC	volatile organic compound
WRF	Weather Research and Forecasting (model)

<u>Abbreviations</u>

CO	carbon monoxide
g	gram
gal	gallon
hp	horsepower
hp-h	horsepower-hour
L	liter
lb	pound
kN	kilonewtons
m	meter
m^3	cubic meter

mm	millimeter
mmHg	millimeters of mercury
NO_x	oxide(s) of nitrogen
O_2	oxygen
$PM_{2.5}$	particulate matter less than 2.5 micrometers
PM_{10}	particulate matter less than 10 micrometers
ppb	parts per billion
ppm	parts per million
tpd	tons per day
tpy	tons per year

1.0 ATTAINMENT PLAN OVERVIEW

1.1 INTRODUCTION

The Clean Air Act (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. One of these SIP requirements is the development of maintenance plans for areas previously designated as being in nonattainment with a National Ambient Air Quality Standard ("NAAQS").

Chapter 445B.500 of the Nevada Revised Statutes (NRS) 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 Clean Air Act 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 Management (DAQM)," "Department of Air Quality and Environmental Management" (DAQEM), and "Department of Air Quality.")

In 2020, the Department of Air Quality became the Department of Environment and Sustainability (DES), 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 attainment plan to fulfill Clark County's SIP obligations. The attainment plan models Hydrographic Area (HA) 212, the only area in Clark County currently designated nonattainment for the 2015 8-hour ozone NAAQS, as being in attainment by the August 3, 2024, attainment date.

This section provides an overview of ozone health effects and the history of ozone nonattainment in Clark County.

1.2 CHARACTERISTICS AND HEALTH EFFECTS OF OZONE

Ozone is a gas composed of three oxygen atoms that occurs both in the upper atmosphere (stratosphere) and at ground level (troposphere). Ozone in the stratosphere, which extends upward from 6 to 30 miles, occurs naturally, and protects life from harmful ultraviolet rays. Ozone in the troposphere, however, poses a significant health risk, especially for children, the elderly, and people with chronic illnesses. It may also damage crops, trees, and other vegetation.

Ground-level ozone forms through chemical reactions that involve two oxides of nitrogen [nitric oxide and nitrogen dioxide, together referred to as nitrous oxide (NO_x)], volatile organic compounds (VOC), and carbon monoxide (CO) in the presence of sunlight. While all three are ozone precursors, EPA requires ozone attainment plans to address only NO_x and VOC.

Ozone can irritate lung airways and cause an inflammation that resembles sunburn: symptoms include wheezing, coughing, pain when taking a deep breath, and difficulty breathing during exercise or outdoor activities. Children and those with respiratory problems are particularly susceptible, but ozone can affect even healthy people who are active outdoors. Repeated exposure over many months may cause permanent lung damage. Even when concentrations are low, ozone pollution may aggravate asthma, reduce lung capacity, and increase susceptibility to respiratory illnesses like pneumonia and bronchitis.

Ground-level ozone may also affect plants and ecosystems. It can interfere with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, harsh weather, and other pollutants. This in turn can impact crop and forest yields. In addition, ozone can damage the leaves of trees and other plants.

1.3 HISTORY OF THE CLARK COUNTY NONATTAINMENT AREA

Clark County's ozone planning efforts span four EPA NAAQS revisions. EPA's implementation rules, and federal court decisions related to those rules, frequently affected the county's SIP requirements and submittal deadlines.

On March 3, 1978, EPA designated the Las Vegas Valley as a nonattainment area for the 1971 photochemical oxidant NAAQS, as noted in volume 43, page 8962 of the *Federal Register* (43 FR 8962). Air quality monitoring data for 1975–1977 show violations of the 1-hour ozone NAAQS of 0.08 parts per million (ppm).

On February 8, 1979, EPA established a primary 1-hour ozone NAAQS of 0.12 ppm (44 FR 8202) and designated the Las Vegas Valley as a nonattainment area for that standard. The county required industries to implement control technologies to curb precursor pollutants after research demonstrated that industrial processes within Clark County were contributing to elevated ozone levels. By the end of 1984, Clark County had completed a SIP demonstrating attainment of the 1979 ozone NAAQS.

In April 1986, the state requested that EPA redesignate the Las Vegas Valley as an attainment area, and documented the control measures and technologies resulting in compliance with the 1979 ozone NAAQS. EPA approved the 1984 SIP submission in August of that year, and on November 19, 1986, redesignated the Las Vegas Valley as an attainment area for the NAAQS effective January 20, 1987 (51 FR 41788).

Clark County remained in compliance with the 1979 1-hour ozone NAAQS for over a decade. Then, on July 18, 1997 (62 FR 38856), EPA replaced the 1-hour 0.12 ppm standard with an 8-hour 0.08 ppm standard that became effective in September 1997.

On June 27, 2003, Clark County submitted a recommendation to the Nevada Division of Environmental Protection (NDEP) that EPA designate Clark County as an attainment area for the 1997 8-

hour ozone NAAQS, since the preceding three years of data (2000, 2001, and 2002) supported that designation. On July 10, 2003, pursuant to Section 107(d) of the 1990 Clean Air Act Amendments, the governor submitted this recommendation to EPA Region 9. EPA agreed with the submission, but noted it was tracking 2003 ozone monitoring data that indicated Clark County exceeded the NAAQS at one location.

On April 30, 2004—before acting on the governor's recommendation—EPA promulgated an implementation rule for the 1997 8-hour ozone NAAQS (69 FR 23951) related to the Act, Part D, Subparts 1 and 2. Subpart 1 contains general requirements that apply to all nonattainment areas for any NAAQS; Subpart 2 contains requirements specific to ozone classifications based on EPA's 1979 1-hour ozone NAAQS. Under the final rule, EPA would designate nonattainment areas with design values above the 1997 8-hour ozone NAAQS under Subpart 2 based on their current 1-hour ozone design values. If an area's current design value was below the level of the 1979 NAAQS but above that of the 1997 NAAQS, as Clark County's was, EPA would designate that area "basic" nonattainment under Subpart 1.

The day EPA promulgated the implementation rule (April 30, 2004), EPA also designated Clark County as a basic nonattainment area for the 1997 8-hour ozone NAAQS, effective 45 days later (69 FR 23858). EPA based its decision on 2001, 2002, and 2003 monitoring data, which showed the area was not meeting the 1997 8-hour ozone NAAQS. On May 21, 2004, before this designation became effective, Nevada's governor submitted a request to EPA to delay the effective date until October 15, 2004, to provide Clark County time to revise its recommendation. EPA agreed and promulgated a final rule deferring the effective date to September 13, 2004 (69 FR 34076).

EPA further agreed that relevant factors for defining a nonattainment area might support a different recommendation than the one the state submitted on April 12, 2004. On August 2, 2004, the state submitted a revised recommendation to designate only a portion of Clark County as a nonattainment area for the 1997 8-hour ozone NAAQS. The recommendation encompassed:

- Ivanpah Valley (HAs 164A, 164B, 165, and 166)
- Eldorado Valley (HA 167)
- Las Vegas Valley (HA 212)
- Colorado River Valley (HA 213)
- Paiute Valley (HA 214)
- Apex Valley (HAs 216 and 217)
- A portion of the Moapa Valley (HA 218).

EPA accepted the state's recommendations and issued a final rule on September 17, 2004, delineating the revised boundaries with the included HAs (69 FR 55956).

On December 22, 2006, a three-judge panel from the U.S Court of Appeals for the District of Columbia Circuit vacated EPA's Phase 1 Implementation Rule for the 1997 ozone NAAQS (*South Coast Air Quality Management Dist. v. EPA*, 472 F.3d 882 (D.C. Cir. 2006)), including use of the "basic nonattainment" classification under Part D, Subpart 1 of the Act. EPA and other organizations filed petitions for a review of the decision by the entire court. On June 8, 2007, the full court revised the decision by vacating only certain portions of the Phase I rule; however, the vacatur still included the "basic" classification determinations made under Subpart 1 for nonattainment areas like those in Clark County (*South Coast Air Quality Management Dist. v. EPA*, 489 F.3d 1245 (D.C. Cir. 2007)).

Following the D.C. Circuit Court's decision, EPA issued a memorandum on June 15, 2007, stating that nonattainment areas classified under "Subpart 1 are not currently subject to the June 15, 2007, submission date for their attainment demonstrations" (EPA 2007). EPA required Clark County to develop and submit the *8-Hour Ozone Early Progress Plan for Clark County, Nevada* (DES 2008) to establish motor vehicle emission budgets (MVEBs) for maintaining transportation conformity. The BCC adopted and approved the early progress plan on June 17, 2008. EPA formally approved the MVEBs on May 14, 2009 (74 FR 22738).

On March 29, 2011, EPA determined the Clark County nonattainment area had attained the 1997 8-hour ozone NAAQS based on monitoring data from 2007–2009 (76 FR 17343). DAQEM prepared and submitted a request for EPA to redesignate the area to attainment, along with a 2011 maintenance plan covering the first 10-year period following redesignation (DES 2011). EPA approved the submission and formally redesignated the area as attainment for the 1997 8-hour ozone NAAQS on January 8, 2013 (78 FR 1149).

In 2008, EPA revised the ozone NAAQS to 0.075 ppm, based on an area's three-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration (73 FR 16436). Although it had not yet redesignated portions of the county to attainment for the 1997 ozone NAAQS, EPA designated all of Clark County as attainment for the 2008 ozone NAAQS (77 FR 30088). EPA called such areas with different designations for the two NAAQS "orphan maintenance areas."

EPA revoked the 1997 ozone NAAQS in its 2008 ozone implementation rule and removed the requirement that orphan maintenance areas, such as Clark County, submit a second 10-year maintenance plan (40 CFR Part 51.1105(d) (vacated)). Therefore, Clark County no longer needed to comply with Section 175A(b) of the Act to provide for maintenance of the NAAQS for 10 additional years following the end of the first 10-year maintenance period.

The South Coast Air Quality Management District, among others, challenged EPA's 2008 ozone implementation rule in *South Coast Air Quality Management District v. EPA* (882 F.3d 1138 (D.C. Cir. 2018)). The court sided with the plaintiffs and vacated the parts of the rule that removed the second maintenance plan requirements for orphan maintenance areas. EPA once again required Clark County to submit a second 10-year maintenance plan for the 1997 ozone NAAQS. DAQ submitted this plan in January 2022, and EPA approved the plan effective May 6, 2024 (89 FR 23916).

Clark County continued to maintain ambient ozone concentrations below the 1997 and 2008 8-hour ozone NAAQS, but EPA revised and lowered the standard in 2015. EPA set the new NAAQS at a maximum concentration of 0.070 ppm, based on a three-year average of the annual fourth-highest daily maximum 8-hour average concentration (80 FR 65292).

In 2016, NDEP recommended that EPA designate HAs 164A, 165, and 212 as nonattainment for the 2015 8-hour ozone NAAQS based on 2013–2015 monitoring data. On December 20, 2017, EPA issued a 120-day notice letter notifying NDEP that it intended to also designate HA 216 as nonattainment after considering multiple factors and design value data from 2014–2016 (83 FR 651; Strauss 2017). NDEP responded in February 2018 with a recommendation that EPA designate HAs 164A and 165 as attainment to reflect 2015–2017 data, which demonstrated design values below the 2015 8-hour ozone NAAQS, and to designate HA 216 as attainment because meteorological conditions show the area does not contribute to ambient concentrations in the Las Vegas Valley (Lovato 2018). EPA agreed, designating only HA 212 as a marginal nonattainment area in June 2018 (83 FR 25776) and requiring that DAQ bring the area into attainment by August 3, 2021, based on the 2018–2020 ozone design value.

DAQ identified 28 exceedance days at area monitors between 2018 and 2020 that it maintains were caused by exceptional events (e.g., wildfires, stratospheric intrusions). In accordance with 40 CFR Part 50.14 (Exceptional Events rule), DAQ submitted 17 exceptional event demonstrations to EPA Region 9 that included data, modeling, and other information to support excluding those exceedance days from the calculation of HA 212's 2018–2020 design value.

After reviewing the submittals, Region 9 decided the weight of evidence did not support a finding that exceptional events caused exceedances in HA 212 on June 19–20, 2018; May 6, 2020; May 9, 2020; June 22, 2020; and June 26, 2020 (88 FR 775). EPA deferred reviewing data exclusion requests on all other dates after determining that any findings would not affect a decision on HA 212's attainment status or qualification for a one-year extension to demonstrate attainment. Based on EPA's decision, HA 212's 2018–2020 design value is 0.074 ppm, above the 0.070 ppm design value required to demonstrate attainment (as required by 40 CFR Part 50.19) by the specified date.

EPA proposed reclassifying HA 212 to "moderate" nonattainment for the ozone NAAQS on July 22, 2022, and finalized the decision on January 5, 2023 (88 FR 775). DAQ must now demonstrate HA 212 will attain the NAAQS by August 3, 2024, based on a 2021–2023 ozone design value.

Figure 1 shows the areas within Clark County previously designated as nonattainment for the 1997 8-hour ozone NAAQS, and the portion now designated as moderate nonattainment for the 2015 8-hour ozone NAAQS.

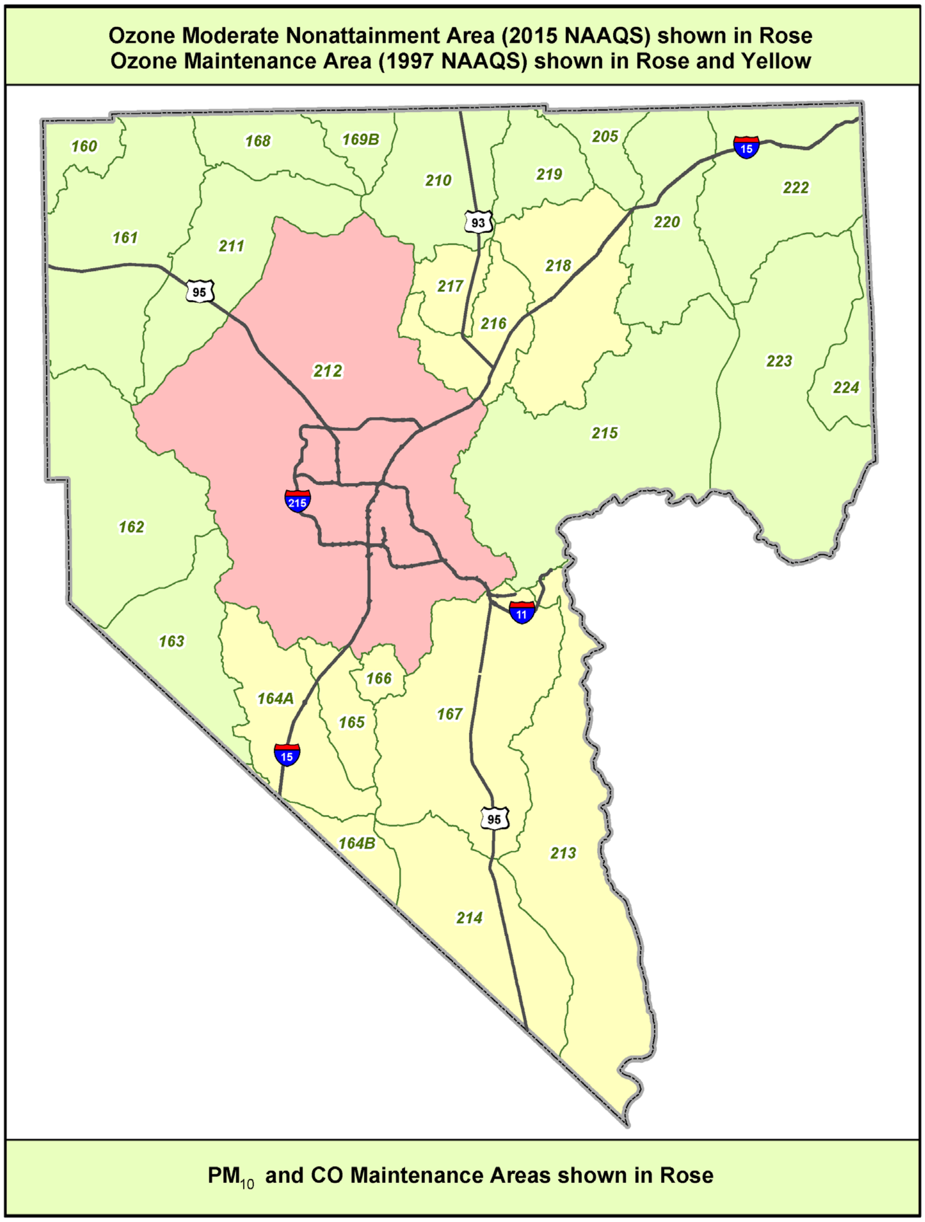


Figure 1. 1997 8-hour Ozone NAAQS Maintenance Area and 2015 8-hour Ozone NAAQS Moderate Nonattainment Area (HA 212) in Clark County.

1.4 IMPLEMENTATION PLAN REQUIREMENTS

EPA set forth SIP requirements for the 2015 8-hour ozone NAAQS at 40 CFR Part 51, Subpart CC. The new NAAQS retained most of the requirements adopted for the 2008 8-hour ozone NAAQS (80 FR 12264), which stemmed directly from the Act.

Section 172 of the Act contains general planning requirements that state or local air pollution control agencies must meet for nonattainment areas. These include a SIP[1] that requires implementation of reasonably available control measures (RACM) as expeditiously as practicable and reasonable further progress (RFP) in attaining the NAAQS. Attainment plans must contain:

- An emissions inventory (for the ozone NAAQS, this includes VOC and NO_x emissions based on a typical summer day), as well as an identification and quantification of emissions growth that is consistent with Reasonable Further Progress (RFP) requirements;
- A preconstruction permit program for new and modified major stationary sources;
- Other control measures necessary to bring an area into attainment by its attainment date; and
- Contingency measures to apply if an area fails to meet RFP or its attainment date.

Section 182(b) of the Act contains additional SIP requirements specific to moderate ozone nonattainment areas like HA 212. These include:

- Demonstration of a 15% Rate-of-Progress (ROP) from base year emissions;
- Specific annual emissions reductions to meet RFP requirements;
- Reasonably available control technology (RACT) for any source category for which EPA has published a control technique guideline (CTG) document;
- RACT for major sources of VOC and NO_x;
- A motor vehicle inspection and maintenance (I/M) program; and
- Major New Source Review (NSR) nonattainment area requirements.

EPA regulations set timelines for submitting planning documents to EPA for approval: for example, 40 CFR Part 51.1315 requires submittal of the base year emissions inventory within two years of the effective date of a nonattainment designation. (For HA 212, the required submittal deadline was August 3, 2020.) On September 1, 2020, the BCC adopted an emissions statement program and a base year (2017) emissions inventory for the 2015 8-hour ozone NAAQS. EPA approved the emissions statement program on July 29, 2022 (87 FR 45657) and the emissions inventory on November 14, 2022 (87 FR 68057) as revisions to the Nevada SIP.

[1] The state plan, under Section 110 of the Act, is a collection of control measures, strategies and rules known as a state implementation plan or a federal implementation plan (when EPA promulgates federal requirements into the state plan). The term "state plan" has waned and instead the state plan as a whole and the individual requirements within it are generally referred to as the SIP.

40 CFR Parts 51.1310 and 51.1314 require that, three years from the date of designation, areas initially designated as moderate nonattainment submit an RFP demonstration (including ROP measures) and major NSR requirements. Neither section addresses deadlines for areas reclassified after an initial designation (as HA 212 was). Parts 51.1308 and 51.1312 allow up to three years from an initial designation for an air pollution control agency to submit an attainment demonstration, including a RACM plan, but do not supply a deadline for areas that EPA subsequently reclassifies to a higher ozone classification.

40 CFR Part 51.1308 also contains the requirements for submission of a RACT SIP to EPA. An air pollution control agency has two years from the effective date of a reclassification to submit a RACT SIP unless the Administrator establishes a different deadline.

Rather than allowing for the two years provided in the rule, EPA set a retroactive deadline of January 1, 2023, in its January 5, 2023, reclassification action for NDEP to submit a moderate area SIP containing all required elements for the HA 212 moderate nonattainment area. On October 18, 2023, EPA issued NDEP a finding of failure to submit with respect to HA 212 (88 FR 71757).

This document provides all the information required to satisfy SIP planning requirements for HA 212 and resolve the finding of failure to submit.

2.0 EMISSIONS INVENTORY

2.1 INTRODUCTION

In support of the development of a moderate ozone attainment plan for the 2015 Ozone National Ambient Air Quality Standard, DAQ developed 2017 (base year) and 2023 (future year) ozone season weekday anthropogenic emissions estimates for ozone precursors within HA 212, collectively referred to as the 2015 Ozone NAAQS SIP Inventory ("modeled inventory") (Ramboll US Consulting, Inc. 2023, Attachment A). The ozone season day emissions inventory represents emissions on a typical summer weekday (not a holiday). The source categories included in the 2015 Ozone NAAQS SIP Inventory include all anthropogenic emissions categories: stationary point sources, stationary nonpoint (area) sources, on-road mobile sources, nonroad mobile sources, airports, and locomotive sources. The nonpoint source category inventory includes emissions from railways, residential wood combustion, and agriculture/livestock. The primary data sources for the 2015 Ozone NAAQS SIP Inventory include locally specific activity data, the 2017 Emissions Modeling Platform (EMP) based on the 2017 National Emissions Inventory (NEI), and 2016v2 EMP 2023 projections (EPA 2022a).

DAQ used the 2015 Ozone NAAQS SIP Inventory to model attainment with the 2015 Ozone NAAQS and establish the MVEBs (Ramboll US Consulting, Inc. 2024a, Attachment B), which were used to determine the number of emissions reductions required as a contingency measure. DAQ did not use the 2015 Ozone NAAQS SIP Inventory for the ROP demonstration; it developed a separate inventory (ROP Inventory) based on an updated EPA modeling platform[2] (Ramboll US Consulting, Inc. 2024b, Attachment F). Section 8.0 discusses the ROP inventory and analysis.

Attachment A to this plan contains a full description of the 2015 Ozone NAAQS SIP Inventory methodology and quality assurance procedures.

2.2 SOURCE CATEGORIES

2.2.1 On-road Motor Vehicle Emissions

On-road mobile sources include automobiles, motorcycles, buses, and trucks traveling on local roads and state and national highways. DAQ ran EPA's Motor Vehicle Emissions Simulator, version 3.1 (MOVES3.1) in inventory mode to develop on-road mobile source emissions estimates for HA 212. MOVES3.1 includes 13 source types and 4 roadway types. DAQ developed updated county-specific MOVES input databases for the 2017 base year and the 2023 future year based on available information. Key MOVES inputs include such vehicle fleet activity data as vehicle miles traveled, vehicle population by vehicle source type (or vehicle class), fleet age distribution, fuel parameters, and inspection and maintenance (I/M) programs. Since vehicle classification is a crucial component for developing an on-road emission inventory, DAQ completed a vehicle classification

[2] Four EPA modeling platforms are cited in this document: 2016v1 (released 2021); 2016v2 (released 2022); 2017 (released 2022); and 2016v3 (released 2023). The term "emissions modeling platform" (EMP) refers to emissions data taken from one of these platforms.

study in June 2018. The study used 2014–2016 traffic count data collected by the Nevada Department of Transportation and included an on-road license plate survey at selected roadway locations.

2.2.2 Nonroad Mobile Source Emissions

Nonroad mobile sources include a wide variety of motorized equipment types that either move under their own power off the roadway network or can be moved from site to site. The nonroad mobile source 2017 and 2023 emissions estimates were taken from the 2017 EMP and 2016v2 EMP 2023 projections, respectively, which are based on the nonroad module of MOVES3. To develop HA 212 subcounty ozone season weekday nonroad emissions estimates, DAQ ran the Sparse Matrix Operator Kernel Emissions (SMOKE) model for weekdays of a single week in July on a grid covering HA 212 with 4-km grid spacing. The total emission estimates within the modeling domain were summed for NO_x and VOC and averaged over all five weekdays.

2.2.3 Nonpoint Source Emissions

Nonpoint sources are stationary sources that fall below point source reporting levels and are too numerous or small to identify individually, e.g., small-scale industrial or residential operations that use emission-generating materials or processes. DAQ accessed the 2017 and 2023 nonpoint emissions from the 2017 EMP and 2016v2 EMP 2023 projections, respectively, to develop the HA 212 subcounty inventory. The nonpoint source category includes locomotives, volatile chemical products (“VCP”), commercial combustion, asphalt paving, residential wood combustion, and other area sources. The 2016v2 EMP uses EPA’s new approach and data to derive emissions for VCP sources; the 2017 EMP and previous emissions inventories reported VCP emissions based on an older methodology. To obtain 2017 VCP estimates based on a consistent methodology, DAQ linearly interpolated VCP emissions reported in the 2016v2 EMP between 2016 and 2023 instead of using emissions from the 2017 EMP. DAQ ran the SMOKE model for weekdays of a single week in July on a grid covering HA 212 with 4-km grid spacing. The total emission estimates within the modeling domain were summed for NO_x and VOC and averaged over all five weekdays.

2.2.4 Point Source Emissions

Point sources are larger stationary sources that emit pollutants above mandatory reporting levels and must be permitted by DAQ. Examples include power plants, industrial boilers, and other such industrial/commercial facilities. Clark County’s point source inventory includes all Title V stationary sources and all minor sources within HA 212 with the potential to emit at least 10 tons of VOC or 25 tons of NO_x. Point source 2017 emissions inventories were obtained from 2017 annual reports submitted by individual stationary sources; 2023 emissions were obtained from the technical support document for the second maintenance plan for the 1997 8-hour ozone NAAQS (DES 2021a), which used the 2016v1 EMP to calculate emissions growth factors. Point source emission inventories were developed from data either collected by direct on-site measurements or calculated using EPA or locally derived emission factors and source-specific activity data. Emissions from all minor sources emitting less than 10 tons of VOC or 25 tons of NO_x were included in the nonpoint source category.

2.2.5 Commercial Aviation Emissions

Commercial aviation within HA 212 covers emissions from three airports: Harry Reid (formerly McCarran) International Airport, North Las Vegas Airport, and Henderson Executive Airport. The Clark County Department of Aviation (DOA) provided 2017 actual and 2023 future year emissions for commercial aviation. The emission inventories were developed using the Federal Aviation Administration's Aviation Environmental Design Tool, Version 3b; DOA calculated design day emissions using the default meteorology in the tool. The design day was in October, so DOA developed correction factors to account for the differences in meteorology between the design day and a typical summer weekday. These correction factors were applied to the emission inventories for all three airports.

2.2.6 Federal Aviation Emissions

Federal aviation emissions in HA 212 occur mostly at Nellis Air Force Base (NAFB). The 2017 actual and 2023 projected emissions from aircraft operations were obtained from Clark County's second maintenance plan for the 1997 8-hour ozone NAAQS (DES 2021b).

2.2.7 Banked Emissions Reduction Credits

DAQ may grant Emission Reduction Credits (ERCs), under strict guidelines and upon request, to an emissions source that voluntarily reduces emissions beyond required levels of control. ERCs may be sold, leased, banked for future use, or traded in accordance with applicable regulations. Once used to offset emissions, they are permanently retired. ERCs are intended to provide an incentive for reducing emissions and to establish a framework to promote a market-based approach to regulating air pollution. DAQ included banked ERCs in the emissions inventory.

2.3 EMISSION INVENTORY RESULTS

Table 1 shows 2017 and 2023 HA 212 NO_x emissions estimates by source category for a typical ozone season weekday. The 2023 NO_X emissions inventory does not include reductions from any new local control measures. DAQ projects that the total NO_x emissions inventory will decrease by 28.6 tpd in 2023. Emissions in the point source and airport categories are projected to increase in 2023, but DAQ projects that turnover in nonroad and on-road fleets will offset these emissions increases.

Table 1. Summary of HA 212 Ozone Season Weekday NO_x Emissions (tpd)

Source Category	2017 NOx	2023 NOx
Point source	2.92	3.23
Nonpoint source	6.15	4.01
On-road mobile	36.32	19.15
Nonroad mobile	36.98	22.98
Airports (commercial & federal)	11.90	15.52
Locomotives	0.80	0.66
Emission Reduction Credits	—	0.92
Total	**95.07**	**66.47**

As shown in Figure 2, on-road and nonroad mobile sectors are the dominant sources of NO_x emissions, collectively making up over half all NO_x emissions in both 2017 and 2023. Airports are the next largest source category of NO_x emissions in both emissions inventories.

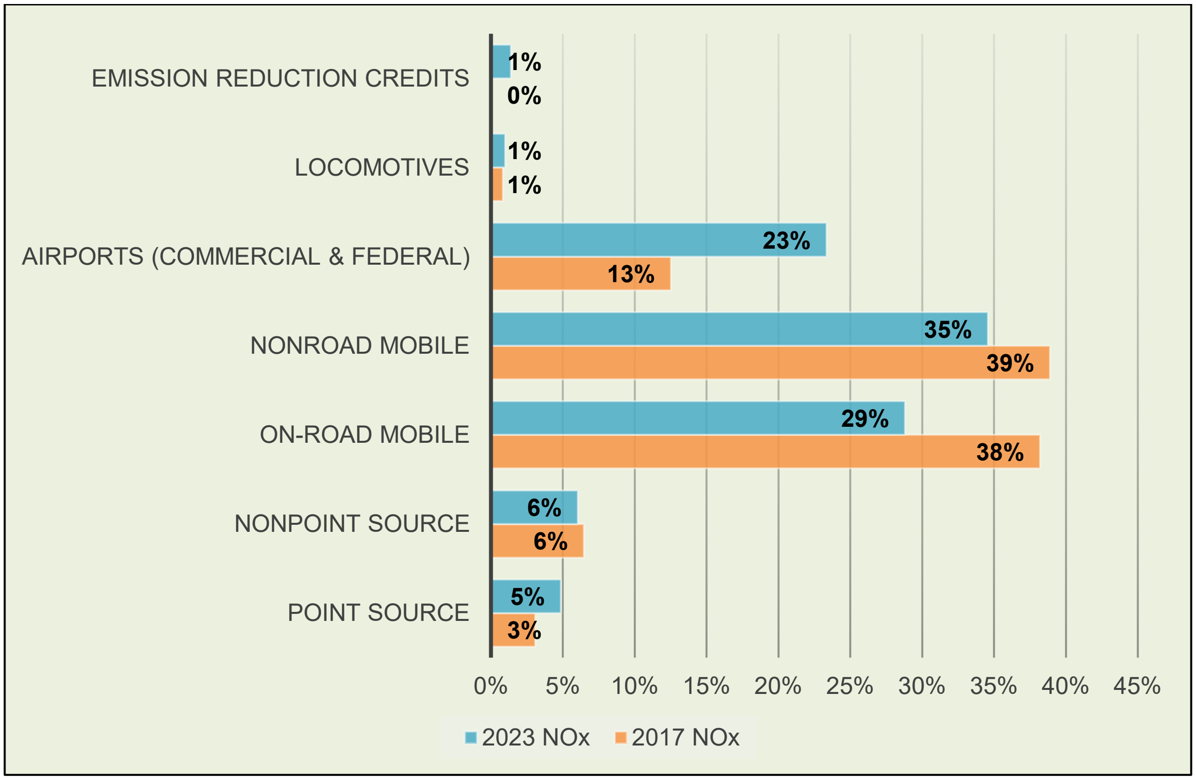


Figure 2. Comparison of NO_x Emissions Inventories for 2017 and 2023 by Percent for Each Emissions Category.

In contrast, as displayed in Table 2, the nonpoint sector is the dominant source of anthropogenic VOCs in the 2017 and 2023 emissions inventories, followed by on-road and nonroad mobile source categories. Slight emissions increases are projected for the point, nonpoint, nonroad mobile and airport source categories for 2023. Emissions decreases in the on-road source category will offset these emissions increases, resulting in a small decrease in total emissions (4.25 tpd VOC). The 2023 VOC emissions inventory does not include reductions from any new local control measures.

Table 2. Summary of HA 212 Ozone Season Weekday VOC Emissions (tpd)

Source Category	2017 VOC	2023 VOC
Point source	1.25	1.32
Nonpoint source	56.05	58.29
On-road mobile	24.43	17.01
Nonroad mobile	24.03	24.17
Airports (commercial & federal)	1.94	2.62
Locomotives	0.04	0.03
Emission Reduction Credits	—	0.05
Total	**107.73**	**103.49**

Figure 3 compares each source category's relative percent of total emissions inventories for both 2017 and 2023.

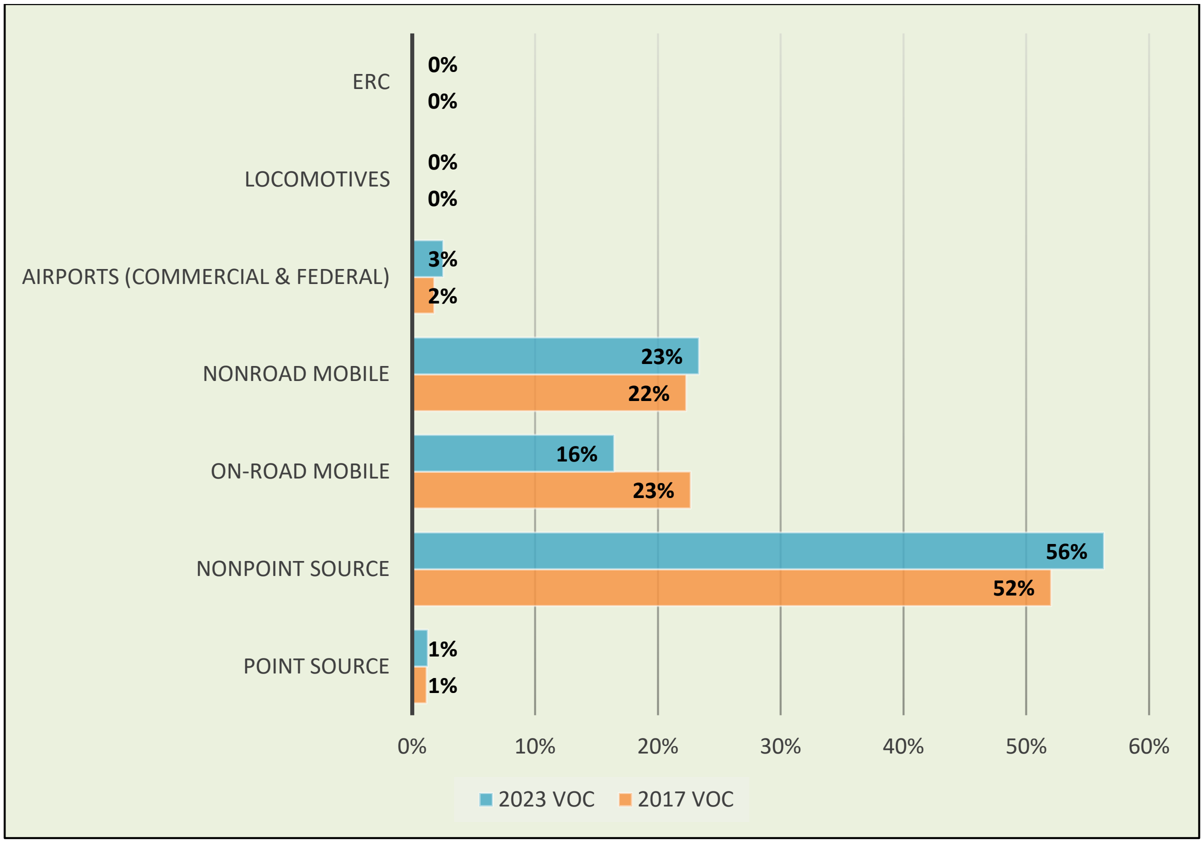


Figure 3. Comparison of VOC Emissions Inventories for 2017 and 2023 by Percent for Each Emissions Category.

2.3.1 Biogenic Emissions

Biogenic emission sources produce VOCs from vegetation and soils such as trees, grass, and crops. Additionally, soils produce a nominal amount of NO_X emissions. Biogenic emission sources produce VOCs from vegetation and soils such as trees, grass, and crops. Additionally, soils produce a nominal amount of NOx emissions. The Biogenic Emission Inventory System (BEIS) estimates natural VOC emissions from vegetation and NOx from soil. Built into the Sparse Matrix Operator Kernel Emissions (SMOKE) processing system, BEIS is driven by gridded, hourly ambient meteorology and land cover data from the Biogenic Emissions Landuse Database (BELD). BELD data provide distributions of hundreds of vegetation classes at 1 km resolution over most of North America.

Three versions of BEIS were developed and applied during the evolution of the EPA 2016 emissions modeling platform used to support modeling for DAQ's moderate ozone attainment plan. BEIS4/BELD6 is the latest version, released in mid-2022. Each of these BEIS versions result in substantially different estimates in biogenic VOC emissions in Clark County. While modeled biogenic NOx and VOC emission rates have trended downward with succeeding versions, the huge range of emission rates among these versions (by factors of 4 to 10+) illustrates the uncertainty in estimating desert biogenic emissions and related vegetative characterization over just the last few years. DAQ concludes that there is far too much uncertainty in the biogenic models to know whether any of them appropriately estimate rural and urban VOC emissions in the desert environment of the southwestern U.S. As described in Section 4.3.5, DAQ adopted BEIS4/BELD6 and processed biogenic emissions on the 36, 12, and 4 km resolution modeling grid system for the entirety of the April-August 2016 modeling period.

Table 3 lists biogenic NO_X and VOC emissions for an average ozone season day in tpd within the HA 212 portion of the 4 km Clark County grid. Values in the table were developed by overlaying a cell mask defining the irregular shape of the HA 212 area onto the 4 km modeling grid (301 total grid cells), and averaging NO_X and VOC emissions over the entire month of July 2016 to represent an ozone season day. Biogenic emissions are held constant between 2016 and 2023.

Table 3. HA 212 Biogenic Emissions for a 2016 Average Ozone Season Day (tpd)

Pollutant	Biogenic Emissions
NO_X	1.0
VOC	22.4

3.0 MONITORING NETWORK

DAQ will continue to characterize ambient air quality in HA 212 by operating a network of ambient air monitoring stations to comply with EPA requirements and guidance. 40 CFR Part 58 (including Appendices A–E) defines the requirements for the 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 that are designed to monitor ambient air concentrations of ozone.

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; instead, SPMs must comply with Appendix A of Part 58. To obtain specific, targeted information and maintain flexibility, DAQ does not operate SPMs in full compliance with 40 CFR Part 58, Appendix E, Sections 2, 3, 4, 5, 6, or 9. Table 4 lists the current monitoring sites in HA 212.

Table 4. Ozone SLAMS Monitoring Sites in HA 212

EPA AQS Site ID	Site Name	Street Address	City	Current Status
32-003-0540	Jerome Mack	4250 Karen Ave	Las Vegas	Active as of Aug. 27, 2010
32-003-0043	Paul Meyer	4525 New Forest Dr	Las Vegas	Active as of Jan. 1, 2003
32-003-0071	Walter Johnson	7701 Ducharme Dr	Las Vegas	Active as of Jan. 1, 2003
32-003-0073	Palo Verde	126 S. Pavilion Center Dr	Las Vegas	Active as of Jan. 1, 2003
32-003-0075	Joe Neal	6076 Rebecca	Las Vegas	Active as of Jan. 1, 2003
32-003-0298	Green Valley	298 North Arroyo Grande	Henderson	Active as of June 4, 2015
32-003-0044	Mountains Edge Park	8101 Mountains Edge Pkwy	Las Vegas	Active as of Sept. 29, 2020
32-003-0299	Liberty High School	3700 Liberty Heights Ave	Henderson	Active as of May 1, 2021
32-003-2003	Walnut Community Center	3075 N Walnut Rd	Las Vegas	Active as of June 1, 2021

Note: AQS = Air Quality System.

DAQ is required to submit an annual network plan to EPA for approval. EPA approved DAQ's 2023 network plan on October 30, 2023. The most recent plan was submitted to EPA in June 2024 (DES 2024) and is awaiting EPA approval.

Figure 4 shows the nine monitoring stations listed in Table 4, as well as others located throughout Clark County.

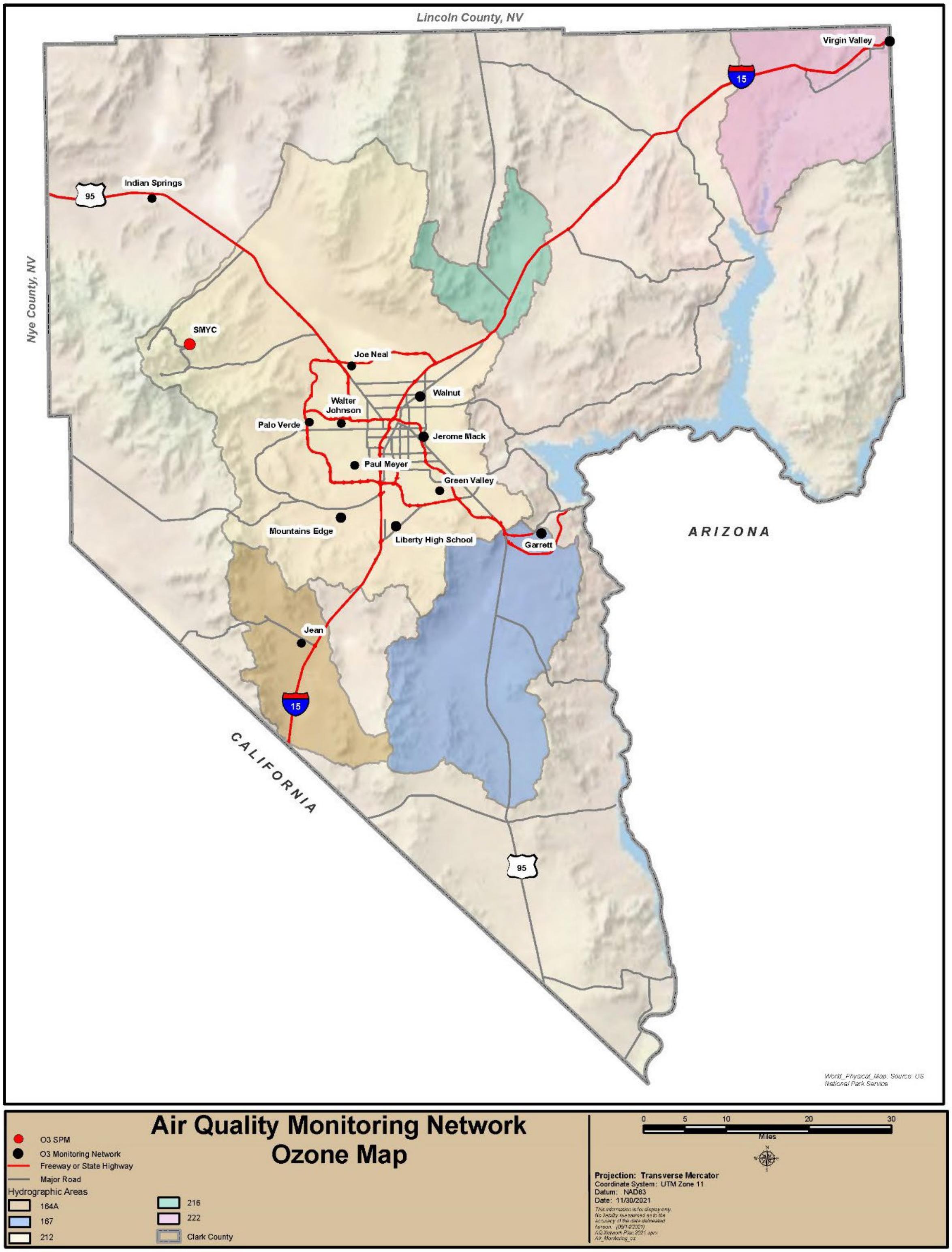


Figure 4. Clark County Ozone Monitoring Stations.

The Spring Mountain Youth Camp (EPA AQS Site ID 32-003-7771) is operated as a nonregulatory SPM monitoring site, as described in the annual network plan. This monitor is not used for NAAQS concentration monitoring, but provides data on stratospheric intrusions and pollutant mixing heights and assists with model validation.

DAQ stores data from these monitors electronically on a data-logger at each monitoring site, then retrieves the data wirelessly and stores them electronically on department servers. DAQ transmits the data to EPA's AQS database after ensuring the following quality control and assurance requirements for ozone have been met:

- > 75% (average) daily maximum and 75% completeness for scheduled sampling days in a calendar year;
- $\geq$ 75% of hours in an 8-hour period; and
- At least 18 of 24 running 8-hour averages.

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

DAQ collects and verifies ozone monitoring data under an EPA-approved Quality Management Plan and a Quality Assurance Project Plan for criteria pollutant and NCore monitoring. DAQ also follows EPA's guidance in the *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II* (EPA 2017a), available at https://www.epa.gov/sites/production/files/2020-10/documents/final_handbook_document_1_17.pdf. 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 ATTAINMENT DEMONSTRATION

Section 182(b)(1)(A) of the Act requires that a moderate area attainment plan submission include a demonstration that the plan will achieve attainment with the NAAQS by the attainment date (42 U.S.C. 7511a). EPA's 2015 Ozone NAAQS Implementation Rule (40 CFR Part 51.1308) requires that this attainment demonstration use photochemical grid modeling that meets the modeling guidelines in 40 CFR Part 51, Appendix W and includes inventory data, modeling results, and an emissions reduction analysis.

DAQ's photochemical modeling is based on EPA's 2016v2 modeling platform, which includes Comprehensive Air Quality Model (CAMx)-ready model inputs for emissions, meteorology, initial/boundary conditions, and other ancillary datasets. In the modeling, DAQ used 2016 for the historical base year and 2023 for the future base planning year (i.e., the attainment year). The modeling included EPA input datasets for two nested grids—36US3, covering North America, and 12US2, covering the conterminous US—and a third grid (CC4c2) with 4-km grid spacing covering the entirety of Clark County and portions of surrounding areas in southern Nevada, northwestern Arizona, and southeastern California.

The following sections provide a summary of the ozone trends in HA 212 and information on the modeling analysis, including summaries on model selection, model validation, emissions and meteorological inputs, control measures included in the modeling, a weight of evidence analysis, and model results. Attachment B provides the complete analysis.

4.1 OZONE TRENDS

As Figure 5 illustrates, ozone design values (i.e., the fourth highest daily maximum 8-hour average concentration, averaged over a three-year period) for Clark County, including HA 212, showed a steady decline between 2007 and 2010. Since 2010, design values within the county have ranged between a low of 0.073 ppm and a high of 0.078 ppm (73 and 78 parts per billion (ppb), respectively).

Since its designation as a moderate ozone nonattainment area, HA 212's design values have continued to show concentrations above the 2015 ozone NAAQS maximum permissible concentration of 0.070 ppm on a three-year average of the annual fourth-highest daily maximum 8-hour average concentration. Figure 6 shows design values for monitors within HA 212. (Mountain's Edge began operating in 2020; Liberty High School and Walnut Community Center began operating in 2021.)

Because attainment cannot be demonstrated based on historical design values, DAQ performed modeling to identify contributions to ozone concentrations and study the effectiveness of various control measures on future projected design values.

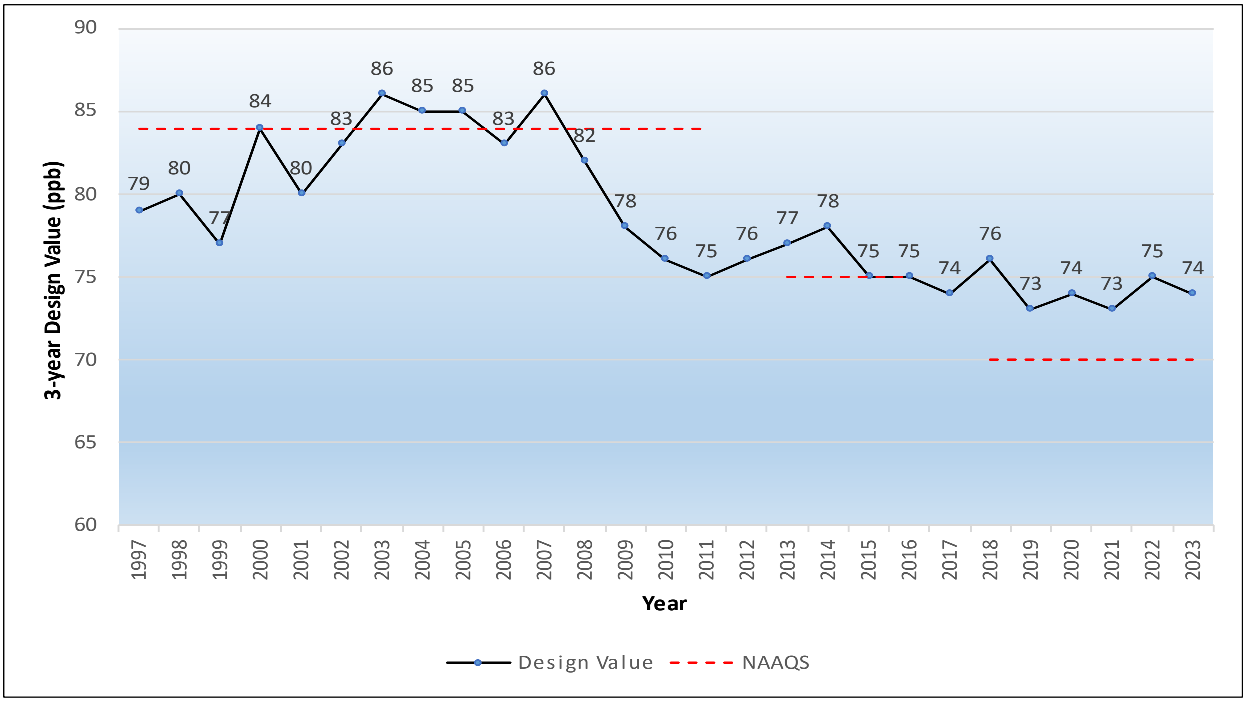


Figure 5. Clark County 8-hour Ozone Design Values (2000-2023).

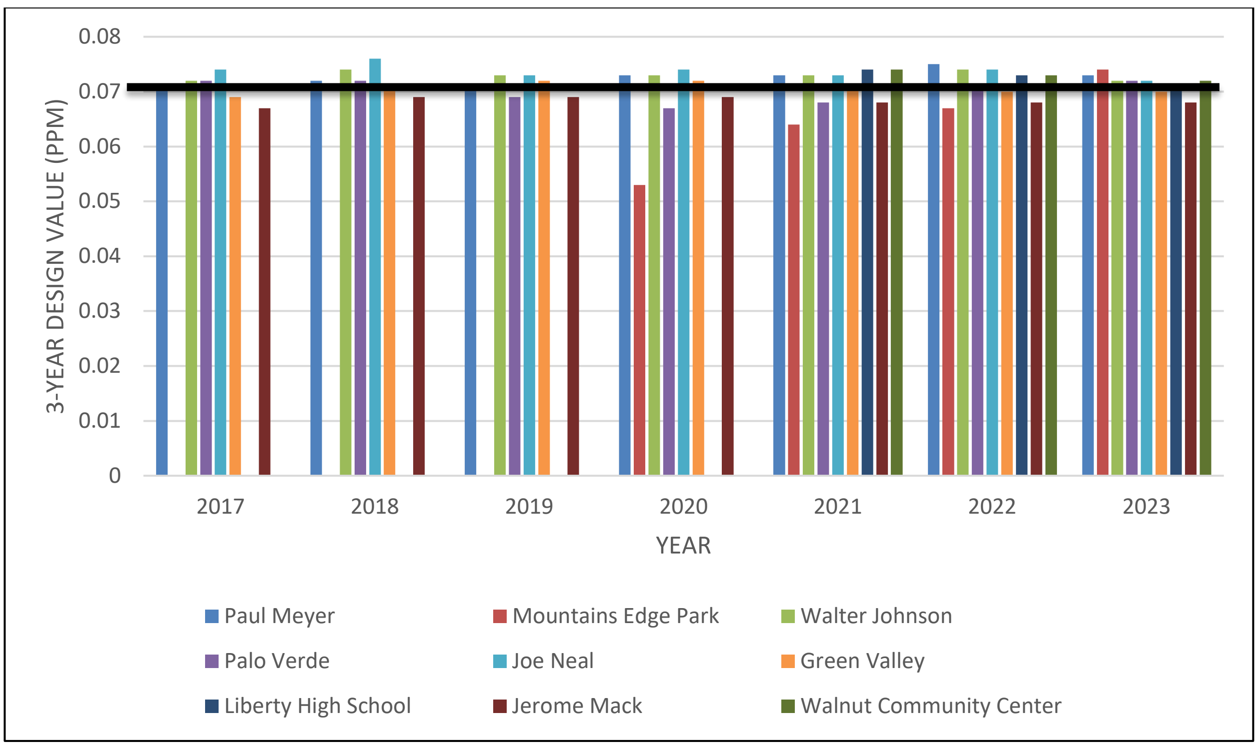


Figure 6. HA 212 Ozone Design Values (ppm) 2017-2023 for each Monitoring Site.

4.2 ATTAINMENT MODELING RESULTS

Photochemical grid modeling using CAMx (as described in Attachment B and summarized in Section 4.3) predicts no exceedances of the 2015 ozone NAAQS in the 2023 future base case analysis, which was conducted without considering any additional control measures. The highest predicted 2023 future design value is 69 ppb at the Joe Neal monitoring site. Reductions in transported, on-road mobile source emissions from California are predicted to allow HA 212 to achieve attainment without additional local control measures.

Following implementation of four Control Technology Guideline (CTG) RACT regulations[3] and other potential local control measures,[4] CAMx modeled continued attainment with the 2015 ozone NAAQS with a reduced 2023 predicted design value of 68.8 ppb at Joe Neal. Emissions reductions estimated for this modeling simulation were based on the 2016v2 EMP; thus they differ from the 15% ROP analysis, which is based on EPA's 2016v3 EMP and emissions reductions occurring in 2026 rather than 2023.

Table 5 lists modeled 2023 design values with and without added control measures for each monitoring site. All values are below the 2015 ozone NAAQS of 70 ppb.

Table 5. 2023 CAMx Modeled Design Values for HA 212 Monitoring Sites With and Without Additional Control Measures

Monitor Site ID	Site Name	2023 Design Value: No Added Emissions Controls (ppb)	2023 Design Value: Added Control Measures[1] (ppb)	Difference (ppb)
320030022	Apex	65.2	65.2	0.0
320030023	Mesquite	57.2	57.2	0.0
320030043	Paul Meyer	67.7	67.5	-0.2
320030071	Walter Johnson	67.9	67.5	-0.4
320030073	Palo Verde	67.2	66.9	-0.3
320030075	Joe Neal	69.0	68.8	-0.2
320030298	Green Valley	67.3	67.1	-0.2
320030540	Jerome Mack	64.1	64.0	-0.1
320030601	Boulder City	61.5	61.5	0.0
320031019	Jean	63.9	63.9	0.0
320032002	J.D. Smith	67.3	67.1	-0.2
320037772	Indian Springs	62.3	62.2	-0.1

[1] Control measures included in modeling were four CTG RACT rules (AQRs 104–107 at 3% max VOC concentration) and two OTC model rules (consumer products (Phases I–IV) and AIM coatings (Phases I–II)), totaling an 18% emissions reduction in the modeled future nonpoint solvent sector emissions inventory.

[3] AQR 104 for industrial cleaning solvents; AQR 105 for metal solvent degreasers; AQR 106 for graphic arts; and AQR 107 for cutback asphalt.

[4] Ozone Transport Commission (OTC) model rules for consumer products (Phases I–IV) and for architectural and industrial maintenance (AIM) coatings (Phases I–II).

CAMx modeling showed that natural and transported emissions are the primary contributors to ambient ozone concentrations in HA 212 and that implementation of additional control measures would decrease the predicted 2023 design value concentration by less than 0.2% (0.02 ppb) despite an 18% VOC emissions reduction.

EPA's own modeling for interstate transport is consistent with this attainment demonstration, further supporting the conclusion that HA 212 can model attainment with the 2015 ozone NAAQS by the 2024 attainment date without the need for additional local emissions reductions. Specifically, EPA's initial (2016v2) and final (2016v3) interstate transport modeling analyses project average design values consistent with CAMx attainment modeling. These models show that HA 212 could attain the 2015 ozone NAAQS by 2024, and that Californian and open-area land fires collectively contribute as much to Joe Neal's design value as Nevada. EPA's modeling also showed, consistent with DAQ's CAMx modeling, that most ozone is transported into the Las Vegas Valley.

The following table compares modeled ozone design values for each monitoring station using EPA and DAQ modeling, and shows all predicted concentrations are below the NAAQS.

Table 6. Comparison of 2023 Predicted Ozone Design Concentrations Using Three Different Photochemical Grid Models

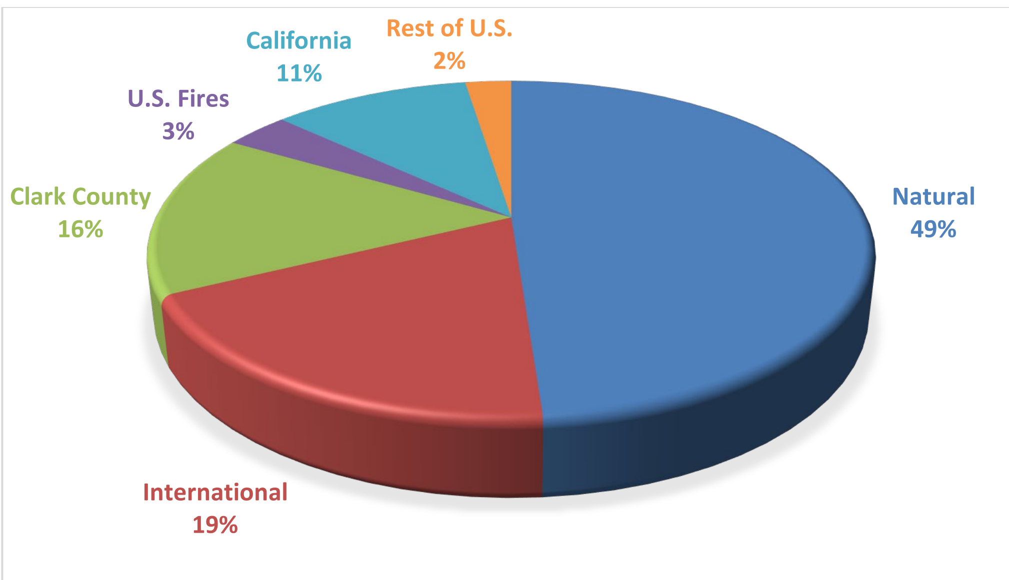
Monitor Site ID	Site Name	EPA 2016 v.2 (ppb)	EPA 2016v.3 (ppb)	DAQ CAMx Attainment Demonstration Model (ppb)
320030022	Apex	66.1	65.6	65.2
320030023	Mesquite	58.3	58.5	57.2
320030043	Paul Meyer	68.5	68.4	67.7
320030071	Walter Johnson	67.7	67.9	67.9
320030073	Palo Verde	67.7	67.9	67.2
320030075	Joe Neal	70.0	69.9	69.0
320030298	Green Valley	66.6	66.8	67.3
320030540	Jerome Mack	65.0	64.4	64.1
320030601	Boulder City	61.8	62.2	61.5
320031019	Jean	64.8	64.4	63.9
320032002	J.D. Smith	67.9	67.5	67.3
320037772	Indian Springs	65.1	63.8	62.3

DAQ used EPA's Software for Model Attainment Test - Community Edition to (1) shift the base year design value from 2016 to 2017 to simulate variability in design value predictions over the base year; and (2) exclude exceptional event-like days in attainment year design value projections. Lower design values are predicted for both scenarios at all monitoring sites. For Joe Neal, using 2017 as the base year lowered the 2023 predicted average design value to 68.4 ppb. Removing wildfire-influenced days eliminated modeled exceedances of the 2015 ozone NAAQS in the base year and resulted in a predicted 2023 average design value of 67.5 ppb at Joe Neal.

Finally, DAQ adjusted 2000–2022 ozone design value trends for meteorological influences, beginning in 2016, with and without removing wildfire-influenced days. The analyses show that without adjusting for meteorology, ozone trends over the past ten years have flattened despite substantial

NO_x and VOC emissions reductions (56% and 26%, respectively) over the last seven years. Removing wildfire-influenced days, however, consistently reduced predicted design values by 1–5 ppb between 2016 and 2023. Conversely, adjusting the trends for meteorology shows wide fluctuations in predicted year-to-year ozone design values, with potential values exceeding the 2015 ozone NAAQS in some instances. This demonstrates that meteorology and wildfire activity may play a larger role than local control measures in achieving attainment or continuing nonattainment (see Attachment I for more information on wildfire atypical event analyses).

The overall findings of these modeling analyses are consistent with source apportionment modeling, which suggests that external, uncontrollable factors significantly impact ambient ozone concentrations in HA 212. Source apportionment modeling of the 2023 future base case shows that Clark County's local emissions contribute only 11 ppb (16%) to the total 69 ppb design value at Joe Neal. Other significant contributors are natural emissions (e.g., lightning, biogenic and oceanic sources), international transport, and transport of anthropogenic emissions from upwind California monitoring sites located within the Mojave Desert. Figure 7 displays the relative contributions of different geographic regions to the 2023 base case projected design value at Joe Neal.



Note: Natural emissions include lightning and biogenic & oceanic emissions.

Figure 7. Percent Contribution by Region to Joe Neal 2023 Base Case Projected Design Value (69 ppb).

As shown, international emissions contribute 19% to the modeled design value. Section 179B(a) of the Act provides that EPA shall approve an implementation plan revision when the plan meets the requirements of the Act and demonstrates that it is adequate to attain and maintain the NAAQS but for international emissions. The source apportionment analysis satisfies this demonstration.

The accuracy of these design value predictions relies on the accuracy of the regional anthropogenic emissions inventory, influence of wildfires, and chemistry and dispersion patterns that characterize transport in CAMx simulations. Source apportionment modeling further showed that Clark County emissions resulted in a fairly balanced mix of NO_x- and VOC-sensitive ozone production over the top 10 simulated days, although with some substantial variations day-to-day. This is typical of a local "transitional" regime, where ozone responds to changes in both NO_x and VOC.

Because local emissions are a small contributor to ambient ozone concentrations and 84% of sources are uncontrollable, there are few opportunities to generate local emissions reductions that will produce a sizable effect on the predicted ozone design value. The following figures show the relative size of Clark County's anthropogenic contributions by source category compared to the 2023 predicted design value at Joe Neal (assuming solvent emissions are nonpoint sources).

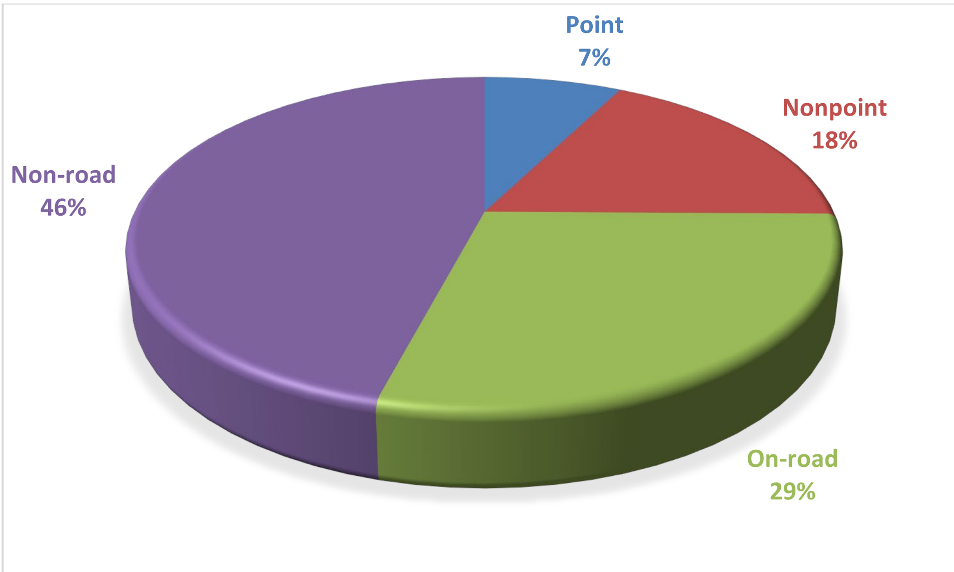


Figure 8. Percent Contribution by Source Category of Clark County's Total Contribution (11 ppb) to the 2023 Predicted Design Value for HA 212.

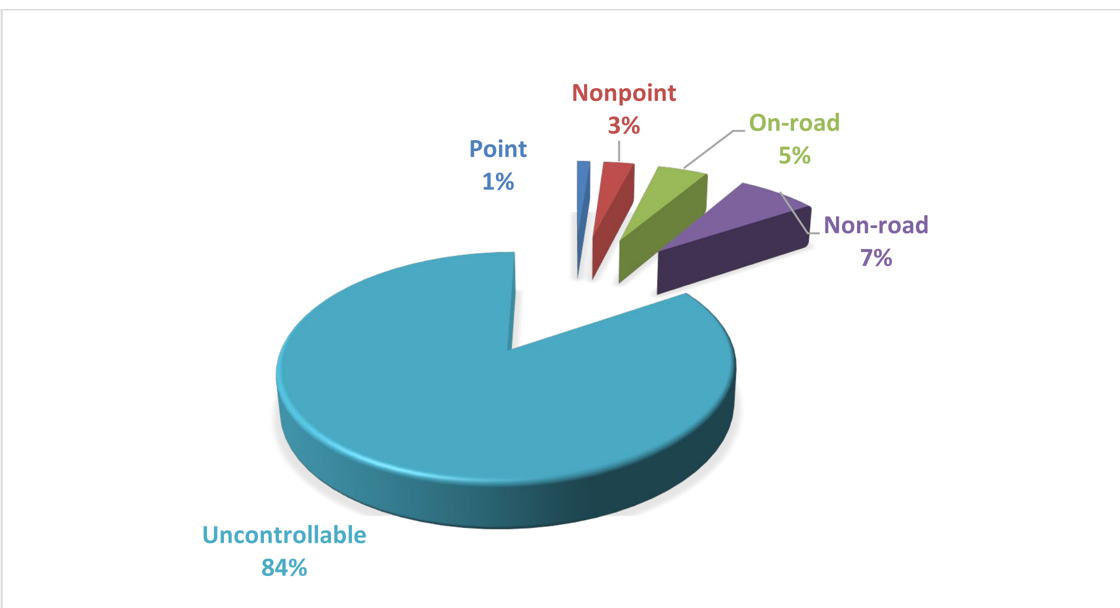


Figure 9. Joe Neal's 2023 Base Case Projected Design Value (69 ppb), Including a Parsing of Clark County's 16% (11 ppb) Anthropogenic Contribution.

These figures suggest there is little opportunity for DAQ to adopt point (stationary) source control measures to reduce ambient ozone concentrations in HA 212. Even emissions reductions from larger contributors (i.e., on-road and non-road source categories), which collectively contribute only 8 ppb (12%) to the 2023 predicted design value of 69 ppb, may not provide opportunities for emissions reductions that would have sizable effects on predicted ozone design values.

4.3 MODEL DESIGN

This section summarizes CAMx model design and modeling.

4.3.1 Model Selection

When EPA reclassified HA 212 to a moderate ozone nonattainment area, DAQ was faced with developing an attainment demonstration to meet a retroactive attainment plan submission deadline. DAQ therefore opted to use readily available, EPA-approved models and datasets to conduct photochemical grid modeling for the attainment demonstration. The selected models included CAMx with extensions in conjunction with the SMOKE model, the Weather Research and Forecasting (WRF) Model, BEIS, and MOVES3 (Section 2.0 in Attachment B describes each model in detail).

CAMx simulates the evolution of pollutant ambient air concentrations in response to variations in emissions and weather over many temporal and geographic scales. The model also allows users to conduct source apportionment studies to identify contributions to ambient ozone concentrations. As described in Attachment B, it satisfies all of EPA's model selection criteria and has been approved for use in numerous ozone and particulate matter SIPs throughout the United States; moreover, EPA has used CAMx to support its own regulatory initiatives. CAMx showed that no additional local control measures are needed to model attainment with the 2015 ozone NAAQS by the 2023 attainment year. DAQ also modeled emissions reductions from potential control measures to demonstrate their effectiveness in further reducing air pollution by the 2023 attainment year.

4.3.2 Modeling Base Year and Period

EPA advises that the modeling period include air quality that is representative of the base year design value and close in time to the NEI. In addition to other criteria, modeling should include periods of both high and low concentrations and simulate a variety of weather impacts on pollutant ambient air concentrations (EPA 2018). DAQ selected the period of May through August for attainment modeling because ozone values in HA 212 are then at their highest levels each year.

For the base year, DAQ selected 2016 because the 2016v2 EMP provides a complete set of model-ready inputs for the summer of 2016, emissions projections for 2023, and a robust foundational database from which to develop inputs for the local Clark County modeling domain. Given the retroactive deadline for the attainment plan submission, using the 2016 base year from the 2016v2 EMP streamlined data inputs for attainment modeling.

Using 2016 also met EPA's recommendations for the base year. Although the most recent NEI occurred in 2020, the data were impacted by the Covid-19 pandemic, making the 2017 NEI a more reliable assessment of normal emissions. The 2016 base year is close in time to the 2017 NEI. In addition, the 2016v2 EMP used a 2016 base year that was largely based on the 2017 NEI (with some recent adjustments). The year 2016 also includes the largest number of exceedance days at the peak monitoring site (Joe Neal) compared to more recent years, and the 2016 design value for HA 212 (75 ppb) is close to the attainment base year's design value (74 ppb) and the 2022 design value (75 ppb). More recent years have also seen increased emissions from wildfires, making them less representative of local air quality impacts. The base year of 2016 contains more days influenced by local or typical regional transport influences. For these reasons, the 2016 base year was appropriate.

4.3.3 Modeling Domain

For the modeling domain, DAQ used the same 36US3 and 12US2 grids used by EPA in the 2016v2 EMP, but added a 4-km grid (CC4c2) covering Clark County, Nevada. The vertical grid structure was defined by the three-dimensional datasets EPA developed for the 2016v2 EMP, which in turn was based on WRF simulations EPA developed to drive the photochemical grid modeling system. Attachment B provides detailed information on grid parameters and resolution.

4.3.4 Base Year Meteorological Inputs

DAQ used preexisting CAMx meteorological inputs for the 36US3 and 12US2 grids from the 2016v2 EMP. CAMx meteorological inputs for the CC4c2 grid were developed from a separate 2016 WRF simulation EPA performed. The most recent version of WRFCAMx (v5.2) was used to map EPA's WRF meteorological output data onto the CC4c2 domain (App. B, Figures 4-2 and 5-1).

The EPA WRF 4-km simulation characterized meteorological conditions well overall and met statistical benchmarks against observed conditions: specifically, the WRF simulations performed well in replicating surface temperature, wind, and vertical profiles for temperature and humidity. While the WRF simulation tended to overstate surface humidity, that variable has the least influence on CAMx ozone model performance; however, some larger wind and temperature errors occurred in modeling high ozone periods, particularly on July 1–2, resulting in poorly simulated convection activity.

To address this shortcoming, DAQ conducted a short WRF simulation based on numerous WRF comparison studies conducted for the Western Regional Air Partnership (WRAP) and the state of New Mexico. The revised simulation performed well in considering winds, temperature, humidity, and rainfall patterns, so DAQ used this to bridge the July 1–2 period in the model. These simulation inputs resulted in a drier, less cloudy, warmer environment within the photochemical model. Even if overstated, these conditions maximized the potential for generating higher ozone on locally driven ozone exceedance days.

WRF output was processed to CAMx-ready inputs on the CC4c2 modeling grid using the WRF-CAMx interface program. WRF output to model-ready inputs was processed for the Community Multiscale Air Quality System model using the Meteorology-Chemistry Interface Processor. Sections 5.0 and 7.0 of Attachment B describe the assessment of meteorological inputs.

4.3.5 Base Year and Projected Emissions Inventory

For the base year, DAQ used the 2016v2 EMP developed by EPA (2016fj; 2023fj) for point source, nonpoint source, on- and off-road, and open area land fires, but made refinements for county-specific data on the CC4c2 grid. The 2016v2 EMP includes a full suite of the base year (2016) and future year (2023) emissions inventories, updated with new VCP estimates, ancillary emissions data, and scripts and software for preparing emissions to support air quality modeling. EPA based 2016v2 EMP estimates on updated MOVES3.1 mobile source modeling, the 2017 NEI's nonpoint source inventory, Western Regional Air Partnership's oil and gas inventory, and updated inventories for Canada and Mexico.

To estimate biogenic emissions, DAQ evaluated four different models: BEIS3.6/BELD4, BEIS3.7/BELD5, BEIS4/BELD6, and MEGAN3.2. They produced wide variations in estimated emissions, signifying an area of uncertainty in the model. After evaluating all models, DAQ elected to use the most recent BEIS4/BELD6 model; its estimated emissions agreed with EPA reports on biogenic emissions in the western U.S., and it was better at predicting ozone concentrations in base case configurations. To facilitate its use, EPA processed BELD6 vegetative cover datasets for the 12US2 and CC4c2 grids for use with BEIS4.

The 2016v2 EMP does not include NO_x emissions from lightning, so DAQ developed its own estimates using a CAMx processor called LNO_x. It uses WRF output fields defining convective activity (cloud top heights and convective available potential energy) to determine the location, timing, and frequency of lightning. The model then uses this information to generate three-dimensional NO_x emissions. LNO_x emissions are developed as virtual point sources over the 12US2 grid. Because lightning is a grid-independent point source (i.e., it does not occur in a set location), LNO_x simulated emissions into both the 12US2 and CC4c2 grids. The use of 12-km LNO_x emissions within the CC4c2 grid does not materially affect CC4c2 ozone results because LNO_x emissions are sparse in time and space.

DAQ also used the 2016v2 EMP to estimate 2023 emissions, with some exceptions. For biogenic emissions, fires (i.e., wildfires, prescribed burns, and agricultural burning), and LNO_x emissions, DAQ assumed that emissions were constant from 2016 through 2023. For aviation emissions, DOA provided 2023 projected emissions for commercial aviation; NAFB provided 2022 emissions, which DAQ projected to 2023. DAQ processed both commercial and federal aviation emissions from aircraft operations with SMOKE.

Table 7 shows the total county-wide emissions used in the attainment modeling demonstration. Section 6 of Attachment B provides information on the modeled emissions inventory.

Table 7. July Weekday Average Clark County 2016 and 2023 Anthropogenic NO_x and VOC Emissions by Sector

Source Category	2016 NOx (tpd)	2023 NOx (tpd)	2016 VOC (tpd)	2023 VOC (tpd)
Point source	14.6	9.7	2.1	1.8
Nonpoint source	4.0	4.1	57.0	60.8
On-road mobile	48.7	20.2	27.8	17.7
Non-road mobile	42.4	24.5	29.5	27.6
Airports (commercial & federal)	12.7	16.6	2.3	3.1
Locomotives	1.3	1.1	0.1	0.0
Fires	0.0	0.0	0.3	0.3
Total	**123.7**	**76.2**	**119.1**	**111.3**

4.3.6 Model Refinement

After preparing all the inputs for the model, DAQ ran a 2016 base case scenario to determine the model's suitability for the attainment demonstration. Due to a variety of factors (outlined in Attachment B), DAQ found that the base case model was insufficient to support regulatory analyses for the attainment demonstration. DAQ proceeded to conduct a series of additional sensitivity tests (SENS1-6), comparing changes in modeled responses to measured ozone concentrations. The following updates improved model performance:

- Elevating landing/takeoff operation emissions from Harry Reid International Airport to reduce the large NO_x burden in central Las Vegas;
- Including aerosols and related chemistry so the full effect from wildfires and large urban pollution plumes were properly characterized throughout the modeling domain;
- Using the BEIS4/BELD6 model on the 36US3, 12US2, and CC4c2 grids to replace the original BEIS3.7/BELD5 biogenic emissions from the 2016v2 EMP; and
- Applying an alternative set of 36US3 initial/boundary conditions derived from 2016 CAM-chem global chemistry model results.

The final sensitivity analysis ("Base2" in Attachment B) improved model performance in replicating ozone patterns from May through June while maintaining the same level of good performance for July and August; however, the model showed a tendency to overpredict ozone on non-peak days while continuing to underpredict ozone on the highest peak days. Also, the influence of biogenic emissions on desert environment conditions introduces a high level of uncertainty whether any of the biogenic models reliably estimate rural and urban VOC emissions within the Las Vegas Valley. Nonetheless, DAQ believes that ozone production from biogenic emissions in the desert environment are likely minimal given the very low isoprene concentrations measured during a 2021 field study (NOAA 2022).

The model underpredicted all of the 26 highest observed ozone days (exceeding 70 ppb) during the summer of 2016, with 8 days within 5 ppb and an average underprediction of approximately 10 ppb. Considering all high days, the average peak observation was 75.4 ppb versus an average paired prediction of 64.2 ppb in the final base case (absolute and normalized bias of -11.2 ppb and -15%, respectively). Results were similar when considering only days not influenced by wildfires. On those 15 days, the average peak observation was 74.2 ppb versus an average paired prediction of 64.4 ppb in the final base case (absolute and normalized bias of -9.8 ppb and -13%, respectively).

Comparing modeled values against the measured design value at each monitoring site shows that, even though the model underpredicted ozone concentrations on the highest ozone days, CAM_x performs well in the modeled spatial pattern of high and low ozone concentrations. Therefore, the model adequately replicates the processes that form and disperse ozone throughout the Las Vegas Valley with well-represented relative response factors for days with predicted concentrations greater than 60 ppb. DAQ concluded that the revised model (BASE2) is suitable for use in the attainment demonstration.

4.3.7 Future Year Base Case Modeling

DAQ used the final 2016 base case CAMx configuration to model attainment, using anthropogenic emissions inputs for each of the three modeling grids (36US3, 12 US2, CC4c2) and a model configuration identical to SENS6/BASE2. The 2023 emissions inventory reflected local, state, and national rules currently in effect and total estimated emissions for HA 212 of 103.49 tpd VOC and 66.47 tpd NO_x, which differ from the values in Table 7 because the table reflects emissions for all of Clark County, not just the nonattainment area (HA 212).

EPA has procedures for predicting future design values from modeling results using the modeled attainment test. It provides Software for Model Attainment Test - Community Edition for conducting these procedures and for scaling base year ozone design values to future year values at each monitoring site while considering interannual variability. EPA also allows air pollution control agencies to exclude some exceptional event-like days from modeled design value projections.

Following these procedures, DAQ scaled the 2016 base year ozone design values to 2023 future year ozone design values at each monitoring site. All predicted design values were below the 2015 ozone NAAQS. DAQ determined that four monitors (Joe Neal, Walter Johnson, Paul Meyer, and Green Valley) were critical sites for determining 2023 design value projections based on previous exceedances recorded at each site, with Joe Neal showing the highest predicted design value for 2023 (69 ppb). See the table in Section 4.2 above for design value predictions without additional control measures for each monitoring station.

4.3.8 Control Measures

In addition to modeling base case future year emissions, DAQ modeled the effect of achieving the required 15% ROP for VOC emissions reductions, which include CTG RACT and additional potential local control measures (i.e., Consumer Products and Architectural Industrial Maintenance Coatings rules) on future design value projections. Implementation of these control measures lowered the projected design values at the monitoring stations by 0-0.4 ppb from the 2023 future base case discussed in Section 4.3.7. See Table 5 in Section 4.2 for design value predictions with additional control measures for each monitoring station.

As modeled, a 15% ROP in 2023 included 19.42 tpd of VOC emissions reductions from the 2017 base year VOC inventory, which reflected 4.29 tpd of VOC emissions reductions from existing local and federal control measures, 5.69 tpd of VOC emissions reductions from CTG RACT regulations, and 9.44 tpd of VOC emission reductions from additional local control measures.[5] As Table 8 shows, total existing emissions reductions plus additional local control measures were modeled as a net 18% of VOC emissions reduction compared to the 2017 base year emission inventory; however, this analysis does not reflect the ROP reductions in Section 8 proposed for implementation in 2026.

5 DAQ completed this modeling before updating the emissions inventory for use in the ROP analysis, which is why the modeled emissions reductions and the calculated emissions reductions to meet ROP differ. The difference is not material to the attainment demonstration modeling, which models attainment without these control measures.

Table 8. HA 212 2017 and 2023 VOC Emissions (tpd) by Sector, Emission Reductions by Control Measure, and Net Change in Emissions from 2017–2023 for 15% ROP Scenario

Description	2017	2023	Difference	Percent Difference
VOC Emissions by Sector				
Point source	1.25	1.32	0.07	5.6%
Nonpoint source	56.05	58.29	2.24	4.0%
Onroad mobile	24.43	17.01	-7.42	-30.4%
Nonroad mobile	24.03	24.17	0.14	0.6%
Airports (commercial & federal)	1.94	2.62	0.68	35.1%
Locomotives	0.04	0.03	-0.01	-25.0%
Subtotals	*107.73*	*103.44*	*-4.29*	*-4.0%*
RACT VOC Emission Reductions				
Solvent Metal Cleaning (Degreasers)		0.66		
Graphic Arts		1.43		
Cutback Asphalt		0.78		
Industrial Cleaning Solvents		2.82		
Subtotals		*5.69*		
VOC Emission Reductions for Planned Local Control Measures				
Consumer Products OTC Model Rules Phase IV		6.74		
AIM Coatings OTC Model Rules Phase II		2.70		
Subtotals		*9.44*		
Net VOC Emissions				
Totals	**107.73**	**88.31**	**-19.42**	**-18.0%**

To simulate these emissions reductions, DAQ reduced nonpoint solvent sector emissions in the 2023fj emissions inventory, assuming all reductions from CTG RACT occurred within HA 212 and the additional local control measures occurred throughout Clark County. DAQ repeated the 2023 future year base case CAMx run, but replaced 2023 nonpoint solvent sector emissions on the CC4c2 grid with revised emissions that reflected reductions from control measures. No other inputs were modified, and DAQ ran only the 12US2/CC4c2 two-way nested grids using the 2023 12US2 future base case boundary conditions extracted from the 36US3 grid.

The revised modeling continues to show HA 212 in attainment by the attainment date, with a high design value of 68.8 ppb at the Joel Neal monitoring station.

5.0 CONTROL STRATEGY

The 2015 Ozone NAAQS Implementation Rule requires areas classified as “moderate nonattainment” to submit an attainment demonstration that provides for emissions reductions (i.e., a control strategy) as necessary to attain the NAAQS by the attainment date (40 CFR Part 51.1308(a)). All control measures needed for attainment must be implemented as expeditiously as practicable, but no later than the beginning of the ozone season in the attainment year (83 FR 63033–63034).

A control strategy is the suite of existing and future control measures leading to permanent and enforceable emissions reductions that DAQ will implement in the nonattainment area to comply with national, regional, state, and local regulations. The attainment demonstration modeling analysis evaluated the potential effects of existing control measures and demonstrated that no additional control measures are needed to achieve timely attainment for the HA 212 nonattainment area by the August 3, 2024, attainment date.

Specifically, DAQ’s attainment demonstration model predicts that future 2023 base case design values, without additional control measures, are below 70 ppb at all monitoring stations. The highest predicted three-year design value is 69.0 ppb at Joe Neal. Table 9 displays projected design values.

Table 9. 2023 Predicted Future Design Values Based on Existing Control Measures

Monitoring Site ID	Site Name	2023 Modeled Design Value (ppb) With Existing Control Measures (base case)
320030022	Apex	65.2
320030023	Mesquite	57.2
320030043	Paul Meyer	67.7
320030071	Walter Johnson	67.9
320030073	Palo Verde	67.2
320030075	Joe Neal	69.0
320030298	Green Valley	67.3
320030540	Jerome Mack	64.1
320030601	Boulder City	61.5
320031019	Jean	63.9
320032002	J.D. Smith	67.3
320037772	Indian Springs	62.3

The source apportionment study showed that 13 ppb (19%) of the modeled design value is attributable to international pollution, while local emissions contribute only 11 ppb (16%) to the 69.0 ppb modeled design value. Nevertheless, DAQ intended to implement six additional control measures to meet its CTG RACT and 15% ROP attainment plan requirements. These control measures would have resulted in reductions in the nonpoint solvent sector of the 2023fj EMP emissions inventory and, in some cases, led to further reductions in modeled design values. Table 10 shows that modeled outcomes from implementing these six additional control measures display only slight (0–0.4 ppb) decreases in modeled design values. As required by the Act and to meet its CTG RACT and 15% ROP attainment plan requirements, DAQ implemented a total of 10 control measures, as described in Section 8.

Table 10. Predicted Design Value Following Implementation of CTG RACT and 15% ROP

Monitoring Site ID	Site Name	Design Value After CTG RACT +15% VOC ROP (ppb)	Differences from 2023 Base Case (ppb)
320030022	Apex	65.2	0.0
320030023	Mesquite	57.2	0.0
320030043	Paul Meyer	67.5	-0.2
320030071	Walter Johnson	67.5	-0.4
320030073	Palo Verde	66.9	-0.3
320030075	Joe Neal	68.8	-0.2
320030298	Green Valley	67.1	-0.2
320030540	Jerome Mack	64.0	-0.1
320030601	Boulder City	61.5	0.0
320031019	Jean	63.9	0.0
320032002	J.D. Smith	67.1	-0.2
320037772	Indian Springs	62.2	-0.1

This section outlines the existing, permanent, and enforceable control requirements that form DAQ's control strategy for the HA 212 nonattainment area and describes additional controls that will apply after the attainment date.

5.1 FEDERAL CONTROLS

EPA has adopted several national rules that do or will require VOC and NO_x emissions reductions from stationary and mobile sources. These rules provide emissions reductions between 2017 (base year) and 2024 (attainment year), which will provide ambient air quality benefits in HA 212.

5.1.1 Tier 3 Emission Standards for Vehicles and Gasoline Sulfur Standards

In April 2014, EPA finalized the Tier 3 Motor Vehicle Emissions and Fuel Standards Rule, which required production of cleaner vehicles and lower-sulfur fuel. The rule, which phases in between 2017 and 2025 (79 FR 23414), will reduce emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles. Tier 3 requires all passenger vehicles to meet an average standard of 0.03 gram/mile of NO_x. These standards for light-duty vehicles are expected to reduce NO_x and VOC emissions by approximately 80% nationwide. Tier 3 also includes evaporative standards using onboard diagnostics that will reduce VOC emissions by 50% compared to Tier 2 requirements (81 FR 23417).

5.1.2 Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements

In January 2001, EPA issued a final rule for highway heavy-duty engines, a program that includes low-sulfur diesel fuel standards requiring reductions beginning in 2004 (66 FR 5002). This rule applies to heavy-duty gasoline and diesel trucks and buses. Fleet turnover will continue to reduce emissions from these mobile sources, and the MOVES emissions model accounts for continued emissions reductions from this program in future years.

EPA estimates the rule will result in a 40% reduction in NO_x from diesel trucks and buses nationwide. In December 2022, EPA issued a new rule (the "Clean Trucks Plan") that lowered the NO_x standard for heavy-duty engines to 0.035 milligrams/horsepower-hour (hp-h) beginning with model year 2027. Since these emissions reductions occur beyond the attainment date, DAQ did not consider the 2022 rule update in developing its control strategy.

5.1.3 Safer Affordable Fuel Efficient Vehicles Final Rule

In April 2020, EPA and the National Highway Traffic Safety Administration issued a final rule that requires automakers to improve fuel efficiency by 1.5% beginning in model year 2021 and continuing through model year 2026 (85 FR 24174). While the rule targets reductions in CO_2 emissions, it will reduce NO_x and VOC emissions as a co-benefit.

5.1.4 Clean Air Non-Road Diesel Rule

In June 2004, EPA issued the Clean Air Non-Road Diesel Rule (69 FR 38958), which applies to diesel engines used in such industries as construction, agriculture, and mining. It contains a cleaner fuel standard, similar to the highway diesel program. The new engine standards, based on engine horsepower, took effect starting in 2008, but equipment turnover will ensure continued emissions reductions from this category in future years.

5.1.5 Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles – Phase 2

In October 2016, EPA finalized changes to a federal rule to reduce greenhouse gas (GHG) emissions from medium and heavy-duty engines and vehicles (81 FR 73478). The rule sets GHG emissions standards for four regulatory categories of heavy-duty vehicles; it covers model years 2018–2027 for certain trailers, and model years 2021–2027 for semitrailer trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. Although this rule primarily targets GHG emissions, it will lower NO_x and VOC emissions over time due to fleet turnover.

5.1.6 Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards

In December 2021, EPA finalized changes to existing federal rules to reduce GHG emissions from cars and light trucks, including sport utility vehicles (86 FR 74434). The rule requires GHG emissions reductions starting with model year 2023, which will reduce NO_x and VOC emissions as a co-benefit. This rule applies nationwide and will ensure continued emissions reductions as the vehicle fleet turns over.

5.1.7 Control of Emissions for Nonroad Spark Ignition Engines and Equipment

In October 2008, EPA set emission standards for new nonroad spark ignition engines (73 FR 59034). Starting in 2011 and 2012, exhaust emissions standards apply for different sizes of new land-based, spark-ignition engines at or below 19 kilowatts (kW). These small engines are used primarily in lawn and garden applications, and emissions reductions will continue as engines are replaced.

5.1.8 Reciprocating Internal Combustion Engines Standards

EPA has issued multiple regulations that cover different types of reciprocating internal combustion engines (RICE):

- Existing, new, and reconstructed stationary RICE of 500 hp or more located at major sources (69 FR 33474).
- New and reconstructed stationary RICE located at area sources of HAP emissions, and new and reconstructed stationary RICE with a site rating of 500 hp or less located at major sources of HAP emissions (73 FR 3568).
- Existing stationary compression ignition (CI) RICE with a site rating of 500 hp or less located at major sources, existing nonemergency CI engines with a site rating higher than 500 hp located at major sources, and existing stationary CI RICE of any site rating located at area sources (75 FR 9648).
- Stationary spark ignition RICE located at area sources of HAP emissions, or those with a site rating of 500 brake-hp or less located at major sources of HAP emissions (75 FR 51570).

These regulations will continue to produce emissions reductions as old engines are rebuilt or replaced.

5.1.9 National Volatile Organic Compound Emissions Standards for Consumer Products

In 1998, EPA finalized 40 CFR Part 59, Subpart C under Section 183(e) of the Act. The rule requires manufacturers, importers, and distributors to limit the VOC content of consumer products. EPA estimated the final rule would reduce VOC emissions by 90,000 tpy nationwide (63 FR 48819).

5.1.10 Control of Hazardous Air Pollutants from Mobile Sources

This rule, also known as the Mobile Source Air Toxics (or MSAT2) Rule, requires refiners and importers to produce gasoline with an annual average benzene content of 0.62 volume percent or less beginning in 2011 (72 FR 8428; 73 FR 61358). EPA estimates that by 2030 this rule will have reduced total mobile source air toxics emissions by 330,000 tons and VOC emissions by over 1 million tons.

5.1.11 Emissions Standards for Locomotive Engines

On June 30, 2008, EPA promulgated regulations to reduce NO_x emissions from locomotive engines (73 FR 37096). The controls apply to all types of locomotives, including line-haul, switch, and passenger. Emissions standards for newly built engines phased in starting in 2009; longer-term standards for newly built locomotives took effect in 2015. EPA projects this rule will continue to reduce NO_x emissions through 2030.

5.1.12 NO_x Emission Standard for New Commercial Aircraft Engines

On June 18, 2012, EPA adopted emission standards for aircraft gas turbine engines with rated thrusts greater than 26.7 kilonewtons (77 FR 36342), used in commercial passenger and freight aircraft. The rule includes two new tiers of NO_x emissions standards, referred to as Tier 6 standards and Tier 8 standards. The Tier 6 standards became effective for newly manufactured aircraft engines beginning in 2013. EPA projected cumulative NO_x reductions associated with these standards to be about 100,000 tons from 2014 to 2030 (77 FR 36346).

5.2 EXISTING STATE CONTROL MEASURES

5.2.1 NRS 445B.780, Heavy-Duty Vehicle Program

NDEP and the Nevada Department of Motor Vehicles (DMV) jointly developed this rule to reduce motor vehicle-related pollution by limiting excessive tailpipe or smokestack emissions from any gasoline- or diesel-powered vehicle with a manufacturer's gross vehicle weight rating (GVWR) of 14,001 pounds (lb) or more.

Heavy-duty vehicles are pulled over for random roadside testing to determine if the exhaust from their vehicle exceeds state opacity standards. Violators are notified, and required to repair and retest the vehicle within 30 days. Fleets may request opacity testing in their fleet yard; if violations are found, fleet managers are notified and vehicles voluntarily repaired and retested.

5.2.2 NRS 445B.700-835, Inspection and Maintenance Program

NDEP and the Nevada DMV jointly developed this rule, administered by the DMV, to control vehicle emissions. The rule reduces motor vehicle-related NO_x and VOC through vehicle inspection and emissions-related repair. Emissions testing is required annually in Clark County before renewing a vehicle's registration. All gasoline-powered vehicles must be tested (with limited exceptions), as well as diesel-powered vehicles weighing up to 14,000 lb GVWR.

5.3 EXISTING LOCAL CONTROL MEASURES

5.3.1 AQR Section 0, "Definitions"

This section defines key terms used throughout the AQRs. DAQ amended it to include definitions for implementing new local control measures, which are discussed in Section 5.4.

5.3.2 AQR Section 12.0, "Applicability and General Requirements for Permitting Stationary Sources"

This section contains applicability and general requirements for permitted stationary sources. DAQ amended it to include a requirement for permitting a stationary source that is subject to a SIP regulation, requiring the source to obtain a minor source permit.

5.3.3 AQR Section 12.1, "Permit Requirements for Minor Sources"

This section requires all minor stationary sources to obtain a permit to construct and operate if they have the potential to emit 5 tpy or more of VOC or NO_x. Some emissions units at these minor stationary sources must comply with RACT requirements.

As part of this attainment plan, DAQ amended AQR Section 12.1 to revise definitions relevant to the implementation of new local control measures, which are discussed in Section 5.4. DAQ added a requirement to obtain a minor source permit if another AQR requires the stationary source to obtain that permit. AQR Section 102, which regulates gasoline dispensing facilities in Clark County, requires certain owners or operators to obtain a minor source permit. DAQ added a requirement that minor stationary sources located within a nonattainment area may be subject to additional requirements imposed to reduce the targeted pollutant(s).

AQR Section 12.11 requires owners or operators of a minor source that is a member of a specific source class and is subject to the permit requirements of AQR Section 12.1 to obtain an authority to operate under a general permit issued by the Control Officer.

5.3.4 AQR Sections 12.3–12.5, Addressing Permit Requirements for Stationary Sources

These sections require all major stationary sources to obtain a permit to construct and operate. AQR Section 12.3 requires some stationary sources in HA 212 to comply with the more stringent lowest achievable emission reduction (LAER) requirement. AQR Section 12.4 requires some emission units to comply with RACT requirements. AQR Section 12.5 collects the requirements of the previous two sections into an operating permit.

5.3.5 AQR Section 28, "Fuel Burning Equipment"

This section 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. The regulation targets reductions in PM_{10} emissions, but by promoting good combustion practices, the rule produces NO_x and VOC emissions reduction co-benefits.

5.3.6 AQR Section 42, "Open Burning"

This section prohibits open burning except as expressly authorized by the Control Officer. It particularly prohibits opening burning during ozone events.

5.3.7 AQR Section 50, "Storage of Petroleum Products"

This section applies to tanks, reservoirs, and containers with a volume capacity greater than 40,000 gallons. It reduces VOC emissions by prohibiting storage of compounds with a vapor pressure greater than 78 millimeters of mercury (mm Hg) unless the emissions unit is pressurized, includes a floating roof, or uses a vapor recovery system. DAQ added AQR Sections 13.3 and 14.2 to incorporate by reference one NESHAP subpart and five NSPS subparts that will replace AQR Sections 50 and 51 to improve rule effectiveness by promoting consistency and thoroughness in compliance obligations.

5.3.8 AQR Section 51, "Petroleum Product Loading into Tanks, Trucks and Trailers"

This section reduces VOC emissions by prohibiting loading of petroleum products with a vapor pressure exceeding 78 mm Hg unless the facility is designed for bottom loading only or uses a submerged fill tube. Loading must occur under a vapor-tight seal with a vapor collection system. DAQ amended Sections 13.3 and 14.2 to incorporate by reference one NESHAP subpart and five NSPS subparts that will replace AQR Sections 50 and 51 to improve rule effectiveness by promoting consistency and thoroughness in compliance obligations.

5.3.9 AQR Section 53, "Oxygenated Gasoline Program"

This section reduces NO_x emissions by requiring that all fuel sold between October 1 and March 31 contain at least 3.5% oxygen content by weight to increase combustion efficiency.

5.4 NEW LOCAL CONTROL MEASURES

As part of the moderate area 2015 ozone NAAQS requirements, DAQ will reduce VOC emissions by promulgating new regulations to impose CTG RACT on stationary sources, RACT on major sources, and additional measures to satisfy ROP requirements. Once approved by EPA, the Nevada SIP will include the following new regulations:

- AQR Section 101, "VOC Emissions Control for Industrial Adhesive Operations."
- AQR Section 102, "Gasoline Dispensing Facilities."
- AQR Section 103, "VOC Emissions Control for Miscellaneous Metal or Plastic Parts Coating Operations."
- AQR Section 104, "VOC Emissions Control for Industrial Cleaning Solvent Operations."
- AQR Section 105, "VOC Emissions Control for Metal Solvent Degreaser Operations."
- AQR Section 106, "VOC Emissions Control for Offset Lithographic, Letterpress, and Flexible Package Printing and Other Graphic Arts Operations."
- AQR Section 107, "VOC Emissions Control for Cutback Asphalt Manufacturing and Use."
- AQR Section 13, "National Emission Standards for Hazardous Air Pollutants," with AQR Section 13.3 incorporating by reference 40 CFR Part 63, Subpart BBBBBB.
- AQR Section 14, "New Source Performance Standards," with AQR Section 14.2 incorporating by reference 40 CFR Part 60, Subparts K, Ka, Kb, XX, and XXa.
- AQR Section 121 (currently in development) addressing existing major source RACT.
- AQR Section 130, "VOC Emissions Control for Architectural and Industrial Maintenance Coatings."

These rules are summarized below and discussed in greater detail in Sections 7 and 8.

5.4.1 AQR Sections 13, 14, and 101–107 (CTG RACT Rules)

The new regulations will impose at least EPA's presumptive RACT level of control on owners and operators of stationary sources with regulated operations, which will result in a 7.5% VOC emissions reduction from the 2026 ROP emissions inventory (7.75 tpd of VOC). These emissions reductions will occur after the August attainment date.

AQR Sections 101–107 are generally structured alike, with similar applicability provisions. AQR Section 107 will apply throughout Clark County. AQR Sections 101–106 will apply to owners or operators of stationary sources with certain specified operations when that source is located in an area EPA has designated as ozone nonattainment and has classified as moderate or higher after January 5, 2023, the date EPA published the notice classifying HA 212 as a moderate ozone nonattainment area. These regulations will continue to apply to stationary sources in such area even after EPA redesignates the area to attainment, i.e., they will still apply during the maintenance period. In addition, AQR Sections 13.3 and 14.2 will become federally enforceable in all areas of Clark County after they are incorporated into the SIP.

AQR Sections 101 and 103–106 have similar applicability thresholds: stationary sources with projected maximum emissions of VOC from specified operations equal to or greater than 3.0 tons per calendar year must meet specific emissions standards and work practice requirements; stationary sources with emissions below this threshold must meet work practice requirements only. Rule applicability is based on total calendar year emissions, from the beginning of January to the end of December. Owners or operators of these sources are not required to calculate a rolling 12-month total of emissions.

Applicability thresholds for AQR Sections 102 and 107 are structured differently. AQR Section 102 applies to all gasoline dispensing facilities (GDFs), though it provides for exemptions based on throughput. AQR Section 107 (cutback asphalt operations) has the same applicability threshold as the other 100 series rules—based on projected maximum emissions of VOC equal or greater than 3.0 tons per calendar year—but requires the owner or operator to compare maximum emissions from all worksites to the threshold, rather than from a single stationary source. A worksite includes any location in Clark County where asphalt is manufactured, sold, mixed, used, and/or stored by the same owner or operator. The applicability of AQR Section 107 extends beyond the boundaries of HA 212 to assure the rule remains equally as or more stringent than the existing SIP-approved regulation AQR Section 60.4. AQR Section 107 will replace AQR Section 60.4 in the SIP.

In AQR Sections 13.3 and 14.2, DAQ adopted through incorporation by reference EPA's federal NSPS regulations in 40 CFR Part 60, Subparts K, Ka, Kb, XX and XXa and its NESHAP regulations in 40 CFR Part 63, Subpart BBBBBB. These regulations meet or exceed the presumptive RACT requirement for bulk gasoline plants and terminals, petroleum storage, and associated equipment leaks. Along with the incorporation of these regulations and AQR Section 102, DAQ requests the removal of AQR Sections 50–52 and 60.1 from the SIP because the newly incorporated rules are at least as stringent as the existing rules, and removal of the rules provides an opportunity to streamline compliance obligations under the more thorough requirements in the federal rules.

All owners or operators subject to AQR Sections 101 and 103–107 will have to meet registration, notification, recordkeeping, and reporting requirements, as applicable. Owners or operators subject to AQR Section 102 must comply with registration requirements unless the GDF is required to obtain a stationary source permit. AQR Sections 101 and 103–107 generally provide existing owners or operators six months to submit registrations and begin complying with the emissions standards and work practice requirements; however, owners or operators electing to install a new emissions control system (ECS) must comply no later than 18 months after the effective date of the rule. New sources must comply with emission standards upon beginning normal operations, and with registration requirements within 45 days after becoming subject to the regulation. Existing sources that become newly subject to the rule after the first compliance date must comply upon meeting the applicability threshold.

Some activities are exempt under the rules; these exemptions are tailored to specific types of equipment in each individual rule. Also, operations that use less than 500 gallons (5,000 lb in AQR Section 106) of materials per calendar year are exempt from Sections 101 and 103–106.

AQR Section 102 has different compliance dates than the other rules, which are included in individual provisions in the emissions standards rather than gathered into a single compliance date section. Some provisions are immediately effective because AQR Section 102 is intended to replace existing SIP-approved regulation AQR Section 52, which already requires compliance with some of these provisions. Other AQR Section 102 provisions allow up to one year to comply.

The new sections that set minimum VOC content requirements on materials allow an owner or operator to continue to use existing material inventory until 12 months after the effective date of the rule or 12 months after first becoming subject to the rule, whichever is later. During this time, an owner or operator may use existing material inventory without complying with the emissions standards but may not purchase new, non-compliant material without using a compliant ECS. The two exceptions are AQR Section 101, which allows a total volume of less than 55 gallons per calendar year of noncomplying materials, and AQR Section 106, which allows a total volume of 110 gallons per calendar year of noncomplying cleaning materials in offset lithographic and letterpress printing operations.

AQR Sections 101 and 103–107 also provide the Control Officer with the flexibility to establish a different compliance date for individual stationary sources, though it cannot exceed three years from the rule’s effective date. The Control Officer can use this flexibility when the owner or operator demonstrates, through a permit application, that they cannot comply with the rules by the applicable compliance date: for example, there may be valid delays in engineering, purchasing, or installing an ECS that would extend final operation beyond the 18 months provided to comply. The Control Officer may extend or deny a compliance date extension request through permitting procedures (i.e., minor source permit, authority to construct, or Part 70 operating permit revisions), but DES expects these instances to be few (if any).

There are no provisions for requesting a compliance date extension under AQR Section 102. DAQ has determined that the compliance dates are reasonable because GDFs must already comply with some requirements and can readily bring other equipment into compliance by the specified dates.

5.4.2 AQR Section 121 (Existing Major Source RACT)

AQR Section 121 will provide emissions standards that implement major source RACT requirements. This regulation, which will apply to major sources of VOC and/or NO_x, will require stationary sources to meet specific emissions limitations for different types of equipment or submit a permit application to obtain a source-specific RACT determination.

To develop the specific emissions limitations that will apply to the eight existing major sources in HA 212, these sources voluntarily submitted information from which DAQ made case-by-case RACT determinations. Attachment D documents the information submitted, and will serve as the technical support document for the emissions standards in AQR Section 121. Section 7.2 of this plan includes more information on the case-by-case RACT process and DAQ's conclusions.

After completing the major source RACT determination process, DAQ noted commonalities in the control requirements between the eight major sources. Thus, DAQ opted to codify major-source RACT requirements in AQR Section 121, rather than submit individual permits for inclusion in the SIP. Any variation from this rule that is allowed through a future case-by-case RACT determination if HA 212 were reclassified would be subject to public and EPA review and documented in an authority to construct or Part 70 operating permit.

The emissions standards in AQR Section 121 will represent current major-source RACT requirements for specific types of equipment.

5.4.3 AQR Section 130, "VOC Emissions Control for Architectural and Industrial Maintenance Coatings"

DAQ adopted this regulation to control the VOC content in architectural and industrial maintenance (AIM) coatings, including paint, primers, varnishes, or lacquers, as well as solvents used as thinners and for cleanup. DAQ based its rule on the OTC model rule (Phases I–II), which recommends reducing VOC emissions by regulating the VOC content of AIM coatings sold, supplied, offered for sale, applied, solicited for the application of, or manufactured for use in Clark County.

The term "architectural coating" refers to a coating applied to such things as stationary structures, portable buildings, pavements, and curbs. This rule will not apply to (1) coatings applied in shop applications or to nonstationary structures (e.g., airplanes, ships, boats, railcars, automobiles), (2) adhesives, and (3) containers of 1 liter (L) or less. DAQ anticipates a 3.83 tpd VOC emissions reduction from implementing this control measure.

5.5 WITHDRAWAL AND REPLACEMENT OF EXISTING CONTROL MEASURES

AQR Sections 50–52 and 60, four of Clark County's existing SIP-approved regulations, partly overlap with the applicability of several of the county's new local control measures and federal rules incorporated by reference. After the BCC repealed Sections 52 and 60 in 2011, they were no longer part of the AQRs, but they remained part of the approved SIP. As part of this SIP submission, DAQ requests that EPA withdraw these outdated and duplicative regulations from the approved SIP and replace them with the new local control measures and federal rules incorporated by reference.

Before EPA can approve a state's SIP submission into the State Plan, it must follow the procedures for plan revisions in Section 110(l) of the Act. The Administrator may not approve a plan revision "if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in Section 171), or any other applicable requirement of the Act" (42 U.S.C. 7410). In nonattainment areas, EPA must also assure the revision satisfies the requirement in Section 193 of the Act stating that control requirements in effect before the 1990 amendments may be only modified if "equivalent or greater emissions reductions" are achieved (42 U.S.C. 7515). The U.S. Court of Appeals for the Ninth Circuit interpreted these provisions as requiring EPA to perform a wholistic look "of an overall plan capable of meeting the Act's attainment requirements… [in] 'relation of the step to the movement as whole'" (*Hall v. EPA*, 273 F.3d 1146 (9th Cir. 2001)).

The court found that a rule-to-rule comparison of emissions reduction was not adequate to show that new rules met current-day SIP obligations. For EPA to approve revisions to existing plan requirements, the submitted SIP revisions must be "neutral in their effect on RFP…" (EPA 2010), as upheld by *Natural Res. Def. Council v. Jackson*, No. 09-1405 & 10-2123 (7th Cir. 2011). These decisions did not mandate a line-by-line comparison of each withdrawn regulation to a corresponding new regulation; rather, EPA must determine whether DAQ's requested SIP revision, as a whole, meets the Act's requirements, and approve the revision if the new control measures will not interfere with HA 212's progress toward attainment or result in fewer emissions reductions.

The CTG RACT analysis and the 15% ROP Plan provide a detailed estimate of emissions reductions that will result from the new CTG RACT rules (11.57 tpd), far greater than the reductions Sections 50–52 and 60 could achieve. As discussed in this section, the existing rules lack control effectiveness because they lack clarity, compliance assurance provisions, and an authority to implement. Their proposed replacements, when directly compared, provide at least equal or greater emissions reductions. The SIP submission as a whole, including the new additional control measures, assures additional benefits that make the requested SIP revision more than neutral in reducing ambient ozone concentrations in HA 212. (Section 4.3.8 details the ozone benefits from modeled local control measures.)

The attainment demonstration in Section 4 explains that additional local measures, including the nine adopted CTG RACT rules, are not necessary to demonstrate attainment for HA 212. In the 2016v2 EMP, EPA did not include Sections 52 or 60 as control measures in estimating the Clark County 2017 NEI—yet DAQ still modeled attainment with the NAAQS. This means that the modeled inventory used in the attainment demonstration did not rely on the control measures in those two sections to demonstrate attainment. Accordingly, the attainment demonstration shows that withdrawing these rules from the SIP will not interfere with RFP or attainment of the NAAQS.

DAQ asks EPA to fully approve the request to withdraw the Clark County SIP-approved regulations AQR Sections 50–52 and 60.1–60.4 from the SIP.

5.5.1 Replacement of AQR Section 50

AQR Section 50 requires that 40,000-gallon or larger tanks storing petroleum liquid with a vapor pressure of 78 mm Hg or greater be equipped with a vapor recovery system or floating roof unless the tank is pressurized. The rule includes provisions for reducing equipment leaks, although requirements such as double seals are not included. DAQ will replace this rule in the SIP by incorporating

EPA's NSPS federal rules at 40 CFR Part 60, Subparts K, Ka, and Kb, and its NESHAP rule at 40 CFR Part 63, Subpart BBBBBB.

Although there are some differences in applicability of the federal rules and the AQRs, DAQ determined that collectively incorporating by reference all the federal rules fills the potential gaps left by any individual federal rule. For example, although Subpart Kb exempts bulk gasoline plants from its requirements, Subpart BBBBBB regulates these tanks with requirements more stringent than the AQRs; and while Subpart BBBBBB exempts aviation fuel loading at airports, DAQ will regulate these activities under the new AQR Section 102.

DAQ determined that EPA's federal rules collectively represent the most current assessment of emissions control capabilities to meet the best available system of emissions reduction under Section 111 of the Act and the maximum achievable control technology under Section 112 of the Act. These regulatory standards exceed the statutory requirement for CTG RACT. The federal rules are written more clearly than AQR Section 50, and include more comprehensive compliance obligations. Table 11 shows how the federal rules are as (or more) stringent than the control requirements in AQR Section 50 and meet presumptive RACT for the CTG source category.

Table 11. Comparison of Federal Rules to AQR and Presumptive RACT

Construction or Reconstruction Date	40 CFR Citation	Requirement	General Exemptions	Comparison with AQR 50	Comparison with CTGs
3/6/74-5/19/78	60.112L: Storage Vessel	If true vapor pressure of ≥ 78 mm Hg (1.5 psia) but ≤ 570 mm Hg (11.1 psia): equip with floating roof, vapor recovery system, or equivalent.	Storage vessels for petroleum or condensate stored, processed, and/or treated at a drilling and production facility prior to custody transfer.	Meets AQR 50.1 applicability threshold and control & vapor pressure requirements; exemption not relevant to HA 212.	Meets or exceeds internal or external floating roof and seal requirement; presumptive RACT includes similar exemption.
6/11/73-5/19/78		If true vapor pressure of the petroleum liquid > 570 mm Hg (11.1 psia): equip with vapor control system or equivalent.			
5/19/78-7/23/1984*	60.112a: Storage Vessels	If true vapor pressure of ≥ 10.3 kPa (1.5 psia) but ≤ 76.6 kPa (11.5 psia): equip with external floating roof meeting specs, fixed roof with internal floating roof meeting specs, or vapor recovery system.	Each petroleum liquid storage vessel < 1,589,873 L (420,000 gal) used for petroleum or condensate stored, processed, or treated before custody transfer to unaffected facility.	Meets AQR 51.1 applicability threshold, vapor pressure, and control requirements.	Meets or exceeds internal or external floating roof and seal requirement; presumptive RACT includes similar exemption.
		If true vapor pressure of petroleum liquid > 76.6 kPa (11.1 psia): equip w/vapor recovery system meeting 95% reduction by weight.			
7/24/84 and after	60.112b: Storage Vessel	Vessel either with design capacity ≥ 151 m^3 (39,890 gal) containing a VOL with max true vapor pressure ≥ 5.2 kPa but < 76.6 kPa, or with design capacity ≥ 75 m^3 but < 151 m^3 containing a VOL with max true vapor pressure ≥ 27.6 kPa but < 76.6 kPa: equip with fixed roof and internal floating roof, external floating roof, or closed vent system with control device w/95% efficiency.	Capacity ≥ to 151 m^3 storing a liquid with a maximum true vapor pressure < 3.5 kPa or with a capacity ≥ 75 m^3 but < 151 m^3 storing a liquid with a maximum true vapor pressure < 15.0 kPa.	More stringent than AQR 50 applicability and control requirements. AQR does not exempt bulk gasoline plants; these tanks will be regulated under Subpart BBBBBB.	Meets or exceeds presumptive RACT controls, but do not discuss exemption for bulk gasoline plants.

Construction or Reconstruction Date	40 CFR Citation	Requirement	General Exemptions	Comparison with AQR 50	Comparison with CTGs
		Design capacity $\geq$ 75 m^3 containing VOL with max true vapor pressure $\geq$ 76.6 kPa: equip with closed vent system and 95% control or equivalent.	Vessels located at bulk gasoline plants; vessels at gasoline service stations; vessels subject to Part 63, Subpart GGGG.	Equivalent to AQR 50 applicability and more stringent by specifying control efficiency of vapor control system. Although AQR does not exempt bulk gasoline plants, these tanks will be regulated under Subpart BBBBBB.	
None	63.11086: Bulk Gasoline Plant Loading Tanks and Trucks	If > 250 gallon, load tank or truck using submerged fill that meets specifications by date installed; all tanks, minimize gasoline spills and follow other work practices such as monthly leak inspection.	Gasoline storage tanks used only for dispensing gasoline in a manner consistent with tanks located at a gasoline station are not subject to any of the requirements in this subpart. These tanks must comply with Subpart CCCCCC.	Meets AQR 51.1.1 requirement to use submerged fill requirement.	Meets presumptive RACT control Option 1.
	63.11087 & Table 1: Bulk Gasoline Terminal Storage Tanks	If gasoline storage < 75 m^3 or < 151 m^3 and throughput $\leq$ 480 gal/day, equip with fixed roof and set pressure relief valves to $\geq$ 18 inches of water.	Aviation fuel loading at airports, marine tank loading,	Exceeds AQR 50.1 40,000-gal applicability threshold and imposes controls not required by AQR 50. AQR does not exempt airports, but airports will be regulated under AQR 102. Marine tank loading exemption not relevant to HA 212.	Not covered by presumptive RACT–below applicability threshold.

Construction or Reconstruction Date	40 CFR Citation	Requirement	General Exemptions	Comparison with AQR 50	Comparison with CTGs
	63.11087 and Table 1: Bulk Gasoline Terminal Storage Tanks	If gasoline storage tank ≥ 75 m^3, equip with closed vent system with 95% control by weight, internal floating roof, or external floating roof; surge control tanks fixed roof with pressure vacuum vent with pressure ≥ 0.5 inches of water.	Bulk gasoline terminal not subject to control in Part 63, Subparts R or CC (Subpart R includes equation for exemption, looks like CTG tanks all would be covered by Subpart CC).	Exceeds AQR 50.1 40,000-gal applicability threshold; requires controls exceeding AQR 50 by specifying a control efficiency for the vapor collection system.	Exceeds presumptive RACT control level.

The replacement of AQR Section 50 with the federal rules satisfies the anti-backsliding provisions in Sections 110(l) and 193 of the Act because the federal rules are at least as stringent, and adopting them will improve rule effectiveness by consolidating regulatory compliance obligations under the more detailed compliance demonstration requirements of the federal regulations. Accordingly, the federal rules will not relax the SIP. DAQ asks EPA to replace AQR Section 50 with the federal rules incorporated by reference into the AQRs.

5.5.2 Replacement of AQR Section 51

AQR Section 51 regulates some bulk gasoline plants and all bulk gasoline terminals, and requires these facilities to use submerged (bottom-filling) or vapor collection and disposal, or an equivalent that meets a 90% control efficiency, depending on the facility's annual throughput. DAQ will incorporate the federal NSPS at 40 CFR Part 60, Subparts XX and XXa, and the federal NESHAP at 40 CFR Part 63, Subpart BBBBBB to meet CTG RACT requirements and replace AQR Section 51.

Table 12 displays the general control requirement(s) of the NSPS and NESHAP that DAQ will adopt into the SIP to meet RACT, and shows how the rules meet the existing requirements of AQR Section 51 and are as least as stringent as EPA's CTG presumptive RACT.

Table 12. Comparison of Federal Rules to AQR and Presumptive RACT

Regulation	Affected Source	Construction or Reconstruction Date	40 CFR Citation	Requirement	General Exemptions	AQR Sections 51 & 60.1 Comparison	CTGs Comparison
Part 60, Subpart XX: Bulk Gasoline Terminals	All the loading racks at a bulk gasoline terminal (> 75,700 L/day gasoline or 20,000 gal/day	12/17/80-6/10/22	60.502: Bulk Gasoline Terminal Loading Rack	Exceeds 90% control efficiency in 51.4. Equip with a vapor tight vapor collection system designed to collect		Exceeds 90% control efficiency in 51.4 for new sources, and is roughly equivalent	Meets or exceeds 80 mg/L presumptive RACT.

Regulation	Affected Source	Construction or Reconstruction Date	40 CFR Citation	Requirement	General Exemptions	AQR Sections 51 & 60.1 Comparison	CTGs Comparison
	throughput) which deliver liquid product into gasoline tank trucks.			the total organic compounds vapors displaced from tank trucks during product loading with emissions ≤ 35 mg TOC/liter gasoline loaded, or if equipped with existing system (constructed before Dec 17, 1980) ≤ 80 mg/l.		to control efficiency requirement for existing sources.	
Part 60, Subpart XXa: Bulk Gasoline Terminals	Loading racks at bulk gasoline terminal (> 75,700 gasoline or 20,000 gal/day throughput) that deliver liquid product into gasoline cargo tanks, including gasoline loading racks, vapor collection systems, and vapor processing system.	6/11/22 or after	60.502a: Bulk Gasoline Terminal Loading Rack	Use submerged fill and Equip with vapor tight vapor collection system to collect vapors from cargo tanks during loading. New units: Use thermal oxidizer to reduce emissions to < 1.0 mg TOC/l; 3-hr rolling average temp, or vapor recovery system ≤ 550 ppm TOC on 3-hr rolling average.		Meets ECS requirement in 51.1, and exceeds control requirement for new sources.	Meets required control for existing sources and exceeds required controls for new sources.
Part 63, Subpart BBBBBB: Bulk Terminals and Plants and Pipeline Facilities	Area source bulk gasoline terminal (≥ 20,000 gal/ day gasoline throughput), pipeline breakout station, pipeline pumping station, & bulk gasoline plant (< 20,000 gal) as specified.	None	63.11086: Bulk Gasoline Plant Loading Tanks and Trucks	If > 250 gallon, load tank or truck using submerged fill that meets specifications by date installed, and all tanks, minimize gasoline spills and follow other work practices such as monthly leak inspection.	Gasoline Service Stations	Meets 51.1.1 requirement to use submerged fill; although rule has no exemption, exempt facilities are covered by new AQR 102.	Meets presumptive RACT control option 1.
			63.11088 & Table 2: Bulk Gasoline Terminal Loading Rack	If total gasoline throughput ≥ 250,000 gallons/day, equip with vapor collection system and reduce to 80 mg TOC/l.		Meets 51.1 and 51.4.1 requirement for vapor collection and disposal.	Meets 80 mg/L presumptive RACT control requirement.
			63.11088 & Table 2: Bulk Gasoline Terminal Loading Rack	If total gasoline throughput < 250,000 gallons/day use submerge fill with pipe no more than 6 inches from bottom.		Meets 51.1.1 requirement to use submerged fill.	Does not meet presumptive RACT emissions limitation of 80 mg/l, but this level of emissions control would be

Regulation	Affected Source	Construction or Reconstruction Date	40 CFR Citation	Requirement	General Exemptions	AQR Sections 51 & 60.1 Comparison	CTGs Comparison
							required for sources under Subpart XX.
			63.11089: Bulk Gasoline Terminal and Plants	Monthly leak inspection.		Meets 60.1 best practice requirement.	Meets or exceeds presumptive RACT leak detection program.

EPA established or revised these federal emissions standards after determining presumptive RACT for the categories, meaning they represent a progression in control and cost considerations.

Although there are some differences in applicability of the federal rules and the AQRs, DAQ determined that these differences are not such that they decrease the stringency of the SIP if the federal rules are incorporated by reference. For example, Subpart XX regulates facilities with a throughput greater than 20,000 gal/day; AQR Section 51 includes an annual throughput limit that, when divided evenly throughout the year, would result in a lower daily throughput applicability criterion. However, DAQ used the annual throughput limit to provide greater operational flexibility and a source is more likely to exceed the 20,000 gal/day limit in Subpart XX than the annual limit in AQR Section 51, making the applicability of Subpart XX more stringent than that of AQR Section 51.

While Subpart XXa does not include a specific throughput limit equivalent to the presumptive RACT emissions limitation of 80 mg/L, facilities subject to Subpart XXa are likely also subject to Subpart BBBBBB, which includes this specific limit. DAQ determined that EPA's federal rules collectively represent the most current assessment of emissions control capabilities to meet the best available system of emission reduction under Section 111 of the Act and the maximum achievable control technology under Section 112 of the Act. These regulatory standards exceed the statutory requirement for CTG RACT, and are equivalent or more stringent than AQR Section 51. DAQ therefore concluded that adopting these regulations into the SIP will more than satisfy CTG RACT requirements.

DAQ estimates no additional emissions reductions will result from the new CTG RACT requirements, but there will be no loss in emissions reduction from removing AQR Section 51 from the SIP. Replacing AQR Section 51 with the federal rules satisfies the anti-backsliding provisions in Sections 110(l) and 193 of the Act because the federal rules are as or more stringent than AQR Section 51, and adopting them will improve rule effectiveness by consolidating regulatory compliance obligations under the more detailed compliance demonstration requirements of the federal rules. Accordingly, compliance with the federal regulations will not relax the SIP. DAQ asks EPA to replace AQR Section 51 with the federal regulations incorporated by reference into the AQRs.

5.5.3 Replacement of AQR Section 52

Existing SIP-approved regulation AQR Section 52 requires submerged filling and a vapor balance system for all new gas stations after January 1, 1978, and for existing gas stations with an annual output of 96,000 gallons or more after Jan. 1, 1979. The BCC repealed AQR Section 52 in 2011. DAQ adopted the new AQR Section 102 to meet CTG RACT requirements, and as a replacement for the existing SIP-approved regulation. It sets forth design and operating specifications for a vapor recovery system that meets Stage I requirements, and adds specifics on design criteria.

Table 13 displays the requirements of the repealed AQR Section 52 and compares them to the equivalent provisions in AQR Section 102. The table shows that AQR Section 102 is more comprehensive than AQR Section 52.

Table 13. Comparison of New Section 102 with Section 52 Requirements

Repealed Section 52 Requirements		New Section 102 requirements that Meet or Exceed Section 52 Requirements	
Section	**Requirement**	**Section**	**Requirement**
52.1 Storage Tanks	Equip with Permanent submerged fill pipe	102.6 (b)	Equip with Permanent submerged fill pipe
52.2 Loading Operation	Minimize spills	102.5(c)	Minimize releases and spills
52.4 New Gasoline Stations	Equip with vapor control system covering storage tank and truck	102.7(c) 102.8(a)	Install and operate vapor balance system. Connect hoses before filling.
	Prevent release of 90% by weight	102.7(c)(1) 102.7(c)(4)(B) 102.7(c)(4)(G) and (H)	Recover displaced vapors. Meet pressure specifications
	System includes both storage tank and tank truck	102.7 and 102.8	Covers storage tanks and cargo tanks
	Vapor-tight fill connector and return line	102.7.(c)(4)(B) 102.7(c)(4)(F) 102.8(a)(3)	Vapor tight line from tank to truck. Liquid fill and return connections vapor tight caps
	Connected before filling	102.7(c)(1) 102.8(a)(1)	Install and operate vapor balance system. Connect hoses before filling.
	Vapor tight tank truck	102.8(a)(3)	Vapor tight hoses, couplers and adapters
	Refill only tank truck only at facility with vapor control system	102.8(b)	Cargo tank must meet 40 CFR Part 60, Appendix A-8
	Subject to source registration or operating permit requirements	102.4	Permitting and registration requirements
52.4.2.4	Maintain system	102.5(b)	Operate and maintain GDF and controls consistent with good air pollution control practices
52.5 Existing Gasoline Stations	Meet Section 52.4 requirements	102.7(a)	Applies to new and existing sources
52.5.5.3.1 Exemptions	Stations with output less than 96,000 gal/yr exempt	102.2(c)	Stations with throughput less than 120,000 gal/yr on a 12-month rolling basis.
52.6 Registration	Register	102.4	Permitting and registration requirements
52.8 Vehicle Filling	No spilling	n/a	n/a
52.9 Airplane refueling areas	Meet 52.4	102.2(b)	Exempt
N/A	N/A	102.5(c)	Regulates materials sent to waste collection systems Clean-up spills

Repealed Section 52 Requirements		New Section 102 requirements that Meet or Exceed Section 52 Requirements	
Section	**Requirement**	**Section**	**Requirement**
N/A	N/A	102.9	Meet CARB and DAQ testing procedures
N/A	N/A	102.10	Extensive monitoring and inspection requirements
N/A	N/A	102.11	Recordkeeping Requirements

The table notes a slight difference between the two rules in the form of the applicability provisions: AQR Section 52 exempts existing GDFs with an annual output of less than 96,000 gallons from vapor control systems, while AQR Section 102 exempts new and existing GDFs with a throughput of less than 120,000 gallons in any consecutive 12-month period. The two applicability provisions are not directly comparable, since the nonattainment area associated with AQR Section 52 was a significantly smaller geographic area than the one associated with AQR Section 102 (all of HA 212).

Moreover, AQR Section 52 is regulated on an "output" basis and AQR Section 102 on a "throughput" basis. AQR Section 52 requires annual tracking of output, while AQR Section 102 requires monthly tracking of throughput. DAQ views the requirement to examine applicability at least 12 times in a year, as opposed to once, as a strengthening of overall applicability that will improve rule effectiveness. AQR Section 102 will regulate aviation refueling areas; AQR Section 52 did not.

DAQ determined that the vehicle filling requirement in AQR Section 52 resulted in no meaningful emissions reductions because, given the number of consumers and the scale of daily activities at GDFs, controlling consumer behavior at the gas pump is unenforceable. Accordingly, DAQ declined to include the provision in AQR Section 102. The absence of the requirement will not reduce the number of emissions reductions achieved by the SIP, since the rule had 0% effectiveness in practice.

Many aspects of AQR Section 102 are more prescriptive than AQR Section 52. AQR Section 52 required use of a vapor control system to prevent release of at least 90% of VOC in the displaced vapor, but included no specific provisions to validate the performance of the system. AQR Section 102 provides a new static pressure performance standard and a requirement to demonstrate the performance of the system through specific testing procedures.

AQR Section 52 included general obligations to maintain and minimize vapor releases, while AQR Section 102 includes a new work practice requirement section with monitoring requirements to assure compliance; for example, owners or operators have a specific obligation to use nonabsorbent, nonleaking containers rather than just minimize releases. AQR Section 102 regulates material sent to waste collection systems; AQR Section 52 includes no explicit regulation of this material.

The replacement of AQR Section 52 with new AQR Section 102 satisfies the anti-backsliding provisions in Sections 110(l) and 193 of the Act because the new regulation is as or more stringent than AQR Section 52. AQR Section 102 enhances design specifications and testing, monitoring, and recordkeeping requirements compared to AQR Section 52. These requirements increase the stringency of the and improving its effectiveness. Accordingly, AQR Section 102 will not relax the SIP. DAQ asks EPA to replace AQR Section 52 with AQR Section 102 in the SIP.

5.5.4 Replacement of AQR Section 60.1

Existing SIP-approved regulation AQR Section 60.1 establishes a general duty to use good air pollution control practices to minimize equipment leaks. The rule prescribes no specific actions an owner or operator must undertake to meet the general duty standard, but allows the Control Officer broad discretion to prescribe specific measures.

Additionally, AQR Section 60.1 provides no specific criteria for an owner or operator to meet to demonstrate compliance or for the Control Officer to meet in applying the rule. It gives the Control Officer unbounded discretion to mandate any manner of control, which is not consistent with EPA's current practices for approving Control Officer discretion.

The federal rules incorporated by reference into AQR Sections 13.3 and 14.2, along with AQR Sections 101–107, include specific work practice requirements that an owner or operator must follow to reduce fugitive emissions and equipment leaks. These rules are more stringent than AQR Section 60.1 because they prescribe specific actions an owner or operator must take to demonstrate compliance.

Replacing Section 60.1 with the new AQR regulations satisfies the anti-backsliding provisions in Sections 110(l) and 193 of the Act because the new rules are as or more stringent than Section 60.1. They include enhanced work practice standards and testing, monitoring, and recordkeeping requirements compared to AQR Section 60.1. These requirements increase the stringency of the regulation and improve its effectiveness. Accordingly, removing AQR Section 60.1 will not relax the SIP. DAQ asks EPA to replace AQR Section 60.1 with the new AQR regulations.

5.5.5 Replacement of AQR Section 60.2

Existing SIP-approved regulation AQR Section 60.2, which was approved in 1978 and 1981 and repealed in 2011, includes some, but not all, of EPA's recommended presumptive RACT requirements. The requirements in AQR Section 60.2 are not organized or tailored to the specific degreaser type, as recommended by presumptive RACT. AQR Section 105 incorporates all of EPA's CTG presumptive RACT recommendations for both control system A and control system B for each degreaser type, so is more comprehensive than AQR Section 60.2.

Table 14 compares AQR Section 60.2 and AQR Section 105 requirements to show that AQR 105 contains all the requirements of AQR Section 60.2.

Table 14. Comparison of AQR Section 105 with AQR Section 60.2 Requirements

Repealed Section 60.2 Requirements		AQR Section 105 Requirements that Meet or Exceed Section 60.2 Requirements	
Section	**Requirement**	**Section**	**Requirement**
60.2.1.1	Reduce evaporation from waste no greater than 10%	105.5 (c) 105.6(c) 105.7(c)	Reduce evaporation from waste no greater than 20%; cover at all times except during parts entry and removal; minimize solvent carryover using specified control measures; avoid workloads that occupy more than half of the degreaser's open top area; drain above the vapor space, etc.

Repealed Section 60.2 Requirements		AQR Section 105 Requirements that Meet or Exceed Section 60.2 Requirements	
Section	**Requirement**	**Section**	**Requirement**
60.2.1.2	Store waste in covered containers	105.5(c)(2) 105.6(c)(8)	Store waste in nonabsorbent nonleaking containers
60.2.1.3	Equip with cover that can be operator with one hand	105.6(a)(1)	Equip with a cover that the operator can easily open and close without disturbing the vapor zone
60.2.1.3	Drain parts at least 15 sec	105.5(c)(4)	Drain parts at least 15 sec
60.2.4.5	No atomization during spraying	105.5(a) 105.6(a)(3)	Low pressure spray; No atomization or shower-type spray
60.2.1.6	Permanent, conspicuous label of operating requirements	105.8(c)	Permanent and conspicuous post of work practice requirement
60.2.17	Use internal drainage for highly volatile solvent use	105.5(a)(2)	Equip with internal drainage recycling if solvent greater than 32 mm Hg
60.2.1.8	If heated above 120°F, use control system meeting specifications	105.5(b)(1)	If heated above 120°F, use control system meeting specifications

AQR Section 105 includes all the elements of AQR Section 60.2, but is more descriptive of how owners or operators must meet the requirements. For example, AQR Section 60.2 seems to have a more stringent emissions limitation on evaporation losses (no more than 10%), but the actual percentage of evaporative losses is not measurable in practice, making the requirement unenforceable; the rule guarantees no specific level of emissions reduction. AQR Section 105 provides a lower targeted evaporative loss percentage, but a list of work practices accompanies the requirement to minimize solvent loss; for one, the owner or operator must dry parts above the vapor zone (where solvent volatilizes) in a conveyorized degreaser and move parts in and out of the conveyor below a certain speed. Ventilation fans are only allowed in the workspace as needed for workplace safety to reduce evaporative losses in the air caused by over-ventilation. This is just a sample of the work practice requirements in AQR Section 105 to reduce solvent loss.

The comprehensive and prescriptive scope of the ECS and work practice requirements in AQR Section 105 greatly enhance its effectiveness compared to AQR Section 60.2, and DAQ estimates greater emissions reductions in practice from AQR Section 105 than from theoretical reductions achievable under AQR Section 60.2 (even if it were enforceable). Accordingly, DAQ asks EPA to replace AQR Section 60.2 with AQR Section 105.

5.5.6 Replacement of AQR Section 60.3

Existing SIP-approved regulation AQR Section 60.3 regulates application areas, flash-off areas, and large appliance coating lines at surface coating operations. Through the process of identifying potential CTG sources, DAQ determined that no stationary source with large appliance coating lines operates within Clark County or HA 212. Removing Section 60.3.1 from the SIP satisfies the anti-backsliding provisions in Sections 110(l) and 193 of the Act because removing the rule will not reduce the emissions reductions achievable under the SIP. Construction of a new stationary source operating large appliance coating lines would be required to apply current RACT under AQR Sections 12.1 and 12.4.

AQR Sections 101, 103, 104, and 106 regulate the same emission sources, but are more comprehensive in their scope of applicability than AQR Section 60.3. The new regulations establish specific emissions control requirements through the use of add-on emissions controls or low VOC coatings, and include comprehensive work practice requirements to reduce fugitive and leak emissions.

Replacing AQR Section 60.3 with the new regulations satisfies the anti-backsliding provisions in Sections 110(l) and 193 of the Act because the new rules are as or more stringent than Section 60.3. By adopting the new rules, DAQ improves rule effectiveness by adding comprehensive compliance obligations, including monitoring, recordkeeping, and reporting requirements, that are not contained in AQR Section 60.3. Accordingly, removing AQR Section 60.3 will not relax the SIP. DAQ asks EPA to replace AQR Section 60.3 with AQR Sections 101, 103, 104, and 106.

5.5.7 Replacement of AQR Section 60.4

Existing SIP-approved regulation AQR Section 60.4, promulgated in 1979 shortly after EPA issued the CTG and withdrawn by the BCC in 2011, followed EPA's original CTG guidance prohibiting the use of cutback asphalt in the Las Vegas Valley except in limited circumstances. After EPA published the CTG, it issued additional guidance (EPA 1978c, 1979, 1979a) explaining that a complete prohibition on cutback asphalt was impractical. EPA revised its CTG recommendation to either (1) use cutback asphalt with a VOC content ranging from 3–12% (depending on the application), or (2) meet an across-the-board VOC content limit of 5–7%. By EPA's own admission, the applicability of AQR Section 60.4, as approved by the BCC in 1979, is impractical; correspondingly, the rule likely had a lower effectiveness.

AQR Section 107 would replace AQR Section 60.4 in the SIP to restrict the VOC content of cutback asphalt to 0.5% or less by volume throughout Clark County. This is more stringent than EPA's recommended control level, and expands the geographic scope of the rule outside the moderate nonattainment area. AQR Section 107 also brings much-needed clarity to the applicability provisions. AQR Section 60.4 included definitions for slow, medium, and fast cure cutback asphalt, but these definitions are not cited in its applicability provisions, leaving the rule unclear. AQR Section 107 addresses the impracticability concerns raised by EPA and provides a clearer set of requirements for the regulated community, including appropriate monitoring, recordkeeping, and reporting requirements that AQR Section 60.4 lacks. The additional requirements in AQR Section 107 should lead to greater emissions reductions than the theoretical potential of those in AQR Section 60.4.

Accordingly, DAQ finds that AQR Section 107 is at least as stringent as AQR Section 60.4 and removing AQR Section 60.4 from the SIP will make room for a more effective rule with higher emissions reductions. DAQ asks EPA to replace AQR Section 60.4 with AQR Section 107 in the SIP.

6.0 REASONABLY AVAILABLE CONTROL MEASURES

Section 172(c)(1) of the Act requires states to implement RACM to assure a nonattainment area attains the NAAQS as expeditiously as practicable. Specifically, the Act states in 42 U.S.C. 7502(c):

> **(1) IN GENERAL**
> Such plan provisions shall provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology) and shall provide for attainment of the national primary ambient air quality standards.

EPA has not identified a specific set of control measures that qualify as RACM: "Under EPA's policy concerning RACM, there are no measures that are automatically deemed RACM" (70 FR 71612, 71660). Instead, the agency recognizes that the requirement for RACM relates to the requirement to attain the NAAQS: EPA determined that it may approve any SIP submittal lacking specific RACM control measures if the state demonstrates "(a) that reasonable further progress and attainment of the NAAQS are assured, and (b) that application of all RACM would not result in attainment any faster" (44 FR 20372, 20375). EPA's interpretation of the RACM requirement has been litigated and upheld by several courts (e.g., *Sierra Club v. EPA,* 314 F.3d 735 (5th Cir. 2002) and *Sierra Club v. EPA,* 294 F.3d 155 (D.C. Cir. 2002)).

This section briefly explains the control technologies considered for RACM and DAQ's conclusions on whether any control measures qualify as RACM for the moderate attainment plan. Attachment E contains the complete RACM list and analysis (RTP Environmental Associates, Inc. 2024a).

DAQ developed a list of potential control measures using EPA's Menu of Control Measures (EPA 2022b). This menu provides a broad listing of potential measures for reducing NO_x and VOC emissions. DAQ also consulted with the Regional Transportation Commission of Southern Nevada to identify potential transportation control measures that could be applied in the area to reduce mobile source emissions, and considered transportation and nontransportation control measures from other state and local RACM plans (e.g., New Jersey, California, Maryland, New York, Maricopa County).

After a thorough evaluation of available control measures, DAQ found none qualified as RACM under EPA's established criteria. Attainment modeling demonstrates that the ambient ozone air quality level in HA 212 will reach ozone attainment without additional local VOC or NO_x control measures.

Moreover, DAQ cannot implement any potential control measure identified in the RACM analysis in time to advance the attainment date by one year. EPA requires implementation of ozone control measures and modeling of attainment by the last full ozone season preceding the attainment date, which for HA 212 is August 3, 2024. EPA will determine whether HA 212 attained by this date using a three-year average of the annual fourth-highest daily maximum ozone concentrations for 2021–2023. To advance the attainment date by a year (to August 3, 2023), EPA would have to rely on the 3-year average of the annual fourth-highest daily maximum ozone concentrations for the years 2020–2022. DAQ would have had to adopt control measures and put them into effect no later than the end of 2022, which was before EPA reclassified HA 212 to moderate nonattainment status and required a RACM analysis.

In summary, existing federal and local ozone control measures, along with reductions in transported pollution, are projected to bring HA 212 into attainment with the 2015 8-hour ozone NAAQS by August 3, 2024. Therefore, no additional control measures are needed. It is also not feasible to implement additional control measures to advance the attainment date by at least one year because such measures could not have been adopted and put into effect by the end of 2022. Therefore, there are no control measures that satisfy the RACM criteria.

7.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

EPA's 2015 Ozone NAAQS Implementation Rule requires air pollution control agencies to submit a SIP revision that meets the Act's VOC and NO_x RACT requirements for any nonattainment area classified as "moderate" or higher (40 CFR Part 51.1312(a)). Specifically, Sections 172(c)(1), 182(b), and 182(f) of the Act require that RACT apply to VOC emissions from each source category for which EPA has issued a control technology guideline (CTG) and all major sources of VOC or NO_x. For a moderate nonattainment area such as HA 212, "major stationary source" is defined as a stationary source that emits, or has the potential to emit, at least 100 tpy of either VOC or NO_x (see Section 302 of the Act; Section 182 uses the terms "major stationary source and "major source" interchangeably).

The AQRs require stationary sources to comply with RACT under Sections 12.1.3.6 and 12.4.3. AQR Section 0, "Definitions," defines RACT as:

> the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available, considering technological and economical feasibility...

This requirement applies when a stationary source proposes to construct or modify an emissions unit and the change will cause either (1) a significant increase in the potential to emit of a minor stationary source, or (2) an emissions increase greater than the minor NSR significant level for a pollutant at a major source. For NO_x and VOC emissions increases, the significance levels are 20 tpy (AQR Sections 12.1.1 and 12.4.2.1).

Although the DAQ and EPA definitions for RACT are consistent,[6] the applicability of RACT to stationary sources under the AQRs differs from the required applicability of RACT based on an area's nonattainment classification. Even where the AQRs would regulate the same source and impose the same level of emissions control as federal RACT, EPA requires states to reevaluate previously applied RACT to determine whether it still meets current requirements.

DAQ undertook the required analysis for determining the applicability of CTG RACT (RTP Environmental Associates, Inc. 2024b) and major source RACT (RTP Environmental Associates, Inc. 2023) to stationary sources in HA 212. Appendices C and D include the full analyses; Sections 7.1 and 7.2 summarize the findings.

[6] Neither the Act nor EPA's rules contain a codified definition of RACT for purposes of implementing the Part D RACT requirements in the Act. Instead, EPA has defined RACT in numerous guidance statements as "the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility." EPA first set forth this definition in a memorandum titled "Guidance for Determining Acceptability of SIP Regulations in Non-attainment Areas" (EPA 1976).

7.1 CONTROL TECHNIQUE GUIDELINES FOR REASONABLY AVAILABLE CONTROL TECHNOLOGY

Sections 108 and 183 of the Act direct EPA to issue control technique guidelines (CTGs) that provide air pollution control agencies with information on reducing VOC emissions from certain source categories. The CTGs include information on emissions reduction benefits, installation costs of emissions controls, and environmental impacts associated with using control technologies.

CTGs provide the presumptive norm of VOC control requirements for specific categories of sources (44 FR 53761). EPA recommends that air pollution control agencies adopt regulations consistent with the applicability thresholds and control levels in the CTGs; however, agencies have the freedom to "judge the feasibility of imposing the recommended controls on particular sources, and adjust the controls accordingly" (44 FR 53761).

Section 182(b)(2) of the Act requires that air pollution control agencies implement CTG RACT requirements for each category of VOC stationary sources covered by an EPA-issued CTG when the source operates in a moderate nonattainment area. EPA has not issued CTGs for NO_x emissions from source categories, but has issued Alternative Control Techniques guidance for some NO_x source categories. Unlike CTGs, ACTs do not establish a presumptive level of emissions control; rather, they provide information on potential control measures and costs. They are a resource for determining RACT for individual major sources and for RACM requirements, which are separate under Section 172(c) of the Act.

The CTG RACT analysis in Attachment C describes DAQ's search methodology and identifies potential CTG sources (i.e., sources that might fall into a CTG source category) operating within HA 212. As summarized in the following sections, the analysis establishes presumptive RACT equivalency for some existing SIP-approved regulations, but DAQ will promulgate new rules for some CTG source categories; provides negative declarations for source categories with no CTG sources operating in HA 212; identifies source categories for which new CTG RACT regulations are needed; and calculates potential emissions reductions from new CTG RACT rules.

Table 15 summarizes the anticipated emissions reductions from the new CTG RACT rules.

Table 15. VOC Emissions Reductions Estimates for CTG Source Categories

Source Category	VOC Emissions Reduction (tpd)
Metal and Plastic Parts Surface Coating	0.13
Degreasing	0.33
Industrial Adhesives	0.90
Industrial Cleaning Solvents	3.74
Graphic Arts	2.03
Cutback Asphalt (county wide)	0.66
Total	**7.79**

A total of 7.75 tpd of anticipated emissions reductions are creditable toward ROP, since the reductions will take place within HA 212.

7.1.1 Identification of Source Categories

DAQ used four methods to search for CTG sources operating within HA 212: searching the annual emissions inventory; searching business licenses obtained through the Nevada Secretary of State's website and the Clark County Business License Office; reviewing minor source permits; and searching the internet and yellow pages using key terms. In some cases, DAQ also conducted site inspections to confirm the nature of operations at a given location.

Through these searches, DAQ identified 11 CTG source categories under which stationary sources may be operating within HA 212:

1. Metal and plastic parts surface coating;
2. Metal solvent cleaning (degreasing);
3. Industrial cleaning solvents;
4. Industrial adhesives;
5. Graphic arts;
6. Cutback asphalt;
7. Gasoline service stations;
8. Gasoline loading terminals;
9. Bulk gasoline plants and trucks;
10. Petroleum storage;
11. Surface coating of paper.

7.1.2 CTG Source Categories Rules

CTG sources operating in HA 212 are already regulated to at least the presumptive RACT level under existing SIP-approved regulations, i.e., gasoline loading terminals, bulk gasoline plants and trucks, petroleum storage, and surface coating of paper. The CTG RACT analysis identifies the existing SIP-approved rules that require at least the presumptive RACT level of control for these. DAQ promulgated new rules to replace existing regulations, implementing CTG RACT to improve rule effectiveness by promoting consistency and thoroughness through compliance obligations. DAQ also promulgated new rules for the remaining six source categories:

1. Metal and plastic parts surface coating;
2. Metal solvent cleaning (degreasing);
3. Industrial cleaning solvents;

4. Industrial adhesives;

5. Graphic arts (flexographic, offset lithographic and letterpress printing); and

6. Cutback asphalt.

7.1.2.1 AQR Section 101 for Industrial Adhesive Operations

Adhesives are compounds that allow two surfaces to join. This CTG (EPA 2008) recommends emissions control requirements for adhesive and adhesive primer applications used in a variety of different industrial operations. Presumptive RACT includes several compliance options: EPA recommends that a CTG source use either low-VOC adhesives with good adhesive transfer application methods, or a combination of low-VOC adhesives and add-on controls. Alternatively, EPA allows CTG sources to meet an 85% control efficiency standard.

AQR Section 101 follows EPA's presumptive RACT recommendations, and includes work practices requirements to assure proper handling and disposal of adhesive materials. DAQ estimates that the new rule will result in 0.90 tpd of emissions reductions in HA 212, assuming an 85% emissions reduction and 80% rule effectiveness.

7.1.2.2 AQR Section 102 for Gas Dispensing Facilities

This CTG (EPA 1975) suggests Stage I vapor recovery systems to control VOC emissions when dispensing gasoline from tanker trucks into storage tanks. These systems capture the gas vapors displaced during the filling process and return them into the tank of the delivery truck. The CTG recommends a Stage I vapor recovery system for gasoline stations exceeding 10,000 gallons a month.

Clark County's existing SIP-approved regulation (AQR Section 52) requires submerged filling and a vapor balance system for all stations constructed after Jan. 1, 1978; however, the BCC repealed Section 52 in 2011. DAQ will adopt AQR Section 102 to include the requirements of the existing SIP-approved regulation, and to set forth design and operating specifications for a vapor recovery system that meets Stage I requirements with more clarity and firmer compliance obligations.

Although DAQ believes the new rule will be more effective than Section 52, no additional emission reductions are included in the ROP demonstration relative to this new local control measure.

7.1.2.3 AQR Section 103 for Miscellaneous Metal or Plastic Parts Surface Coating Operations

This CTG (EPA 1978a) applies to miscellaneous metal and plastic parts manufacturers with VOC emissions higher than 3 tpy from use of paints, sealants, caulks, inks, and maskants from coating parts. Presumptive RACT recommends specific limits (in lb VOC/gal) for different coating types. EPA provides additional options for compliance through add-on emissions controls and work practices requirements, estimating that compliance with CTG recommendations would result in a 35% VOC emissions reduction.

DAQ identified several companies whose business operations might be regulated by AQR Section 103; however, the current 2017 base year emissions inventory only includes four point sources. For the attainment plan, DAQ estimated emissions reductions only from those four point sources. DAQ estimates that AQR Section 103 will result in 0.13 tpd of VOC emissions reductions, assuming a 35% emissions reduction from the required emissions controls with 80% rule effectiveness.

7.1.2.4 AQR Section 104 for Industrial Cleaning Solvent Operations

This CTG (EPA 2006a) regulates consumer and commercial products used to remove such compounds as dirt, adhesives, inks, coatings, and other unwanted materials. Industrial operations across all types of source categories may use these products. Presumptive RACT includes work practices requirements, an emissions limitation, and an alternative emissions standard that applies to facilities exceeding a 15 lb/day VOC emissions threshold. EPA estimated that the emissions controls would result in an 85% emissions reduction.

Section 104 adopts EPA's presumptive RACT VOC emissions limitation of 0.42 lb/gal (50 g/L) or at least 85% emissions control efficiency using an ECS, or the alternative composite vapor pressure standard of 8.0 mm Hg measured at 68°F (20°C). The rule also imposes work practices requirements at least equivalent to presumptive RACT.

DAQ estimates that AQR Section 104 will result in 3.74 tpd of VOC emissions reductions, assuming a 94% emissions reduction with an 80% rule effectiveness.

7.1.2.5 AQR Section 105 for Solvent Metal Cleaning Operations

This CTG (EPA 1977a) establishes presumptive RACT to control VOC emissions from cold cleaners, open top vapor degreasers, and conveyorized degreasers that use volatile solvents to clean metal parts.

EPA based presumptive RACT for this source category on equipment specifications and operating requirements, rather than on achieving compliance with a specific emissions limitation. The CTG recommends either of two compliance options—equipment/operation specifications or work practices—for each type of degreaser system; however, states typically adopt both options as RACT.

AQR Section 105 will impose EPA's presumptive RACT equipment specifications, operating requirements, and recommended work practices requirements. Although the new rule establishes requirements for all three types of degreasers, it is likely only cold cleaners operate in HA 212, which would result in lower emissions reductions from the rule. From this assumption, DAQ estimates that AQR Section 105 will result in 0.33 tpd of VOC emissions reductions based on a control efficiency of 53%. Since conservatism was built into this estimate, DAQ did not further discount the reduction with a rule effectiveness adjustment.

7.1.2.6 AQR Section 106 for Offset Lithographic, Letterpress, and Flexible Package Printing and Other Graphic Arts Operations

EPA issued three CTGs (EPA 1978b; EPA 1993a; EPA 2006b; and EPA 2006c) affecting graphic art operations, including flexographic and rotogravure printing, offset and letter press printing, and flexible packaging. The CTGs identify a variety of options for controlling VOC emissions from the inks, coatings, adhesives, and cleaning materials used in such printing operations, including add-on controls (e.g., carbon absorbers, incinerators), waterborne materials, and work practices requirements. The CTGs also recommend VOC material content limits or add-on ECSs to meet presumptive RACT requirements. EPA recommends different ECS control efficiency performance standards, depending on the date of installation.

AQR Section 106 will regulate only flexible packaging and offset and letterpress printing, since DAQ identified no flexographic and rotogravure printing operations in HA 212. The rule follows EPA's presumptive RACT approach for emissions reduction requirements, and includes work practices requirements for handling and disposing of graphic arts material.

DAQ estimates the new rule will result in 2.03 tpd of VOC emissions reductions, assuming an average control efficiency of 66% with 80% rule effectiveness.

7.1.2.7 AQR Section 107 for Cutback Asphalt Operations

Cutback asphalt is used in road construction and other paving operations. This CTG (EPA 1977b) recommends substituting emulsified asphalt for cutback asphalt which EPA estimated would lead to nearly 100% VOC emissions reductions. In subsequent years, however, EPA issued additional guidance (EPA 1978c, 1979a, 1979b) explaining that a complete prohibition on cutback asphalt was impractical and recommended either VOC content limits ranging from 3–12% (depending on the application) or an across-the-board VOC content limit of 5–7%. Subsequently, some states adopted CTG RACT rules with an across-the-board, lower VOC content restriction.

As discussed in Section 5.5.7, AQR Section 107 would replace Section 60.4 in the SIP. The rule will restrict the VOC content of cutback asphalt to 0.5% or less by volume throughout Clark County. DAQ estimates the new rule will result in 0.62 tpd VOC emissions reductions within HA 212 and an additional emissions reduction of 0.04 tpd in the larger Clark County area, assuming 80% rule effectiveness.

7.1.2.8 New Subsections of AQR Sections 13 and 14 for Petroleum Storage

Existing AQR Section 50 requires 40,000-gallon or larger tanks storing petroleum liquid with a vapor pressure of 78 mmHg or greater to equip the tank with a vapor recovery system or floating roof unless the tank is pressured. The rule includes provisions for reducing equipment leaks. Although requirements such as double seals are not included, the rule meets EPA's presumptive RACT recommendation.

DAQ will replace this rule in the SIP by incorporating by reference federal NSPS rules at 40 CFR Part 60, Subparts K, Ka, and Kb, and the federal NESHAP rule at 40 CFR Part 63, Subpart BBBBBB. Section 5.5.1 and Attachment C of this plan explain how the new AQRs are as least as stringent as Section 50 and satisfy CTG RACT requirements.

7.1.2.9 New Subsections of AQR Sections 13 and 14 for Bulk Gas Plants and Terminals

Existing AQR Section 51 regulates some bulk gasoline plants and all bulk gasoline terminals. It requires facilities to use submerged or bottom-filling, vapor collection and disposal, or an equivalent meeting a 90% control efficiency, depending on the facility's annual throughput. This control requirement meets EPA presumptive RACT recommendation.

DAQ will replace AQR Section 51 by incorporating by reference the federal NSPS at 40 CFR Part 60, Subparts XX and XXa, and federal NESHAP at 40 CFR Part 63, Subpart BBBBBB to meet CTG RACT requirements and substitute for the existing AQR Section 51. Section 5.5.2 and Attachment C of this plan explain how the new AQRs are as least as stringent as AQR Section 51 and satisfy CTG RACT requirements.

7.2 MAJOR SOURCE RACT

7.2.1 Introduction

This section explains DAQ's methodology for making major source RACT determinations and summarizes the findings of a series of case-by-case RACT analyses for individual major stationary sources of VOC and NO_x within HA 212. DAQ determined RACT for each major source based on (1) source-provided RACT analyses, and (2) supplemental information and additional analyses conducted by DAQ. The resulting RACT determinations for existing major stationary sources (as defined in 40 CFR Part 70) are based on technically feasible control technologies available in 2023 and their concurrent costs.

Due to the limited number of major sources in HA 212's emissions inventory, DAQ determined that conducting a case-by-case analysis for each existing major stationary source was the most appropriate course for determining RACT. The RACT analyses conducted for each applicable emissions unit for NO_x and/or VOC demonstrated that no additional controls existed that were both technically feasible and cost-effective, so controls (and, in most cases, compliance monitoring) in the sources' current permits was determined to be RACT. Therefore, RACT requirements will result in no emission reductions of either pollutant in HA 212.

7.2.2 Methodology

Attachment D provides a complete RACT analysis for the emission units subject to RACT at each of the major stationary sources involved. DAQ's case-by-case RACT determinations consisted of:

1. Establishing a threshold for each pollutant above which control would not be considered cost-effective. DAQ established a threshold of $5,500/ton for both NO_x and VOC based on a review of other agency thresholds.

2. Identifying all available control options for each type of emission unit subject to RACT (e.g., a 30-MMBtu/hr natural gas-fired boiler).

3. Listing all the control options identified in Step 2.

4. Evaluating each control option and rejecting those not technically feasible for that specific emission unit (e.g., unavailable for that size boiler).

5. Estimating baseline and controlled pollutant emissions (in tpy) and determining the emissions reduction (in tpy) that would occur from application of that control option.

6. Calculating the cost-effectiveness in 2022 dollars per ton of pollutant removed ($/ton) and comparing it to the cost-effectiveness threshold established in Step 1.

7. Determining and evaluating the environmental, energy, and other impacts (i.e., benefits and disbenefits), including whether application of the control technology would increase or decrease emissions of other pollutants, such as GHG or HAP.

8. When a control option for an emission unit was cost-effective and did not result in unacceptable secondary impacts, developing a proposed RACT emissions limitation or averaging approach that also addressed startup and shutdown operations; establishing a schedule for installing and operating the ECS; and preparing testing, monitoring, recordkeeping, and reporting methods that met periodic monitoring or compliance assurance monitoring requirements.

DAQ first provided major stationary sources an opportunity to conduct their own RACT analyses to submit to DAQ for review. To assure uniformity in cost estimates, DAQ advised sources to use a 6% interest rate and to presume the emission unit had a remaining useful life of 30 years; however, sources could submit information justifying a different useful life and/or actual interest rates, which DAQ would consider in final RACT determinations.

DAQ identified two approaches for determining baseline emissions for cost-effectiveness calculations. The first used the emission unit's PTE, including consideration of existing, enforceable control technologies. The second used either the source's or an emission unit's actual emissions. DAQ allowed a major source to compute cost-effectiveness using the second approach when its actual emissions over a representative period of operations were less than 70% of PTE: that is, the source could use actual emissions as a baseline for all its emission units if the source's actual emissions were 70% below its PTE, or the source could use actual emissions for an individual emission unit if that unit's actual emissions were 70% below its PTE.

DAQ advised sources to submit RACT analysis information on each emission unit with a PTE equal to or greater than 5 tpy. In a few cases, DAQ asked a source to evaluate RACT for a group of similar emission units (e.g., storage tanks, emergency backup generators) even when the individual units fell below the 5-tpy threshold. This approach assured that each RACT analysis addressed major contributions to each source's PTE.

All the draft RACT analyses submitted generally followed DAQ guidance, providing information on emission units, available control technologies, and cost-effectiveness. Attachment D contains the information from these analyses, along with DAQ's further analyses and conclusions.

After receiving self-analyses from the major sources, DAQ reviewed the information for thoroughness, reliability, and to determine if the source:

1. Included all emission units;

2. Searched the RACT/BACT/LAER Clearinghouse and literature for potential control technologies;

3. Listed all available control technologies;

4. Followed the guidelines for determining RACT; and

5. Documented critical parts of the analysis (e.g., how sources determined the remaining useful life of equipment).

These self-analyses proved useful to DAQ's final RACT determinations. In determining the suitability of a given control option for RACT, DAQ was guided by the cost-effectiveness values it had approved in past control technology determinations, the cost-effectiveness guidance provided by EPA, and the cost thresholds other states found acceptable. DAQ used a cost-effectiveness threshold of $5,500/ton, which was among the highest in a survey of state agencies (San Diego Air Pollution Control District 2020).

For its cost-effectiveness analyses, DAQ used a 30-year equipment life term and 6% interest rate to make conservative estimates, i.e., it selected values that would result in a lower cost-effectiveness (in $/ton removed) than a less conservative estimate for items like maintenance costs. DAQ also considered the remaining life for either (1) the control device, if it could continue to operate when the emission unit it serves is replaced by a new one, or (2) the emission unit, if the control technique was inherent to the unit. An example of the first instance is an selective catalytic reduction (SCR) system that treats the exhaust gas from a diesel generator: if the generator is replaced, the SCR system can be connected to the new generator and continue operating. An example of the second is modifying a generator for Injection Timing Retard: that technology would be part of the existing unit, so the remaining life of the generator would be used.

DAQ assumed a 30-year remaining useful life unless a source documented a shorter time. If a source provided cost estimates using a shorter useful life but did not provide adequate documentation to justify, DAQ revised the analysis using a 30-year life expectancy. If a source provided adequate documentation for a shorter life, DAQ reviewed the information and decided whether to revise its analysis.

Developing cost-effectiveness values was an iterative process. Initial analyses were first-order approximations based on information in the literature except where vendor information on cost or applicability was available. After conducting the first-order approximation, costs were not corrected for inflation unless the first calculation for a unit fell below the cost-effectiveness threshold; in such cases, DAQ adjusted the cost for inflation and recalculated cost-effectiveness. If the inflation-adjusted cost-effectiveness value was still below the threshold of $5,500/ton, DAQ reviewed the parameters to determine whether further refinements to the cost estimate were warranted; if so, revised parameters were developed and cost-effectiveness recalculated. A cost-effectiveness value that was still below the threshold indicated the control technology for that emission unit was reasonable.

Most of the cost-effectiveness developed in these analyses relied on values from available literature for at least some of the parameters used in the calculations. Major sources could elect to develop parameters based on vendor quotes for application of a specific control technology on specific emission units and request that DAQ use those parameters instead. Since vendor quotes for specific units are generally more accurate and up-to-date than literature values, DAQ usually accepted the recalculated cost-effectiveness value.

After determining what control measures qualified as RACT, DAQ determined RACT emissions limitations. If DAQ determined the existing level of control was RACT, it accepted the emissions limitations imposed through the source's permit, which provided an effective emissions limit (or equivalent) and adequate monitoring, reporting, and recordkeeping conditions to ensure compliance. DAQ did not consider existing limits based on annual mass emissions appropriate for RACT. If the existing level of control was RACT and the affected source only had an annual mass emission limit, DAQ applied a concentration-based limit (i.e., Y ppm @ X% O_2) derived from the facility's baseline emissions estimate for that unit.

The RACT emissions limitations derived from this process represent the lowest achievable emissions level with which existing emission unit(s) can continuously comply using the proposed RACT control option. RACT also includes requirements for startup, shutdown, and malfunction (SSM) periods; these provisions may be included in a single RACT emissions limitation, or they may be regulated under a separate emissions limitation when including emissions in a generally applicable emissions limitation would cause the proposed limitation to be too lax during normal operations. DAQ also considered using work practice requirements when numerical emissions limitations were not feasible.

7.2.3 Major VOC and NO_x Sources in HA 212

Through a review of the 2017 NEI and major source (40 CFR Part 70) operating permits, DAQ identified the following major sources that could be subject to major source VOC or NO_x RACT requirements.

Table 16. Major Sources in the HA 212 Nonattainment Area

Facility ID	Facility Name	Total Facility NO_x PTE (tpy)	2017 NEI Emissions (tpy)	2017 NEI Emissions (tpd)
NO_x Major Sources				
114	NAFB	199.0[1]	19.81	0.05
257	Caesars Consolidated Properties	370.1	19.9	0.05
16304	Switch, Ltd.	246.18	33.23	0.09
825	MGM Resorts International	757.05	65.07	0.18
7	Clark Generating Station	2465.9	115.40	0.32
423	Sun Peak Generating Station	249.4	15.89	0.04
393	Saguaro Power Company	164.1	102.79	0.28
VOC Major Sources				
13	Calnev Pipe Line LLC	187.4	59.31	0.16
7	Clark Generating Station	216.5	14.12	0.04

[1] NAFB's most recent ATC permit (10/13/22) states that NO_x PTE is now 200.47 tpy.

DAQ asked each major source to prepare and submit RACT analyses for any emission units with a PTE of 5 tpy or more of either NO_x or VOC. All agreed to provide the information. Because actual emissions from nearly all sources were much lower than PTE, the sources generally used actual emissions baselines per DAQ guidance.

7.2.4 RACT Analysis Summary

RACT analyses were conducted for emission units at the eight major stationary sources in HA 212. This section summarizes the results.

By emission unit type, there were 199 generators (all but 1 emergency generators); 9 natural gas-fired boilers, including 2 auxiliary boilers at a power plant; 16 simple cycle turbines; 6 combined cycle turbines; 2 aircraft engine test cells (hush houses); and 1 petroleum storage terminal with VOC emissions from storage tanks, a vapor recovery system, loading racks, remediation equipment (for treating contaminated soil), and fugitive emissions from numerous points within the system (e.g., valves, flanges, etc.). NO_x RACT was conducted for all emission units except the Calnev Pipe Line terminal, which had only VOC RACT emission units. Five turbines at Clark Generating Station were evaluated for both VOC RACT and NO_x RACT.

For all emission units evaluated, DAQ determined RACT was the current level of control. Most of the sources had existing permitted limitations or practices that represented RACT; for those that did not, DAQ set emissions limitations based on existing control equipment. With few exceptions, the existing monitoring, reporting, and recordkeeping provisions in the permits ensure compliance with RACT-level limits; the DAQ analysis identified new or revised monitoring, reporting, and recordkeeping provisions as needed to ensure compliance, including during SSM.

The principal reason the RACT analyses resulted in determinations that no additional control was cost-effective is that most emission units are already well-controlled because of former best available control technology (BACT) and existing RACT requirements in the AQR Section 12 series. The reduction in emissions from installing more stringent controls, by either adding to or replacing the existing controls, would be small, and a small reduction in emissions usually results in a high cost-effectiveness value.

For example, the seven natural gas-fired boilers at Caesars and MGM Resorts International (MGMRI) are already restricted to around 30 ppm, a relatively low emissions rate. Current technologies are available to reduce emissions to as low as 9 ppm, but this level of control would not achieve much additional emissions reduction: Caesars' CP01 boiler emissions rate limit, currently about 35 ppm at 3% O_2, could be reduced to as low as 10 ppm, but the reduction in actual emissions would be only 1.08 tpy. When looking at the cost to upgrade emissions controls, such relatively small reductions are not generally cost-effective.

7.2.5 Actual Emissions Methodology: Results and Considerations

The presumption behind the actual-emissions methodology is that the annual actual emissions used for a cost-effectiveness calculation represent normal operations for the source or individual emission unit. Because actual emissions from many individual emission units were quite low, the cost-effectiveness calculation was particularly sensitive to actual emissions levels.[7]

DAQ's RACT analyses used a variety of approaches to derive actual emissions. The sources' most common approach was to use the highest two-year average (in tpy) during a five-year (2017–2021) or three-year (2019–2021) period. One source used the highest annual emissions during 2019–2021; another used the highest-emitting generator in 2017; yet another used a three-year (2019–2021) average. Calnev estimated the actual VOC emissions from most of its equipment based on the type of equipment and seals. DAQ determined that all the different approaches yielded actual emissions that ranged from representative of normal operations (long-term averages) to conservative (e.g., highest annual emissions over a period of years); therefore, DAQ accepted the estimates.

7.2.6 RACT Summaries for Individual Major Stationary Sources

7.2.6.1 Nellis Air Force Base

The emission units at NAFB consist of nine diesel generators (eight emergency ones) and a hush house with two aircraft engine test cells. The generator analyses considered 18 control technologies, but only SCR was considered for the hush house. The Part 70 operating permit (DES 2021b) for the generators already requires good combustion practices (GCP) and good maintenance practices (GMP); turbocharging; Injection Timing Retard for emissions units A032, G032, and G033; and aftercoolers for all but the nonemergency generator (A032). No other technologies were found cost-effective.

For the hush house, only SCR was considered an available control technology. Information on SCR costs, feasibility, and even level of control was unavailable, but given the nature of the unit (intermittent testing of aircraft engines) and the fact that SCR is not suited for intermittent operations, DAQ concluded that SCR would be neither technically feasible for intermittent operations nor cost-effective. Therefore, RACT for these units consists of the existing control technologies; emissions limits; monitoring, reporting, and recordkeeping; and SSM provisions already contained in the NAFB Part 70 operating permit.

7.2.6.2 Caesars

Caesars owns several properties with boilers and emergency generators (DES 2021c). DAQ identified and evaluated 23 boiler control technologies. For five boilers, only one control technology (in addition to those already required) appeared cost-effective: switching to ceramic fiber burners. This control would have reduced emissions from 30 ppm to 15 at 3% O_2, saved fuel, and reduced

[7] For example, assume a boiler with actual emissions of 2.74 tpy and a reduction of 1.15 tpy from a control technology has a cost effectiveness of $7,533/ton, above the $5,500/ton threshold. If the actual emissions rose only 2.26 tpy, to 5 tpy, the reduction would be 2.1 tpy and the cost-effectiveness would drop to $4,128/ton, below the threshold, making the boiler cost-effective for RACT.

maintenance. However, all Caesars' boilers are about 30 MMBtu/hr in size and, according to several manufacturers, ceramic fiber burner applications are available only up to about 16 MMBtu/hr.[8]

Further research indicates that metal mesh burners, like ceramic burners, are ultra-low NO_x burners and can reduce emissions substantially—in this case, down to 9–15 ppm. The burners are suitable for larger boilers, up to 100 MMBtu/hr or more, but their cost is much higher (an estimated $250,000, since metal mesh burners are custom-designed and built for each boiler make and model) and there are no fuel savings. DAQ concluded that metal mesh burner technology is not cost-effective for these boilers.

In summary, DAQ finds that ceramic fiber burners are not available for these emission units and metal mesh burners are not cost-effective, so concluded that existing controls constitute RACT for these boilers.

Caesars' properties also host 27 emergency diesel generators subject to RACT review that are rated from 600–2,100 kW. These are limited to 100 hours of operation per year for testing and maintenance, and up to 50 hours per year for nonemergency situations (which count toward the 100 hours). All the engines are turbocharged and aftercooled. Of the 18 control technologies evaluated, DAQ determined that only the existing controls (i.e., turbocharging, GCP/GMP, and aftercooler) were cost-effective, and concluded they constitute RACT for the emergency diesel generators. The Caesars Part 70 operating permit (Source ID 257) includes compliance and monitoring requirements to ensure these existing controls conditions are met; DAQ concluded these constitute adequate monitoring, reporting, and recordkeeping to ensure RACT compliance.

7.2.6.3 Switch, Ltd.

Switch, Ltd. operates no emissions units with a PTE above 5 tpy NO_x, but DAQ asked the company to review its 117 large (3,353-hp/2,503-kW) emergency diesel generators in a RACT analysis.

The Switch Part 70 operating permit (DES 2021d) requires turbochargers and aftercoolers on all emergency generators. It requires Switch to follow the manufacturer's operations and maintenance guidance, and to ensure all 117 units comply with the emissions limitations in 40 CFR Part 60, Subpart IIII. DAQ concluded that these requirements are RACT because the NSPS for engines represent state-of-the-art emissions controls for these types of units. Switch's operating permit includes compliance and monitoring requirements to ensure these conditions are met; DAQ concluded these constitute adequate monitoring, reporting, and recordkeeping to ensure RACT compliance.

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[8] From 2019 to 2021, the five boilers' highest annual emissions were 10.89 tpy NO_x; had ceramic burners been applicable, they would have reduced that to 5.445 tpy, reducing NO_x by the same amount. The burners have the benefit of increasing efficiency and saving fuel, which makes them more cost-effective; for example, the cost-effectiveness for unit CP02, with 2.74 tpy actual emissions (without considering fuel savings), is $3,895/ton, which is cost-effective; but the cost-effectiveness for unit CP04, with 1.08 tpy actual emissions, is $9,881/ton, which is not. However, assuming the lowest hours of operation (446.6 for CP01 in 2021) and 5% fuel savings, would be $6,815/year, resulting in a cost-effectiveness of -$1,080 to -$2,739/year (depending on the unit), which is cost-effective. The reduction in actual emissions from equipping the boilers with ceramic burners (had they been available) would have been 5.445 tpy NO_x.

7.2.6.4 MGM Resorts International

MGMRI is currently a major source of NO_x with a source-wide PTE of 757.05 tpy, but it reported only 65.07 tpy of actual NO_x emissions in 2017. Emission units include two natural gas-fired boilers, each with a capacity of 32.66 MMBtu/hr, and 46 diesel-fired emergency generators ranging from 1,100–3,700 hp.

DAQ evaluated 23 boiler control technologies; only ceramic fiber burners appeared to be potentially feasible as additional RACT. However, the MGMRI boilers all are about 30 MMBtu/hr in size and, as discussed in Section 7.2.6.2, ceramic fiber and metal mesh burner applications are available only up to about 16 MMBtu/hr and are not cost-effective.

All 46 of MGMRI's emergency diesel generators are required to follow the manufacturer's operations and maintenance guidance, which is generally accepted as constituting GCP. In addition, the operating permit requires all units to have turbochargers and aftercoolers except:

- Turbochargers only: EX007–EX010 and NY27–NY29.
- Neither: TM01.

TM01 is the only unit for which the operating permit does not explicitly require turbocharging or aftercoolers, but it is also the only unit specifically mentioned as subject to EPA Tier Certification. The unit's manufactured control technology must comply with the applicable NSPS, thereby meeting the requirements of this certification and satisfying the definition of RACT.

The emergency generators currently:

- Are all required to practice GCP and GMP;
- Have and use turbochargers and aftercoolers, except the eight units that are not required to have aftercoolers (EX007–010 & NY 27–29, and TM01); and
- Have one EPA Tier-Certified unit (TM01). It must meet the appropriate limit in 40 CFR Part 60, Subpart IIII.

DAQ determined that the current control techniques (GCP/GMP, turbochargers, and aftercoolers, except as noted above) constitute RACT for all the units reviewed. In addition to GCP/GMP, RACT for TM01 includes meeting the Tier Certification requirements, specifically the emissions limits. MGMRI's Part 70 operating permit (Source ID 825) includes compliance and monitoring requirements to ensure all the above conditions are met; DAQ concluded these conditions constitute adequate monitoring, reporting, and recordkeeping to ensure RACT compliance.

7.2.6.5 Calnev Pipe Line

Calnev Pipe Line, LLC (Calnev), a Kinder Morgan subsidiary, owns and operates the Las Vegas Terminal (LVT), a petroleum products distribution terminal facility in HA 212. Operations include receiving petroleum fuel products via pipeline or truck and transferring gasoline, diesel, and biodiesel from storage tanks into trucks via loading racks.

LVT had a VOC PTE of 187.4 tpy and actual VOC emissions of 59.31 tpy in 2017. Most individual emissions units have a VOC PTE below 5 tpy, but DAQ asked LVT to include a majority of the emissions units in its RACT analysis.

LVT grouped individual emission units so the group PTE exceeded 5 tpy, then conducted RACT analyses on the following groups:

1. Storage tanks (total PTE of 61.3 tpy VOC) (Attachment D, Table 3-1);[9]

2. A vapor recovery unit (14.5 tpy VOC);[10]

3. Loading racks (65.7 tpy VOC);[11]

4. A remediation system (37.7 tpy VOC);[12] and

5. Fugitive components, such as valves, flanges, fittings, and pump seals (6.6 tpy VOC).

DAQ conducted a RACT analysis for each of these units/groups and determined they are well-controlled and no additional control technologies are cost-effective, so the existing controls and compliance measures (specified in the Part 70 operating permit (Source ID 13)) constitute RACT. DAQ also reviewed the monitoring, reporting, and recordkeeping requirements in the operating permit and determined they are effective in ensuring compliance with RACT.

7.2.6.6 Clark Generating Station

The Clark Generating Station (CGS) plant has a PTE of 2,465.9 tpy and had actual emissions of 115.4 tpy in 2017. Emissions units analyzed at CGS consisted of 13 simple cycle combustion turbines (Unit 4 and Units 11–22) and four combined cycle turbine units (Units 5–8). All turbines are already subject to RACT for NO_x; Units 4 and 5–8 are already subject to RACT for VOC (DES 2020a).

For this NO_x RACT evaluation, DAQ considered the use of SCR, water injection, and GCP for Unit 4. For Units 5–8, DAQ considered the installation of SCR with the existing dry-low NO_x combustors (DLNC); for Units 11–12, DAQ considered the installation of DLNC with the current use of SCR and water injection. For the VOC RACT evaluation, DAQ considered the use of oxidation catalyst controls and GCP for Units 4–8; Units 11–22 are already equipped with oxidation catalyst controls. All other control technologies are technically infeasible.

DAQ found no cost-effective NO_x or VOC control options for any unit except Unit 4. The proposed NO_x RACT for Unit 4 was an emissions limit of 120 ppm(dry volume) @ 15% O_2, based on the use of GCP for all periods of operation. For all other units, DAQ determined the current NO_x limits

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[9] No tank has a PTE of 5 tpy or more.
[10] The vapor recovery unit is itself a control device that LVT says is considered BACT.
[11] There are 15 loading racks. Most of the 65.7 tpy PTE is from gasoline dispensing. Assuming each rack has the same PTE, 65.7÷15 = 4.38 tpy per rack, less than the 5-tpy PTE threshold for RACT review.
[12] This system is also considered BACT per LVT.

represented RACT based on the use of existing control equipment and compliance determination procedures (Part 70 operating permit (Source ID 7)).

DAQ determined that VOC RACT for Unit 4 is an emissions limitation of 21.6 lb/hr based on GCP. For Units 5–8, DAQ determined the existing VOC limits represent RACT based on existing control configuration and compliance determination procedures.

DAQ defined NO_x and VOC RACT for startup and shutdown operations at CGS as GCP, and included a requirement to develop a best operating practices guideline with adequate reporting and recordkeeping procedures to ensure each unit maintains compliance with the "good operating practices" work practice standard.

7.2.6.7 Sun Peak Generating Station

The Sun Peak Generating Station (SPGS) plant has a NO_x PTE of 249 tpy and had actual emissions of 15.89 tpy in 2017. The emission units analyzed at SPGS consist of three natural gas-fired, simple cycle combustion turbines (Units 3–5). All units were subject to a RACT evaluation for NO_x; VOC RACT did not apply because emissions were below the RACT applicability threshold of 5 tpy PTE (DES 2020b). No other sources at the facility have NO_x or VOC emissions above the applicability threshold.

All turbines are currently equipped with water injection for NO_x control (Part 70 operating permit (Source ID 423)). Potential control options include SCR, DLNC, and a combination of SCR with DLNC for all units. All other options are technically infeasible. The cost evaluation identified no cost-effective control options; therefore, DAQ determined the current controls represent RACT. DAQ will require the source to continue to meet its NO_x emissions limitations and follow existing compliance determination procedures to satisfy RACT.

DAQ concluded that GCP would also apply to startup and shutdown operations at SPGS, and included a requirement to develop a best operating practices guideline with adequate reporting and recordkeeping procedures to ensure that each emission unit maintains compliance with the "good operating practice" work practice standard.

7.2.6.8 Saguaro Power Company

Saguaro Power Company (SPC) had the highest emissions relative to PTE of all the major sources reviewed: a PTE of 164.1 tpy NO_x and actual emissions of 102.79 tpy NO_x in 2017. The emissions units consist of two natural gas-fired combined cycle turbine units (Units 1 and 2) and two natural gas-fired auxiliary boilers (Units 5 and 6). All turbines and boilers were subject to a NO_x RACT evaluation; VOC emissions are below the RACT applicability threshold (DES 2020c).

All turbines are currently equipped with steam injection and SCR for NO_x control (Part 70 operating permit (Source ID 393)). Potentially available control technologies include DLNC and SCR catalyst replacement; all other options are technically infeasible. The cost evaluation was based on actual emissions data, and showed there were no cost-effective control options for either unit. DAQ determined that existing controls represent RACT, and will require continued compliance with current NO_x limits and compliance determination procedures.

Both boilers are equipped with low NO_x burners (LNBs), although the Unit 5 boiler is also equipped with flue gas recirculation. DAQ evaluated an extensive list of potential NO_x control technologies for Unit 5 and, with a few exceptions, found all were technically infeasible. DAQ lacked sufficient information to determine feasibility for certain combustion-related technologies, including LNBs, staged combustion, excess air reduction, and gas flow modifiers; however, none of these options would be considered cost-effective even if deemed technically feasible. Therefore, DAQ concluded the existing controls represent RACT and will require continued compliance with the current NO_x limit and compliance determination procedures.

DAQ also evaluated an extensive list of potential control technologies for Unit 6, and concluded that only the following technologies are technically feasible: LNB upgrade with flue gas recirculation, installation of a ceramic fiber burner, installation of a forced internal recirculation burner, and fuel-induced recirculation. Based on the cost evaluation, DAQ concluded there are no cost-effective upgrades for this unit. Therefore, the existing controls represent RACT and DAQ will require continued compliance with the current NO_x limit and compliance determination methods.

Finally, DAQ proposed the use of GCP as RACT for all units during startup and shutdown operations, with an additional requirement to develop a best operating practices guideline.

8.0 RATE OF PROGRESS

Section 182(b)(1)(A) of the Act requires states to provide at least a 15% VOC emissions reduction in moderate ozone nonattainment areas within six years from a 1990 emissions baseline year. In the 2015 Ozone Implementation Rule, EPA interpreted this 15% ROP requirement to apply to the 2015 ozone NAAQS based on the corresponding baseline year (2017). EPA indicated the ROP requirement applies in any moderate ozone nonattainment area where it was not previously met for an earlier ozone NAAQS (40 CFR 51.1310(a)(4)).

Since EPA classified HA 212 as a "marginal" ozone nonattainment area for the 1997 ozone NAAQS, an ROP requirement for ozone has never applied to HA 212. However, DAQ must meet this requirement for the 2015 ozone NAAQS.

For the ROP analysis, DAQ developed an inventory different from the 2015 ozone NAAQS SIP Inventory (Ramboll US Consulting, Inc. 2024b, Attachment F). DAQ based this "ROP inventory" on EPA's most recent 2016v3 EMP, and it includes 2017 base year and 2026 future year inventories. Attachment G provides detailed information on DAQ's ROP analysis (Ramboll US Consulting, Inc. 2024c).

As described in this section, HA 212's 2017 VOC base year ROP inventory equals 109.81 tpd. DAQ must reduce HA 212's VOC emissions by at least 16.47 tpd to meet the 15% ROP. This reduction must come from within the boundaries of HA 212, and DAQ may not substitute NO_x emission reductions or take credit for control measures implemented outside HA 212.

With implementation of all current control measures, DAQ projects 2026 VOC emissions to decrease by 5.09 tpd to 104.72 tpd. These reductions are principally related to anticipated emissions reductions in the on-road mobile sector. The 2026 VOC emissions inventory does not include reductions from any new local control measures. To meet ROP, DAQ must impose new control requirements that achieve at least 11.38 tpd VOC emissions reductions.

Table 17. Summary of HA 212 Summer Weekday VOC Emissions (tpd)

Source Category	2017 VOC Base Year Emissions (tpd)	2026 VOC[1] Estimated Emissions (tpd)
Point source	1.25	1.35
Nonpoint source	57.72	61.69
On-road mobile	24.81	14.60
Nonroad mobile	24.03	24.25
Airports (commercial & federal)	1.96	2.75
Locomotives	0.04	0.03
ERC	Federal	0.05
Total, tpd	109.81	104.72

[1] Emissions estimated without additional control measures proposed in this attainment plan.

DAQ plans to meet the additional VOC emissions reduction requirement through (1) implementation of CTG RACT on stationary sources, and (2) adoption of a local control measure to restrict

VOC content in AIM coatings. The following table shows the expected emissions reductions from each new control measure.

Table 18. Projected VOC Emissions Reductions from New Control Measures

Control Measure	Description	2026 VOC Emissions Reductions (tpd)
Existing Control Measures	Already adopted	5.09
CTG Reasonable Available Control Technology	Metal and plastic parts surface coating	0.13
	Degreasing	0.33
	Industrial adhesives	0.90
	Industrial cleaning solvents	3.74
	Graphic arts	2.03
	Cutback asphalt (HA 212)	0.62
	Subtotal	*7.75*
Local Control Measures	AIM coatings from OTC model rules (Phases I–II)	3.83
	Subtotal	*3.83*
	Total Reduction	**16.67**

The new control measures, combined with existing ones, will reduce future year VOC emissions by 16.67 tpd to a total of 88.05 tpd. This represents a 15.18% decrease from the 2017 base year inventory, which satisfies ROP. Appendices C and G provide complete explanations and documentation of these calculations.

Although the 2015 ozone implementation rule requires VOC emissions reductions to occur within the six years following the 2017 base year (i.e., by 2023), the timing presented a challenge because the requirement to achieve ROP did not become effective in HA 212 until January 5, 2023. Given the time necessary to develop an emissions inventory, conduct attainment demonstration modeling, identify sources subject to CTG and major source RACT, develop regulations to implement additional control measures, and allow for EPA SIP approval, the required VOC emissions reductions could not be achieved by the attainment date.

"EPA has routinely concluded in these circumstances that the area should demonstrate the required ROP as expeditiously as practicable once the statutory date for achieving such ROP had passed" (68 FR 55472; also 65 FR 31485, 63 FR 28898, and 62 FR 31343). Although no court has directly addressed the "as expeditious as practicable" standard, courts have addressed other issues concerning ROP plans submitted after the statutory date that demonstrated ROP as expeditiously as practicable without expressing any concern. For instance, 68 FR 55472 cited *Sierra Club v. EPA,* 252 F.3d 943 (8th Cir. 2001), where the court upheld the calculation methods used in an ROP plan that was submitted three years after the statutory date and demonstrated ROP achievement seven years after the statutory date. DAQ intends to implement the required ROP as expeditiously as practicable; it adopted the CTG RACT rules in early 2024, and expects full implementation by September 2025.

For this ROP demonstration, DAQ estimated future year emissions using the 2026 projected emissions inventory because emissions reductions will occur close in time to that inventory year.

9.0 PERMIT PROGRAM FOR NEW AND MODIFIED MAJOR SOURCES

Section 172(c)(5) of the Act requires the state to implement a permit program consistent with the requirements of Section 173. DAQ has a long-standing and fully implemented Nonattainment New Source Review (NNSR) permitting program for major sources under AQR Section 12.3. DAQ certifies that the existing NNSR program is as least as stringent as the requirements at 40 CFR Part 51.165 for ozone and its precursors, and includes everything needed to meet EPA's minimum requirements for moderate nonattainment areas for the 2015 ozone NAAQS.

9.1 EXISTING NNSR RULES

AQR Section 12.3 contains Clark County's existing NNSR regulations. These rules were last revised on July 20, 2021 (NDEP 2021), and EPA approved the revisions on May 6, 2024, finding the rules met the marginal area NNSR requirements for the 2015 ozone NAAQS (89 FR 37137).

9.2 HOW CLARK COUNTY REGULATIONS MEET MINIMUM NNSR SIP REQUIREMENTS

Table 19 shows how DAQ's regulations meet EPA's minimum requirements for an approvable NNSR SIP for a moderate nonattainment area for the 2015 ozone NAAQS. Accordingly, DAQ certifies that its existing NNSR program is as least as stringent as the requirements at 40 CFR Part 51.165 for ozone and its precursors.

Table 19. Compliance Demonstration for Clark County's NNSR Program

40 CFR Part 51.165 Requirement		Compliance Demonstration AQR Section 12.3 and Section 12.7.5
1.	(a)(1)(iv)(A)(*1*)(i)-(iv) and (*2*): Major source thresholds for ozone – VOC and NOx	Section 12.3.2 (y)(1)(C) definition of "major stationary source" includes the 100 tpy threshold for moderate ozone nonattainment area (and other thresholds up to the extreme classification).
2.	(a)(1)(iv)(A)(*3*): Change constitutes a major source by itself	Section 12.3.2(y)(2) definition of "major stationary source" mirrors EPA's rule: "if the change would constitute a major stationary source by itself"
3.	(a)(1)(v)(E): Significant net emissions increase of NOx is significant for ozone	Section 12.3.2(ii)(3)(A) definition of "regulated NSR pollutant"; Section 12.3.2(aa) definition of "net emissions increase"; Section 12.3.2(mm) definition of "significant" Rules define NO_x as an ozone precursor pollutant and set a 40 tpy significant threshold.
4.	(a)(1)(v)(F): Any emissions change of VOC in Extreme area triggers NNSR	Not applicable because no Clark County nonattainment area is or previously has been classified as Extreme.
5.	(a)(1)(x)(A)-(C) and (E): Significant emissions rates for VOC and NO_x as ozone precursors	Section 12.3.2(mm)(4) definition of "significant" sets 40 tpy significant emissions rate for NO_x and VOC.
6.	(a)(2) Applicability Procedures	Section 12.3.1 Applicability Procedures applies NNSR to the same project emissions increases as the federal program.
7.	(a)(3)(ii)(C)(*1*)-(*2*): Provisions for emissions reduction credits	Section 12.3.6.6(a) Emission Reduction Requirements, Section 12.7.5(i) Stationary source shutdowns mirrors EPA's requirements.

40 CFR Part 51.165 Requirement		Compliance Demonstration AQR Section 12.3 and Section 12.7.5
8.	(a)(*8*): Requirements for VOC apply to NOx as ozone precursors	Section 12.3.2 (y)(1)(C) definition of "major stationary source"; Section 12.3.2(ii)(3)(A) definition of "regulated NSR pollutant"; Section 12.3.2(mm)(4) definition of "significant"; Section 12.3.6.5 Quantity Table 12.3-1 Offset Ratios: regulates NOx as a regulated NSR pollutant; sets the significant rate at the same level as VOC and requires the same offset ratio as VOC.
9.	(a)(*9*)(ii)-(iv): Offset ratios for VOC and NOx for ozone nonattainment areas	Section 12.3.6.5 Quantity Table 12.3-1 Offset Ratios establishes offset ratio for moderate ozone nonattainment area at 1.15:1.
10.	(a)(11) – interprecursor trading (partially vacated)	Section 12.3.6.3(b) has been removed from the rules consistent with the *Sierra Club* (2021).
11.	(a)(12) Anti-backsliding provision(s), where applicable	No other areas in Clark County are designated nonattainment for a previous ozone NAAQS.
12.	(f) Actual PALs	Section 12.3.9 (PAL) essentially mirrors EPA's PAL provisions.
13.	(i) Public Participation Requirements	Section 12.3.8 Public Participation requires publication in both a newspaper and on the DAQ website.

9.3 CONCLUSION

DAQ certifies that the 2021 version of its SIP-approved NNSR program in AQR Sections 12.3 and 12.7.5 meet EPA's minimum SIP requirements for the 2015 8-hour ozone NAAQS NNSR program for the Las Vegas Valley moderate nonattainment area.

10.0 INSPECTION AND MAINTENANCE PLAN

Section 182(b)(4) of the Act requires moderate ozone nonattainment areas to provide for a vehicle inspection and maintenance (I/M) program that meets pre-1990 performance standards, or a "Basic I/M" program. A vehicle I/M program conducts periodic inspections of the emissions control systems on motor vehicles. These programs help reduce VOC and NO_x emissions by identifying cars and trucks with high emissions that may need emissions-related repairs.

40 CFR Part 51, Subpart S sets forth requirements for I/M programs. The rule requires that:

> If a marginal ozone nonattainment area, not required to implement enhanced I/M under paragraph (a)(1) of this section, is reclassified to moderate, a basic I/M program shall be implemented in the 1990 Census-defined urbanized area(s) with a population of 200,000 or more... (40 CFR 51.350(a)(8))

EPA's basic I/M program requirements are based on the original I/M program operating in New Jersey in the early 1970s, and require testing only of light-duty passenger cars using a simple idle test. EPA originally estimated its basic I/M performance standard achieved about a 5% reduction in highway mobile source VOC emissions (57 FR 52950). However, since EPA originally promulgated I/M regulations, light-duty trucks have become a significant part of the motor vehicle fleet and are now included in nearly all I/M programs; also, more sophisticated steady-state tests have been developed and are being used in I/M programs to improve emissions reduction performance. Modern I/M programs almost always achieve greater emissions reductions than basic I/M requires.

The Clark County Vehicle Inspection and Maintenance Program is detailed in the *Carbon Monoxide State Implementation Plan: Las Vegas Valley Nonattainment Area, Clark County, Nevada* (CO SIP), approved by the Board of County Commissioners in August 2000 and by EPA in September 2004 (69 FR 56351). EPA classified the program as an "EPA low enhanced I/M program" meeting the requirements of 40 CFR Part 51.351(g), which means the program approved in the CO SIP also exceeds the requirements for moderate ozone nonattainment areas in 40 CFR Part 51.352.

The county I/M program is governed under Chapters 445B.700-835 of the Nevada Revised Statutes and Chapter 445B of the Nevada Administrative Code, and administered by the Nevada DMV. These regulations establish annual testing procedures for 1968 or newer gasoline-powered vehicles, regardless of size, and for diesel-powered vehicles with a manufacturer's GVWR of up to 14,000 lb. Onboard diagnostic II testing procedures are used for 1996 and newer vehicles, while older vehicles are tested with a two-speed idle test. Any used-car dealer in Nevada must provide a valid passing emissions test with any vehicle they sell that will be registered in Clark County.

The I/M program includes waiver provisions for motorists who spend $450 on emission-related repairs. To qualify, a 2G Licensed Authorized Station must repair the vehicle, and the waiver application must include receipts from the station showing that the owner spent at least $450 on parts other than a catalytic converter, a fuel inlet restrictor or air injection system, or on labor other than emissions testing. For low-income consumers, the Smog Free Clark County Voucher Program will pay for up to $975 in emissions-related repairs for 1968–1999 model year vehicles. Eligibility had been based on income, but program revisions implemented in August 2024 eliminated this requirement. Clark County administers this program through an independent contractor.

The I/M program allows emissions testing exemptions for new vehicles in their first three years of registration, and for new hybrid-electric vehicles in their first five years of registration. A waiver for classic cars was revised by the state legislature in 2021, so cars with “Classic Vehicle,” “Classic Rod,” or “Old Timer” license plates must now carry classic or antique vehicle insurance with limited-use restrictions that include a limit of 5,000 miles driven per year. Vehicles unqualified to carry any of these special license plates must meet emissions inspection requirements. No waivers are available for any vehicle that emits visible smoke.

EPA’s low enhanced performance standard meets the Act’s requirement that it be based on centralized, annual testing of light-duty cars and trucks, but provides flexibility that allows comprehensive, decentralized programs. As approved and implemented, the I/M program is a decentralized program that satisfies the applicable performance standard, with test-only and test-and-repair vehicle inspection stations.

According to 40 CFR Part 51.353(a), test-only stations have the presumption of equivalency to a centralized test-only network and receive the same emission reduction credits as a centralized system. 40 CFR Part 51.353 also allows the test-and-repair component to receive the same credits if it can be demonstrated that type of facility achieves the same level of effectiveness as a test-only station. In 2002, DAQ conducted a study to compare the effectiveness of test-only stations and test-and-repair stations to establish the overall effectiveness of the I/M program (Parsons 2002, Attachment H). The study showed that test-and-repair stations and test-only stations were equally effective in reducing emissions, making the I/M effectiveness rate for the Clark County program 100%.

The county’s I/M program requires licensed inspectors to meet training requirements and follow certification procedures (40 CFR Part 51.367). Specifically, certified inspectors must have verified training that includes a course approved by the Nevada DMV and Department of Public Safety, written and practical testing, and fulfillment of a separate certification process. In general terms, inspector training covers the purpose and goals of enhanced I/M, emission control devices, configuration and inspection, test procedures, and rationale.

The I/M program also requires class 2 inspector training and licensing that conforms to the requirements in 40 CFR Part 51.369. Certification and licensing is required to perform work on or service vehicle emissions components. Chapters 445B.485–445B.5084 of the Nevada Administrative Code contain additional information about these requirements, as does the “State of Nevada State Implementation Plan for an Enhanced Program for the Inspection and Maintenance of Motor Vehicles for Las Vegas Valley and Boulder City, Nevada” (69 FR 56531; CO SIP, Appendix E).

The Nevada DMV is the agency responsible for implementing and monitoring the state’s I/M program, including inspector training and certification programs. As specified in NRS Chapters 445B.765 and 445B.810, the DMV submits annual reports on the I/M program to EPA in July to comply with the provisions of 40 CFR Part 51.366.

The moderate ozone classification requires implementation of a Basic I/M program. States with existing I/M programs must conduct and submit a SIP and Performance Standard Modeling (PSM) analysis, and document any necessary program revisions, as part of their SIP submission to ensure their I/M program is operating at or above the Basic I/M performance standard level.

I/M performance standards are defined at 40 CFR Part 51.352 (for Basic I/M programs) and 40 CFR Part 51.351 (for Enhanced I/M programs). A PSM analysis shows whether the state I/M program (or modifications thereto) meets the applicable performance standard, which establishes the level of emission reductions that a mandatory I/M program must meet or exceed. States that determine through a PSM analysis that an existing SIP-approved program would meet the performance standard for the 2015 ozone NAAQS without modification can submit a written statement certifying the existing program as adequate to meet the 2015 ozone NAAQS SIP requirements.

To perform a PSM analysis, two scenarios had to be modeled:

1. An existing state program scenario, representing Clark County's I/M program as it operates today (including a delay in initial testing for the newest six model-year vehicles) and factoring in all local parameters and control measures, as well as inputs required to define the existing program; and

2. EPA's performance standard benchmark scenario, representing the applicable EPA defined benchmark program, including all local area parameters and control measures, and the EPA's I/M program, with the elements of the applicable performance standard.

The PSM analysis compares the results of these scenarios to determine whether the existing program's emissions rates are the same as, or lower than, EPA's performance standard. If the existing program shows the same or lower emissions levels for VOC and NO_x as EPA's performance standard benchmark program—to within 0.02 grams per mile (g/mile)—then it meets the enhanced performance standard.

DAQ performed modeling for its PSM analysis using the MOVES3.1 emissions model with the latest planning assumptions (e.g., local fleet age distribution, vehicle miles traveled, meteorology, fuel parameters, etc.). These assumptions were based on 2020 data that are updated every three years in conjunction with the federal requirements for statewide NEI development.

DAQ performed three modeling scenarios: a no-I/M case, the basic I/M performance standard, and the low enhanced I/M performance standard. All used the most recently required mobile source emission factor model, along with other locally variable parameters, e.g., age distribution of the local in-use fleet, average ambient temperature, distribution of vehicle miles traveled, average speed, etc. DAQ compared the proposed program and performance standard scenarios to the no-I/M case to determine the reduction produced by the I/M programs.

Table 20 shows the result: DAQ's existing I/M program meets the basic performance standard because emissions reductions are higher than in the base case. Therefore, DAQ certifies that its current I/M program meets the applicable basic I/M performance requirements of 40 CFR Part 51.352.

Table 20. I/M Performance Standard Modeling for HA 212's Existing I/M Program

Pollutant	2023 Clark Co. Base Case (tpd)	2023 Basic I/M Performance Standard (tpd)	Meets Basic I/M Performance Standard
VOC	17.01	17.66	Yes
NOx	19.15	19.85	Yes

Tables 21 and 22 list the modeling inputs used.

Table 21. MOVES3.1 I/M Input for Clark County Low Enhanced I/M Program

Pol Proc ID	St ID	Co ID	Yr ID	Src Type ID	Fuel Type ID	IM Prog ID	Inspect Freq	Test Stds ID	Beg Model Yr ID	End Model Yr ID	Use IM? Y/N	Comp. Factor
101	32	32003	2023	21	1	2	1	12	1968	1995	Y	60.90
101	32	32003	2023	21	1	10	1	51	1996	2020	Y	89.19
101	32	32003	2023	21	5	202	1	12	1968	1995	Y	60.90
101	32	32003	2023	21	5	210	1	51	1996	2020	Y	89.19
101	32	32003	2023	31	1	2	1	12	1968	1995	Y	60.90
101	32	32003	2023	31	1	10	1	51	1996	2020	Y	89.19
101	32	32003	2023	31	5	202	1	12	1968	1995	Y	60.90
101	32	32003	2023	31	5	210	1	51	1996	2020	Y	89.19
101	32	32003	2023	32	1	2	1	12	1968	1995	Y	60.90
101	32	32003	2023	32	1	10	1	51	1996	2020	Y	89.19
101	32	32003	2023	32	5	202	1	12	1968	1995	Y	60.90
101	32	32003	2023	32	5	210	1	51	1996	2020	Y	89.19
101	32	32003	2023	42	1	2	1	12	1968	2020	Y	90.32
101	32	32003	2023	43	1	2	1	12	1968	2020	Y	90.32
101	32	32003	2023	51	1	2	1	12	1968	2020	Y	90.32
101	32	32003	2023	52	1	2	1	12	1968	2020	Y	90.32
101	32	32003	2023	53	1	2	1	12	1968	2020	Y	90.32
101	32	32003	2023	54	1	2	1	12	1968	2020	Y	90.32
101	32	32003	2023	61	1	2	1	12	1968	2020	Y	90.32
102	32	32003	2023	21	1	2	1	12	1968	1995	Y	60.90
102	32	32003	2023	21	1	10	1	51	1996	2020	Y	89.19
102	32	32003	2023	21	5	202	1	12	1968	1995	Y	60.90
102	32	32003	2023	21	5	210	1	51	1996	2020	Y	89.19
102	32	32003	2023	31	1	2	1	12	1968	1995	Y	60.90
102	32	32003	2023	31	1	10	1	51	1996	2020	Y	89.19
102	32	32003	2023	31	5	202	1	12	1968	1995	Y	60.90
102	32	32003	2023	31	5	210	1	51	1996	2020	Y	89.19
102	32	32003	2023	32	1	2	1	12	1968	1995	Y	60.90
102	32	32003	2023	32	1	10	1	51	1996	2020	Y	89.19
102	32	32003	2023	32	5	202	1	12	1968	1995	Y	60.90
102	32	32003	2023	32	5	210	1	51	1996	2020	Y	89.19
102	32	32003	2023	42	1	2	1	12	1968	2020	Y	90.32
102	32	32003	2023	43	1	2	1	12	1968	2020	Y	90.32
102	32	32003	2023	51	1	2	1	12	1968	2020	Y	90.32
102	32	32003	2023	52	1	2	1	12	1968	2020	Y	90.32
102	32	32003	2023	53	1	2	1	12	1968	2020	Y	90.32
102	32	32003	2023	54	1	2	1	12	1968	2020	Y	90.32
102	32	32003	2023	61	1	2	1	12	1968	2020	Y	90.32
112	32	32003	2023	21	1	8	1	43	1996	2020	Y	89.19
112	32	32003	2023	21	5	208	1	43	1996	2020	Y	89.19
112	32	32003	2023	31	1	8	1	43	1996	2020	Y	89.19
112	32	32003	2023	31	5	208	1	43	1996	2020	Y	89.19
112	32	32003	2023	32	1	8	1	43	1996	2020	Y	89.19

Pol Proc ID	St ID	Co ID	Yr ID	Src Type ID	Fuel Type ID	IM Prog ID	Inspect Freq	Test Stds ID	Beg Model Yr ID	End Model Yr ID	Use IM? Y/N	Comp. Factor
112	32	32003	2023	32	5	208	1	43	1996	2020	Y	89.19
113	32	32003	2023	21	1	8	1	43	1996	2020	Y	89.19
113	32	32003	2023	21	5	208	1	43	1996	2020	Y	89.19
113	32	32003	2023	31	1	8	1	43	1996	2020	Y	89.19
113	32	32003	2023	31	5	208	1	43	1996	2020	Y	89.19
113	32	32003	2023	32	1	8	1	43	1996	2020	Y	89.19
113	32	32003	2023	32	5	208	1	43	1996	2020	Y	89.19
201	32	32003	2023	21	1	2	1	12	1968	1995	Y	60.90
201	32	32003	2023	21	1	10	1	51	1996	2020	Y	89.19
201	32	32003	2023	21	5	202	1	12	1968	1995	Y	60.90
201	32	32003	2023	21	5	210	1	51	1996	2020	Y	89.19
201	32	32003	2023	31	1	2	1	12	1968	1995	Y	60.90
201	32	32003	2023	31	1	10	1	51	1996	2020	Y	89.19
201	32	32003	2023	31	5	202	1	12	1968	1995	Y	60.90
201	32	32003	2023	31	5	210	1	51	1996	2020	Y	89.19
201	32	32003	2023	32	1	2	1	12	1968	1995	Y	60.90
201	32	32003	2023	32	1	10	1	51	1996	2020	Y	89.19
201	32	32003	2023	32	5	202	1	12	1968	1995	Y	60.90
201	32	32003	2023	32	5	210	1	51	1996	2020	Y	89.19
201	32	32003	2023	42	1	2	1	12	1968	2020	Y	90.32
201	32	32003	2023	43	1	2	1	12	1968	2020	Y	90.32
201	32	32003	2023	51	1	2	1	12	1968	2020	Y	90.32
201	32	32003	2023	52	1	2	1	12	1968	2020	Y	90.32
201	32	32003	2023	53	1	2	1	12	1968	2020	Y	90.32
201	32	32003	2023	54	1	2	1	12	1968	2020	Y	90.32
201	32	32003	2023	61	1	2	1	12	1968	2020	Y	90.32
202	32	32003	2023	21	1	2	1	12	1968	1995	Y	60.90
202	32	32003	2023	21	1	10	1	51	1996	2020	Y	89.19
202	32	32003	2023	21	5	202	1	12	1968	1995	Y	60.90
202	32	32003	2023	21	5	210	1	51	1996	2020	Y	89.19
202	32	32003	2023	31	1	2	1	12	1968	1995	Y	60.90
202	32	32003	2023	31	1	10	1	51	1996	2020	Y	89.19
202	32	32003	2023	31	5	202	1	12	1968	1995	Y	60.90
202	32	32003	2023	31	5	210	1	51	1996	2020	Y	89.19
202	32	32003	2023	32	1	2	1	12	1968	1995	Y	60.90
202	32	32003	2023	32	1	10	1	51	1996	2020	Y	89.19
202	32	32003	2023	32	5	202	1	12	1968	1995	Y	60.90
202	32	32003	2023	32	5	210	1	51	1996	2020	Y	89.19
202	32	32003	2023	42	1	2	1	12	1968	2020	Y	90.32
202	32	32003	2023	43	1	2	1	12	1968	2020	Y	90.32
202	32	32003	2023	51	1	2	1	12	1968	2020	Y	90.32
202	32	32003	2023	52	1	2	1	12	1968	2020	Y	90.32
202	32	32003	2023	53	1	2	1	12	1968	2020	Y	90.32
202	32	32003	2023	54	1	2	1	12	1968	2020	Y	90.32
202	32	32003	2023	61	1	2	1	12	1968	2020	Y	90.32
301	32	32003	2023	21	1	10	1	51	1996	2020	Y	89.19

Pol Proc ID	St ID	Co ID	Yr ID	Src Type ID	Fuel Type ID	IM Prog ID	Inspect Freq	Test Stds ID	Beg Model Yr ID	End Model Yr ID	Use IM? Y/N	Comp. Factor
301	32	32003	2023	21	5	210	1	51	1996	2020	Y	89.19
301	32	32003	2023	31	1	10	1	51	1996	2020	Y	89.19
301	32	32003	2023	31	5	210	1	51	1996	2020	Y	89.19
301	32	32003	2023	32	1	10	1	51	1996	2020	Y	89.19
301	32	32003	2023	32	5	210	1	51	1996	2020	Y	89.19
302	32	32003	2023	21	1	10	1	51	1996	2020	Y	89.19
302	32	32003	2023	21	5	210	1	51	1996	2020	Y	89.19
302	32	32003	2023	31	1	10	1	51	1996	2020	Y	89.19
302	32	32003	2023	31	5	210	1	51	1996	2020	Y	89.19
302	32	32003	2023	32	1	10	1	51	1996	2020	Y	89.19
302	32	32003	2023	32	5	210	1	51	1996	2020	Y	89.19

Table 22. MOVES3.1 I/M Input for the Basic Performance Standard

Pol Proc ID	St ID	Co ID	Yr ID	Src Type ID	Fuel Type ID	IM Prog ID	Inspect Freq	Test Stds ID	Beg Model Yr ID	End Model Yr ID	Use IM? Y/N	Comp. Factor
101	32	32003	2023	21	1	111	1	11	1968	2000	Y	100
102	32	32003	2023	21	1	111	1	11	1968	2000	Y	100
301	32	32003	2023	21	1	111	1	11	1968	2000	Y	100
302	32	32003	2023	21	1	111	1	11	1968	2000	Y	100
101	32	32003	2023	21	1	151	1	51	2001	2022	Y	100
102	32	32003	2023	21	1	151	1	51	2001	2022	Y	100
301	32	32003	2023	21	1	151	1	51	2001	2022	Y	100
302	32	32003	2023	21	1	151	1	51	2001	2022	Y	100
112	32	32003	2023	21	1	143	1	43	2001	2022	Y	100
101	32	32003	2023	21	5	111	1	11	1968	2000	Y	100
102	32	32003	2023	21	5	111	1	11	1968	2000	Y	100
301	32	32003	2023	21	5	111	1	11	1968	2000	Y	100
302	32	32003	2023	21	5	111	1	11	1968	2000	Y	100
101	32	32003	2023	21	5	151	1	51	2001	2022	Y	100
102	32	32003	2023	21	5	151	1	51	2001	2022	Y	100
301	32	32003	2023	21	5	151	1	51	2001	2022	Y	100
302	32	32003	2023	21	5	151	1	51	2001	2022	Y	100
112	32	32003	2023	21	5	143	1	43	2001	2022	Y	100

11.0 CONTINGENCY MEASURES

11.1 POLICY BACKGROUND

Section 172(c)(9) of the Act provides that a moderate ozone nonattainment area SIP must include contingency measures that will apply if the area fails either to achieve attainment by the attainment date or to meet RFP requirements (42 U.S.C. 7502). The SIP shall provide specific measures to be implemented if the area fails to make RFP or to attain the NAAQS by the attainment date; these contingency measures will take effect without further action by the state or the EPA Administrator if the area fails to reach attainment or RFP.

The Act provides no definition for the term "contingency measures," nor has EPA defined the term in a rule. But the preamble to EPA's 2015 Ozone NAAQS Implementation Rule states:

> [c]ontingency measures required under CAA sections 172(c)(9) and 182(c)(9) must be fully adopted rules or measures that can take effect without further action by the state or EPA upon failure to meet milestones or attain by the attainment deadline. Per EPA guidance, these measures should provide 1 year's worth of emissions reductions, or approximately 3 percent of the baseline emissions inventory. (83 FR 62998 at 63026, December 6, 2018)

The purpose of contingency measures is to assure continued air quality improvement during the SIP development period, before an air pollution control agency must submit a revised SIP implementing additional control measures for a higher nonattainment classification. EPA's guidance states that, although the Act requires no specific quantity of emissions reductions to satisfy contingency measures, reductions equivalent to one year's worth (OYW) of RFP—i.e., up to 3% of the VOC emissions base year inventory—would be adequate (57 FR 13498 at 13511, April 16, 1992).

An agency could achieve this entirely with VOC emission reductions, or could substitute with NO_x emissions reductions. "The EPA interprets RFP under CAA section 172(c)(2) to be an average 3 percent per year emissions reduction of either VOC or NO_X" (40 CFR Part 51.1300(l)). For areas like HA 212, where an air pollution control agency is submitting an ROP plan with the SIP revision, the agency may substitute NO_x emissions reductions for only up to 90% of the required VOC emissions reductions (EPA 1993b).

An agency may propose emissions reductions from outside the nonattainment area if a technical demonstration shows that will help the area reach attainment, or EPA may approve contingency measure plans that provide for less than 3% of VOC emissions reductions, if appropriate.

In March 2023, EPA released a draft guidance document suggesting a revised formula for determining the amount and type of emissions reductions needed to meet contingency measure requirements (EPA 2023a). In it, EPA explains that recent court decisions found prior contingency measure policies inconsistent with the Act because the guidance allowed credit for already-implemented emissions reduction measures. The draft guidance suggests a new policy, that contingency measures be control measures that are:

- Not required to meet other attainment plan obligations;

- Require minimum further action to take effect; and
- Provide conditional and prospective emissions reductions.

EPA also provided a new draft formula for determining the quantity of emissions reductions that agencies should require from contingency measures. EPA has not finalized this draft guidance, and the existing guidance that bases contingency measures on OYW of RFP remains in effect (1993c).

11.2 METHODOLOGY

Some air pollution control agencies have begun to rely on EPA's draft guidance for computing contingency measure emissions reductions. DAQ, however, finds that the draft guidance may not be well-suited for computing the number of emissions reductions required for HA 212 because it does not adapt its formula for OYW of Progress for an area like HA 212 that is:

1. Modeling attainment by the attainment date without need for additional emissions reductions;

2. Continuing to achieve new emissions reductions from ROP and CTG RACT after the area's attainment date; and

3. Showing that VOC emissions reductions are more effective in reducing ozone ambient air concentrations in the near term.

Since EPA has not finalized this draft guidance, DAQ's contingency measure demonstration follows EPA's existing guidance (1993c). As explained above, the required amount of VOC emissions reductions is up to 3% of the 2017 VOC base year emissions inventory. Table 23 shows the quantity of emissions reductions based on 3% of the 2017 VOC base year emissions inventory.

Table 23. Contingency Measure Calculation using Methodology in Current EPA Guidance

Guidance Version	CM Approach	Inventory Used	VOC	NO_x	Total Emissions Reduction: VOC (tpd)	Total Emissions Reduction: NO_x (tpd)	Total (tpd)
Current (1993c)	OYW of RFP (up to 3% VOC)	2017 base year[1]	107.73	95.07	Up to 3.23	None; NOx substitution permissible up to 90%	Up to 3.23

[1] Based on verified 2017 NEI..

Notwithstanding DAQ's use of the existing guidance to compute the quantity of emissions reductions required for contingency measures, DAQ will follow EPA's draft guidance to the extent that it requires prospective control measures with minimum further action to take effect, since this aspect of the draft guidance has some support in case law.

11.3 NO_X OR VOC CONTROL MEASURES

OYW of RFP contingency measures are generally based on achieving VOC emissions reductions. EPA allows areas that have already submitted an approvable ROP plan to substitute NO_x emissions reductions for the required VOC emissions reductions (EPA 1993b). DAQ will submit an approvable ROP plan for HA 212 with its contingency measure plan, allowing it to use either pollutant to satisfy OYW of RFP. DAQ evaluated the potential effectiveness of control measures aimed at reducing either pollutant.

The attainment modeling shows HA 212 includes a balanced mix of NO_x and VOC sensitive ozone production on the top 10 simulated days at the monitoring site with the highest modeled design value, Joe Neal (Ramboll US Consulting, Inc. 2024a, Attachment B, pp. 186 and 196). There are substantial variations in day-to-day sensitivities, meaning that, in the near term, ambient air concentrations of ozone should respond to either VOC or NO_x emissions reductions, making reductions in either pollutant a candidate for effective contingency measures (Ramboll US Consulting, Inc. 2024a).

To confirm this observation, DAQ conducted two future year sensitivity modeling scenarios, using CAMx modeling (Ramboll US Consulting, Inc. 2024a, Attachment B, Appendix B). These scenarios used the ROP modeling case and further reduced all NO_x, then VOC, anthropogenic source category emissions by an across-the-board 10% in all categories except airports.

The CAMx model yielded estimated ozone design value changes at six monitoring sites in HA 212 for each sensitivity scenario (NO_x, VOC). With respect to NO_x sensitivity, three monitoring sites showed a slight increase in design value while all monitoring sites show a positive sensitivity to VOC emissions reductions. DAQ concluded the modeling supports designing a contingency measure that relies only on VOC emissions reductions because VOC emissions reductions are up to 12.5 times as effective in reducing ambient ozone concentrations, in the near term, than NO_x emissions reductions.

11.4 TOTAL VOC EMISSIONS REDUCTIONS QUANTITY

In EPA's draft guidance, EPA notes that EPA's existing OYW of RFP method (i.e., using up to 3% of the VOC emissions inventory) may overcalculate the emissions reductions needed to meet contingency measure requirements, and provides the OYW of Progress method as a means of tailoring the required amount of emissions reductions to a lower number, as appropriate (EPA 2023a). Importantly, a contingency measure is not required to bring an area into attainment, and should not result in emissions reductions beyond those needed to attain. "[T]he goal for contingency measures is not a new attainment demonstration, but rather just continued progress" (EPA 2023b). Given that attainment modeling and source contribution analysis showed that no additional local measures are necessary for HA 212 to achieve attainment, DAQ believes that 3% of the 2017 VOC base year emissions inventory more than adequately fulfills the requirement for contingency measures.

The attainment modeling, discussed in Section 4.0, shows that HA 212 can reach attainment with no changes in emissions between the base year and attainment year inventories because transport is the predominant contributor to increased ambient ozone concentrations in the area, and DAQ expects recently enacted transportation control measures in California to reduce transport emissions such that HA 212 will achieve attainment without any need for added local control measures.

Even if HA 212 failed to achieve attainment by the required date, the unavoidable delay in achieving full implementation of ROP and RACT emissions control requirements would provide emissions reductions after the attainment date greater than those required by contingency measures. HA 212 would continue to make substantial progress toward attainment during the subsequent planning period regardless of contingency measures emissions reductions. Nonetheless, DAQ evaluated measures that could provide up to 3% of the 2017 VOC base year emissions inventory as potential contingency measures.

11.5 PROPOSED CONTROL MEASURE

DAQ identified CARB's Phase I EVR executive orders and certification requirements as a viable control measure to satisfy the contingency measure requirement. These Executive Orders, posted on the CARB website (https://ww2.arb.ca.gov/resources/documents/vapor-recovery-phase-i-evr-executive-orders), include:

- VR-101: Phil-Tite Phase I Vapor Recovery System
- VR-102: OPW Phase I Vapor Recovery System
- VR-104: CNI Manufacturing Phase I Vapor Recovery System
- VR-105: EMCO Wheaton Retail Phase I Vapor Recovery System.

EVR performance standards and specifications improve in-use performance of vapor recovery systems, lowering emissions. Specifically, CARB's Phase I EVR requirements control gas vapors during the transfer of gasoline from a cargo tank to a GDF tank. Under EVR specifications, stationary sources must replace pre-EVR Phase I equipment with CARB-compliant components. Additional information on CARB's vapor recovery requirements, including a link to certification and test procedures, is available at https://ww2.arb.ca.gov/our-work/programs/vapor-recovery/resources and detailed below.

Stage I Enhanced Vapor Recovery System

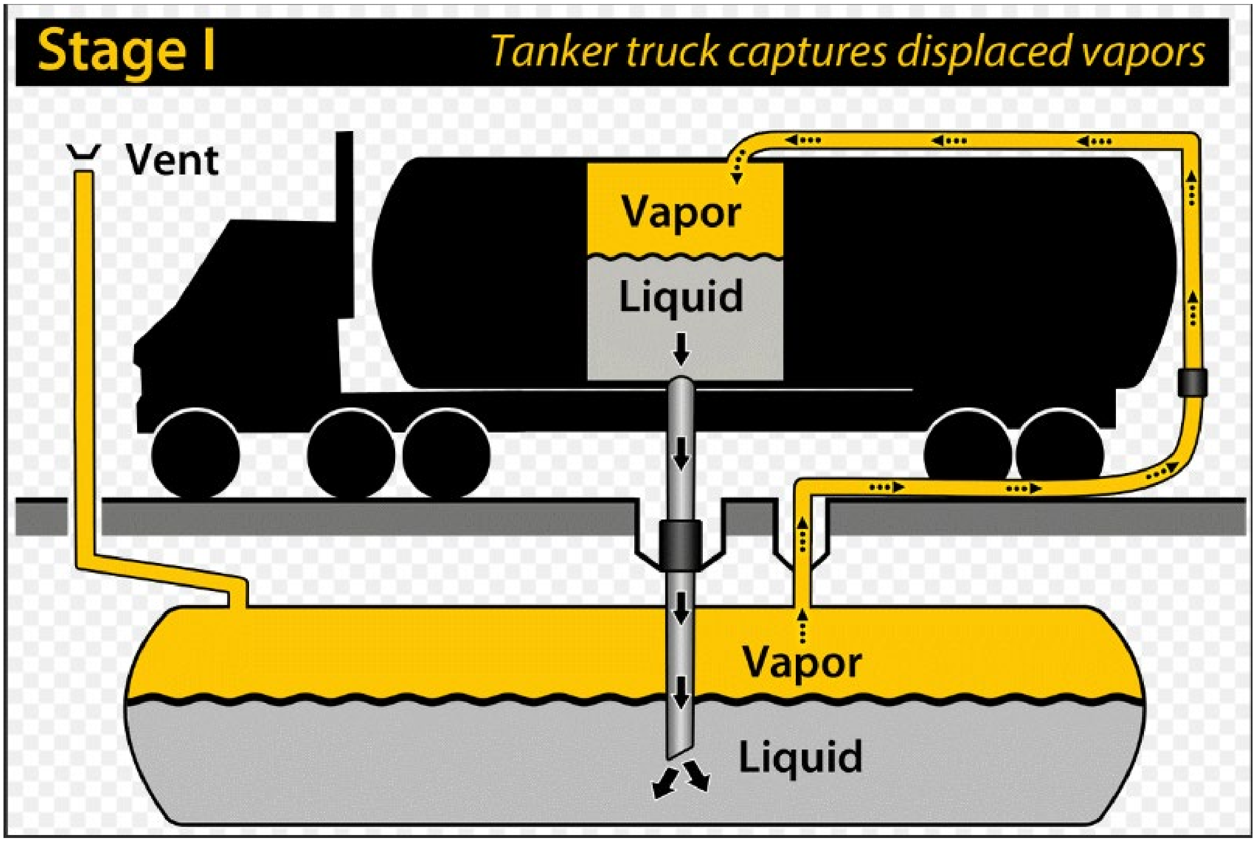
Stage I (or Phase I) refers to the emissions source category associated with the transfer of gasoline from tanker trucks to underground storage tanks (USTs). As a UST is filled, gasoline vapors are displaced to the atmosphere or routed back to the tanker truck.

In 1975, EPA established Stage I vapor recovery to control emissions at GDFs when gasoline is transferred from tanker trucks to USTs. GDFs are federally required to use Stage I vapor recovery when their maximum gasoline throughput is equal to or greater than 100,000 gallons per month (1.2 million gallons per year) (40 CFR Part 63, Subpart CCCCCC).

During tank filling, submerged pipes are also used to minimize the formation of VOC and hazardous air pollutant (HAP) emissions that result from the displacement of gasoline vapors in the UST. Most gasoline station tanks in HA 212 are equipped with these Stage I controls.

To achieve emissions reductions beyond EPA's Stage I controls, some agencies began requiring use of an approved vapor balancing system to recover the displaced gasoline vapors routed back to tanker trucks. In 2000, CARB adopted its own Phase I EVR regulations, which require a 98% recovery efficiency (CARB 2020; NJDEP 2023). Prior to CARB's 2000 regulation, recovery systems were generally rated to operate at 90–95% efficiency.

Figure 10 depicts a GDF vapor recovery system.



Source: Shelby County public domain website (Shelby County Health Department 2024).

Figure 10. Vapor Recovery System at a GDF.

As a contingency measure, GDFs in HA 212 will meet CARB Phase I EVR requirements with CARB-certified systems that achieve a recovery efficiency of 98% for USTs and 95% for above-ground tanks. DAQ included the 95% requirement for above-ground tanks in its rule, but anticipates that only the 98% emissions reduction requirement will apply in practice, since tanks operating in Clark County are primarily USTs.

11.6 ACHIEVABLE EMISSIONS REDUCTIONS

The contingency measure will require additional emissions reductions compared to conventional submerged filling and vapor recovery at GDFs. Attachment F (ROP emissions inventory) reports estimated emissions for SCC codes 2501060051 and 2501060053.

The 2026 emissions inventory for these SCC codes was derived from the 2016v3 EMP. EPA based estimates in the 2016v3 EMP on an interpolation of emissions between 2002 NEI data and 2017 NEI data, assuming no change to underlying emissions factors and 90% control using EPA Stage I requirements (EPA 2022c, 2023c). DAQ forecast 2026 Stage I emissions from the 2016 base year emissions reported in the modeling platform, assuming no change in these assumptions.

Adopting new EVR equipment specifications will result in a 98% control efficiency in transfer losses, since Clark County's regulated tank population is predominantly comprised of USTs. If the contingency measure is triggered, DAQ estimates the contingency measure rule will be fully effective by 2026 and reduce future emissions for these SCC source categories by an additional 80%, or 3.72 tpd of VOC compared to current emission controls. Table 24 displays emissions reduction estimates for each SCC category (see Attachment J for details).

Table 24. Estimated VOC Emissions Reductions (tpd) within HA 212 from Enhanced Vapor Recovery Rule

Source Description	SCC Source Category	2026 Projected Emissions (tpd)	Current Emissions Control Level (%)	New Emissions Control Level (%)	Estimated VOC Emissions Reductions (tpd)	Total Reduction (%)
Stage1: Submerged Filling	2501060051	4.474	90%	98%	3.58	80%
Stage1: Balanced Submerged Filling	2501060053	0.173	90%	98%	0.14	80%
	Total	**4.65**	**—**	**—**	**3.72**	**80%**
	Amount Needed for Contingency Measure (tpd)			**3.23**		
	Excess Emissions Reductions (tpd)			**0.49**		

The calculated emissions reduction exceeds the 3.23 tpd of VOC emissions reduction needed to meet the contingency measure requirement. Accordingly, the CARB EVR rule will fully satisfy contingency measure requirements.

11.7 COST EFFECTIVENESS OF CONTROL MEASURE

Fixed costs of complying with CARB's Phase I EVR systems in Massachusetts were estimated as an average of $7,500, with lower costs for GDFs already equipped with some CARB-compliant components. Table 25 shows the estimated annual cost per ton of VOC reduced by GDF throughput (ERG 2012).

Table 25. 2012 Phase I EVR Cost Effectiveness Estimates[1]

Gasoline Throughput (gallons/year)	Cost-Effectiveness ($/ton VOC)
<120,000	$55,005
120,000 to 240,000	$17,029
240,001 to 500,000	$7,327
500,001 to 1,000,000	$2,992
1,000,001 to 2,000,000	$885
>2,000,000	-$253

[1] Source: MDEP 2012 (modified Table 4-11).

Cost per ton of emission reduction decreases as gasoline throughput increases. The largest facilities, those with gasoline throughput of greater than 2 million gallons per year, showed a financial benefit based on substantial estimated fuel savings from this measure.

The cost per ton can decrease by allowing GDFs to make Phase I EVR modifications gradually rather than at a fixed time (MDEP 2012). The cost-effectiveness of applying CARB-compliant Stage I

EVR in HA 212 will depend upon GDF throughput, whether there is a low gasoline throughput exemption, and the extent to which any existing control equipment is already in compliance.

11.8 IMPLEMENTATION OF CONTINGENCY MEASURE

AQR Section 102.7(c)(5) will require GDF owners or operators to begin meeting CARB EVR certification requirements and CARB executive orders for certain GDF equipment 180 days after DAQ issues a notice stating that the rule applies, then fully meet the requirements after two years. If EPA determines that HA 212 has failed to meet its attainment date, DAQ will issue such a notice, as appropriate, within 60 days of EPA's final action. No additional rulemaking action is necessary for DAQ to trigger applicability (AQR Section 102.7(c)(5)). Because CARB EVR is not currently required, and no additional rulemaking action is necessary for DAQ to trigger AQR Section 102.7(c)(5), the rule satisfies Section 172(c)(9) of the Act, which requires that contingency measures take effect without further action by the state or the EPA Administrator (42 U.S.C. 7502).

12.0 CONFORMITY AND MOTOR VEHICLE EMISSIONS BUDGET

Transportation conformity is required under Section 176(c) of the Act, which prohibits the federal government from engaging in, supporting, or providing financial assistance for licensing, permitting, or approving any transportation project unless it conforms to the SIP. Conforming to the SIP means the transportation projects do not create new violations of the NAAQS, do not increase the frequency or severity of NAAQS violations, and do not delay timely attainment of the NAAQS.

EPA established implementation rules in 40 CFR Part 51, Subpart T, and 40 CFR Part 93. For nonattainment areas required to demonstrate reasonable further progress and attainment, EPA requires the SIP to document the MVEB on which the attainment demonstration is based. The amount of mobile source emissions used in the attainment demonstration becomes the emissions budget for highway and transit vehicles. Emissions from future transportation projects must stay within this budget. Transportation plans, programs, and projects funded or approved under U.S.C. Title 23 or the Federal Transit Act must conform to the on-road MVEBs specified in the applicable SIP. In this case, 40 CFR Part 93.118 provides the criteria and procedures for MVEBs.

The MVEB establishes a cap on motor vehicle-related emissions that the predicted transportation system emissions from new transportation projects cannot exceed. The emissions budget serves as a ceiling on emissions for the estimation year and all subsequent years, until either a different budget is defined for another year or a SIP revision modifies the budget. Unless the SIP clearly indicates otherwise, the estimate of future transportation network emissions used in a milestone or attainment demonstration acts as the MVEB.

To create the MVEB, DAQ added a safety margin of 2 tpd of both VOC and NO_x to the on-road mobile sector 2023 projected emissions inventory (Table 26).

Table 26. Safety Margin for On-road Mobile Source Emissions in MVEB

Parameter	2023 Unadjusted Emissions (tpd)	Safety Margin (tpd)	2023 Adjusted Emissions (tpd)	Percent Change
On-road mobile VOC emissions	17.01	2.00	19.01	11.8%
On-road mobile NO_x emissions	19.15	2.00	21.15	10.4%

DAQ also added an amount equal to banked ERCs to the VOC and NO_x point source inventories (Table 27).

Table 27. Point Source Adjustments to MVEB for ERCs

Parameter	2023 Unadjusted Emissions (tpd)	ERC Adjustment (tpd)	2023 Adjusted Emissions (tpd)	Percent Change
Point source VOC emissions	1.32	0.05	1.37	3.8%
Point source NO_x emissions	3.23	0.92	4.15	28.5%

Table 28 displays the total MVEB. Once approved by EPA, these emissions values will be used in future transportation conformity analyses.

Table 28. VOC and NO_x MVEB for 2015 Ozone NAAQS

Source Category	2023 MVEB VOC (tpd)	2023 MVEB NOx (tpd)
Point source	1.37	4.12
Nonpoint source	58.29	4.01
On-road mobile	19.01	21.15
Non-road mobile	24.17	22.98
Airports (commercial & federal)	2.62	15.52
Locomotives	0.03	0.66
ERC	0.05	0.92
Totals	**105.54**	**69.36**

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