State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-059-23

UTAH AIR QUALITY BOARD MEETING
TENTATIVE AGENDA

Tuesday, September 12, 2023 - 1:30 p.m.
195 North 1950 West, Room 1015
Salt Lake City, Utah 84116

Board members may be participating electronically. Interested persons can participate telephonically by dialing 1-406-640-8251 using access code: 756-589-061#, or via the Internet at the Google meeting link: meet.google.com/tyx-ynte-nfv

I. Call-to-Order

II. Date of the Next Air Quality Board Meeting: October 4, 2023

III. Approval of the Minutes for the April 5, 2023, Board Meeting.

IV. Approval of the Minutes for the May 3, 2023, Board Meeting.

V. Approval of the Minutes for the August 2, 2023, Working Lunch and Board Meeting.

VI. Propose for Final Adoption: Amendment to Section R307-110-13; Incorporation of Utah State Implementation Plan, Section IX.D.11: 2015 Ozone NAAQS Northern Wasatch Front Moderate Nonattainment Area. Presented by Ryan Bares.

VII. Propose for Final Adoption: Amendment to Section R307-110-17; Incorporation of Utah State Implementation Plan, Section IX.H.31 and Section IX.H.32: Emission Limitations and Operating Practices. Presented by Ryan Bares.

VIII. Five-Year Review. R307-361. Architectural Coatings. Presented by Erica Pryor.

IX. US Magnesium LLC – Administrative Settlement Agreement. Presented by Harold Burge.

X. Informational Items.
A. Air Toxics. Presented by Leonard Wright.
B. Compliance. Presented by Harold Burge, Rik Ombach, and Chad Gilgen.

C. Monitoring. Presented by Sally Lloyd.
D. Other Items to be Brought Before the Board.
E. Board Meeting Follow-up Items.

In compliance with the Americans with Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Larene Wyss, Office of Human Resources at (801) 503-5618, TDD (801) 536-4284 or by email at lwyss@utah.gov.

ITEM 6

State of Utah
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DAQ-061-23

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

THROUGH: Erica Pryor, Rules Coordinator

FROM: Ryan Bares, Environmental Scientist

DATE: August 25, 2023

SUBJECT: PROPOSE FOR FINAL ADOPTION: Amendment to Section R307-110-13; Incorporation of Utah State Implementation Plan, Section IX.D.11: 2015 Ozone NAAQS Northern Wasatch Front Moderate Nonattainment Area.

On August 3, 2018, the U.S. Environmental Protection Agency (EPA) designated Utah's Northern Wasatch Front (NWF) as a marginal nonattainment area (NAA) for the 2015 National Ambient Air Quality Standard (NAAQS) for 8-hour ozone concentrations (83 FR 25776). On October 7, 2022, EPA finalized the reclassification of the NWF NAA from marginal to moderate status (87 FR 60897) since the area failed to attain the standard by the attainment date of August 3, 2021. The reclassification to moderate status became effective on November 7, 2022. As a result of this designation, under Section 182(b) of the Clean Air Act (CAA), the state of Utah is required to submit a revision to Utah's State Implementation Plan (SIP) which outlines specific provisions to be implemented for the NWF NAA to attain the NAAQS as expeditiously as practicable.

The amendments to Section R307-110-13 result in the incorporation of a revision into the Utah SIP which address the statutory requirements for a moderate ozone NAA including:

- Emission inventories;
- Reasonable Available Control Technologies (RACT);
- Reasonable Available Control Measures (RACM);
- Motor vehicle inspection and maintenance (I/M) program;
- Nonattainment New Source Review (NNSR) program;
- Motor Vehicle Emission Budgets (MVEBs);

- Contingency measures;
- Reasonable Further Progress (RFP); and
- Attainment demonstration.

Throughout the development of this SIP revision, staff at the Utah Division of Air Quality (UDAQ, the Division) engaged with a wide array of stakeholders through reoccurring meetings, as well as through specific one-time stakeholder meetings. All technical supporting documentation used in the development of this SIP revision was made available to the public for review at the earliest possible date through the Division's web page.

On April 5, 2023, the Utah Air Quality Board approved the proposed amendments for a 45-day public comment period. The comment period ran from June 1 until July 17, 2023, giving stakeholders a total of 103 days from the initial proposal for public comment to the close of the comment period to review the documents and provide feedback to the Division. During this time, the Division received 58 sets of written comments. On July 12, 2023, the Division also hosted a public hearing where stakeholders could provide oral comments, during which time three individuals provided comment, two of whom subsequently submitted corresponding written comments.

The Division has reviewed and evaluated all comments received during this 45-day public comment period in accordance with the Utah Administrative Rulemaking Act, Utah Code § 63G-3-301(11)(b). All written comments received by the Division have been posted on its webpage where they can be viewed in their entirety. A summary of comments received and the Division's responses can be found in APPENDIX B.

The comments received span a wide array of opinions, with many commenters urging the Division to act quickly to implement additional emission reduction strategies, provide for additional clarification on the included RACT analysis, and suggestions and requests for additional clarifying materials and edits.

Impacted stakeholders also submitted a wide array of comments including:

- Questioning the Divisions determination surrounding the cost effectiveness of the proposed controls;
- Questioning if the Division has the authority to implement controls beyond the moderate SIP timeline and in light of the outstanding RFP requirements;
- Questioning if NO_x emission reductions are an effective strategy for reducing ozone in the NWF NAA; and
- Submitted additional technical details pertaining to the proposed emission limits and timeline for installation of controls were submitted.

After review and consideration of comments, the following changes were made to the proposed amendments:

- Additional clarifying language, minor editorial changes, and a Control Techniques Guidelines analysis were added to the SIP text or Technical Supporting Documents.
- Additional details regarding the determination for the appropriate level of cost for controls was added to Section 4 of the SIP.
- The emission limit for the proposed cogeneration turbines at the Tesoro Refining and Marketing Company Marathon Refinery was increased from 2.0 to 5.0 ppmv.
- The timeline for the proposed controls for the cogeneration turbines at the Tesoro Refining and Marketing Company Marathon Refinery was adjusted to match a typical project schedule for a project of this size; with a new control implementation deadline of October 1, 2028. RACT costs were adjusted to account for the updated timeline and the inclusion of additional costs incurred by

the source during the installation of controls, which were deemed to be economically reasonable. This determination was assisted by the cost thresholds outlined in Table 1 of APPENDIX A.

- The originally proposed low NO_x burners for crude heaters F21001 and F21002 at Chevron Products Company Salt Lake Refinery were deemed to exceed RACT cost thresholds and were subsequently removed. This determination was assisted by the cost thresholds outlined in Table 1 of APPENDIX A.

On July 26, 2023, the EPA received a Notice of Intent (NOI) to sue from the Sierra Club pursuant to 42 U.S.C. § 7604(b) due to the EPA's failure to issue a Finding of Failure to Submit (FFS) for states that have failed to submit a SIP by the statutory due date of January 1, 2023. This NOI initiated a 60-day clock for EPA to act on issuing an FFS, which expires on September 26, 2023. Therefore, the proposed amendments to the Utah SIP will need to be finalized and submitted to the EPA for review as soon as possible to avoid Utah's inclusion in any final FFS rulemaking actions by the EPA, and any associated sanctions actions.

Recommendation: Staff recommends the Board approve the amendment to Section R307-110-13; Incorporation of Utah State Implementation Plan, Section IX.D.11: 2015 Ozone NAAQS Northern Wasatch Front Moderate Nonattainment Area, for final adoption.

APPENDIX A:

Table 1: Northern Wasatch Front 2023 Quarter 3 Reasonably Available Control Technologies (RACT) cost thresholds. This table is presented in 2023 dollars, and is intended to assist in RACT determinations, however additional discretion is applicable to all final RACT determinations.

Annualized Cost ($/Ton Removed)	**Total Tons Reduced (TPY)**
$0 - $5,000	Any
$5,000 - $10,000	Reduction ≥ 2.00
$10,000 - $15,000	Reduction ≥ 5.00
$15,000 - $20,000	Reduction ≥ 10.00
$20,000 - $25,000	Reduction ≥ 15.00
$25,000 - $30,000	Reduction ≥ 20.00
$30,000 - $35,000	Reduction ≥ 25.00
$35,000 - $40,000	Reduction ≥ 30.00
$40,000+	Case-by-Case

Utah Division of Air Quality

State Implementation Plan

2015 Ozone NAAQS Northern Wasatch Front Moderate Nonattainment Area

2023

Section IX Part D.11

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY

AIR QUALITY

Contents

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List of Acronyms

ACT = Alternative Control Techniques
AO = Approval Order
BDV = Base Design Value
CAA = Clean Air Act
CAMx = Comprehensive Air Quality Model with Extensions
CFR = Code of Federal Register
CO = Carbon Monoxide
CTG = Control Techniques Guidelines
DERA = Diesel Emissions Reduction Act
DV = Design Value
EGU = Electric Generating Units
EMP = Enhanced Monitoring Program
EPA = U.S. Environmental Protection Agency
EV = Electric Vehicles
FDV = Future Design Value
FHWA = Federal Highway Administration
FIP = Federal Implementation Plan
FR = Federal Register
HAP = Hazardous Air Pollutants
HYSPLIT = Hybrid Single–Particle Lagrangian Integrated Trajectory
ICT = Interagency Consultation Team
I/M = Inspection and Maintenance
MDA8 = Maximum Daily Average Ozone Over an 8-Hour period
MOVES3 = [~~Mobile~~]Motor Vehicle Emission[~~s~~] Simulator (2014 Release)
MPE = Model Performance Evaluation
MPO = Metropolitan Planning Organization
MVEB = Motor Vehicle Emissions Budgets
NAA = Nonattainment Area
NAAQS = National Ambient Air Quality Standard
NESHAP = National Emission Standards for Hazardous Air Pollutants
NMOG – Non-Methane Organic Gases
NOx = Nitrogen Oxides
NSPS = New Source Performance Standards
NNSR = Nonattainment New Source Review
OBD = On-Board Diagnostics
OSAT = Ozone Source Apportionment
PPB = Parts per Billion
PPM = Parts per Million
PPMV = Parts Per Million by Volume
RACM = Reasonably Available Control Measures
RACT = Reasonably Available Control Technology
RFP = Reasonable Further Progress
RRF = Relative Response Factor
SIP = State Implementation Plan
SMOKE = Sparse Matrix Operator Kernel Emissions

TIP = Transportation Improvement Program
TPD = Tons per Day
TPY = Tons per Year
TSD = Technical Support Document
UDAQ = Utah Division of Air Quality
VMT = Vehicle Miles Traveled
VOC = Volatile Organic Compounds
WOE = Weight of Evidence
WRF = Weather Research and Forecasting
ZEV = Zero Emission Vehicles

Chapter 1 – Background and State Implementation Plan (SIP) Requirements

1.1 How Ozone is Formed

Ozone is a highly unstable and oxidative gas made up of three atoms of oxygen covalently bonded together. Tropospheric ozone is not directly emitted but is formed in the atmosphere through a complex series of secondary and tertiary reactions. In short, Volatile Organic Compounds (VOCs) from a variety of natural and anthropogenic sources react in the atmosphere with Nitrogen Oxides (NO_x), and to a lesser extent Carbon Monoxide (CO), in the presence of sunlight and heat to form ozone (Equation 1).

Equation 1

VOC + NO_x + Sunlight + Heat = O_3

Anthropogenic sources of VOCs and NO_x include, but are not limited to automobile exhaust, refueling vapors, solvents, complete and incomplete combustion of fuels, and industrial activities. Natural sources include wildfires, biogenic activities, and soil respiration.

In the Northern Wasatch Front (NWF), elevated concentrations of ground-level ozone are predominantly a summertime phenomenon associated with extended periods of high-pressure coinciding with high temperatures, low relative humidity, limited cloud cover, and intense incoming solar radiation. In addition to favorable atmospheric conditions for the local formation of ozone, the high elevation of the NWF and its location within the Intermountain West contribute to the observed elevated ozone concentrations.

1.2 Health Effects of Ozone

Exposure to elevated levels of ozone is linked to an array of respiratory and pulmonary problems, primarily among susceptible populations and those participating in outdoor activities.[1] These health problems can include increased susceptibility to respiratory illnesses like pneumonia and bronchitis, chest pain, inflammation of the respiratory tract, irritated and or permanently damaged lung tissues, and cardiac impacts and aggravation of preexisting respiratory issues like asthma or chronic obstructive pulmonary disease (COPD).

The Clean Air Act (CAA) requires the US Environmental Protection Agency (EPA) to set air quality standards for certain criteria air pollutants, known as the National Ambient Air Quality Standards (NAAQS), to protect both public health and the environment. States must develop plans to attain and maintain these health-based standards called State Implementation Plans (SIPs). If an area is determined to not meet these standards, then the SIP must be revised with plans on how the area will achieve the standard by deadlines established in the CAA.

[1] Devlin BR, Raub AJ, Folinsbee JL. (1997). Health effects of ozone. Science & Medicine;(3):8-17.

1.3 History of Ozone NAAQS in the Northern Wasatch Front

Significant efforts have been made in reducing precursor emissions, primarily NO_x and VOCs, throughout the NWF over the last 40 years. Much of the more recent efforts have been targeted at reducing Utah's wintertime fine particulate matter ($PM_{2.5}$), however, there is a long history of efforts to combat ozone directly.

1.3.1 1979 1-Hour Ozone Standard

In 1977 EPA designated parts of the Wasatch Front including Davis, Salt Lake, Utah, and Weber Counties as nonattainment for the 1-hour ozone standard of 0.120 parts per million (ppm). In 1981 both Weber and Utah Counties were re-designated as attainment. In April of 1981, an ozone SIP was submitted to EPA that demonstrated attainment of the standard for both Davis and Salt Lake Counties by May 1, 1984. This ozone SIP submittal was fully approved by the EPA.

In November of 1990, Congress amended the CAA. Under the 1990 Amendments, each area of the country that was designated nonattainment for the 1-hour ozone NAAQS, including Salt Lake County and Davis County, was classified by operation of law as marginal, moderate, serious, severe, or extreme nonattainment depending on the severity of the area's air quality problem. The ozone nonattainment designation for Salt Lake County and Davis County continued by operation of law according to section 107(d)(1)(C)(i) of the CAA, as amended in 1990. Furthermore, this area was classified by operation of law as moderate for ozone under CAA section 181(a)(1). On November 12, 1993, Utah submitted a formal request to EPA that the Salt Lake/Davis County nonattainment area (NAA) be redesignated to attainment of the 1-hour ozone NAAQS, and the State, in accordance with the CAA, submitted a maintenance plan. In July of 1997, the EPA approved the Ozone Maintenance Plan for Salt Lake and Davis Counties, effective August 18, 1997, and redesignated both counties to attainment for 1-hour ozone NAAQS.

1.3.2 1997 8-Hour Ozone Standard

In July 1997, the EPA established a new, more rigorous standard for the 8-hour ozone NAAQS. The new 8-hour standard was set at a level of 0.080 ppm averaged over an eight-hour period. To better account for variable meteorological conditions that can influence ozone formation, a violation of the standard occurs when the three-year average of the fourth-highest maximum value at a monitor exceeds the federal standard. On April 30, 2004, EPA published the first phase of its final rule (Phase 1 Rule) to implement the 8-hour ozone NAAQS.[2] At the same time, EPA also published 8-hour ozone designations for all areas of the country. All areas of Utah were designated attainment or unclassifiable. These designations became effective on June 15, 2004. The Phase 1 Rule provided that the 1979 1-hour ozone NAAQS would be revoked following the effective date of the 8-hour ozone NAAQS, or June 15, 2005. This revocation action was affirmed on August 3, 2005.[3] On November 29, 2005, EPA published the Final Rule to Implement the 8-hour Ozone NAAQS - Phase 2.[4]

[2] Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard—Phase 1, 69 Fed. Reg. 23,951 (April 30, 2004).

[3] Identification of Ozone Areas for Which the 1-Hour Standard Has Been Revoked and Technical Correction to Phase 1 Rule, 70 Fed. Reg. 44,470 (Aug. 3, 2005).

[4] Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard—Phase 2; Final Rule to Implement Certain Aspects of the 1990 Amendments Relating to New Source Review and Prevention of Significant Deterioration as They Apply in Carbon Monoxide, Particulate Matter and Ozone NAAQS; Final Rule for Reformulated Gasoline, 70 Fed. Reg. 71,612 (Nov. 29, 2005).

The Utah Air Quality Board adopted a revised maintenance plan on January 3, 2007. Salt Lake and Davis Counties were found to be in attainment on July 18, 1995, under the 1-hour ozone NAAQS[5] and had been operating under an approved maintenance plan (62 Federal Register [FR] 38213) since July 17, 1997.[6] This maintenance plan demonstrated that Salt Lake and Davis Counties had achieved the 8-hour ozone standard and could maintain compliance with the standard through 2014.

1.3.3 2008 8-Hour Ozone Standard

In March, 2008, the EPA revised the 1997 8-hour NAAQS from 0.080 to 0.075 ppm averaged over an 8-hour period. In 2012, EPA finalized the standard and issued rulemaking relevant to the implementation of the rule.[7] In 2015, EPA finalized the SIP requirements and NAA classifications and determinations for this standard.[8] Monitoring data indicated that all areas of Utah were attaining the standard, and thus no SIP revisions were required for the state of Utah for this NAAQS.

1.4 2015 NAAQS Ozone NAAs

On October 26, 2015, the EPA promulgated a revision to the primary NAAQS for ground-level ozone in accordance with Section 107(d) of the CAA. This revision lowered the standard from 0.075 to 0.070 ppm for the 4th highest daily maximum 8-hour concentration (MDA8) averaged over three years.[9] As a result of the more stringent standard, effective on August 3, 2018, the EPA designated two areas along the Wasatch Front as marginal NAA including the Northern Wasatch Front and Southern Wasatch Front.[10] The NWF NAA includes Salt Lake and Davis counties as well as portions of Tooele and Weber counties (Figure 1).

[5] Determination of Attainment of Ozone Standard for Salt Lake and Davis Counties, Utah, and Determination Regarding Applicability of Certain Reasonable Further Progress and Attainment Demonstration Requirements, 60 Fed. Reg. 36,723 (July 18, 1995).

[6] Approval and Promulgation of Air Quality Implementation Plans; State of Utah; Salt Lake and Davis Counties Ozone Redesignation to Attainment, Designation of Areas for Air Quality Planning Purposes, Approval of Related Elements, Approval of Partial NOX RACT Exemption, and Approval of Weber County I/M Program, 62 Fed. Reg. 38,213 (July 17, 1997).

[7] 77 FR 30160

[8] FR 80 12264

[9] National Ambient Air Quality Standards for Ozone, 80 Fed. Reg. 65,292 (Oct. 26, 2015).

[10] Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, 83 Fed. Reg. 25,776 (June 4, 2018).

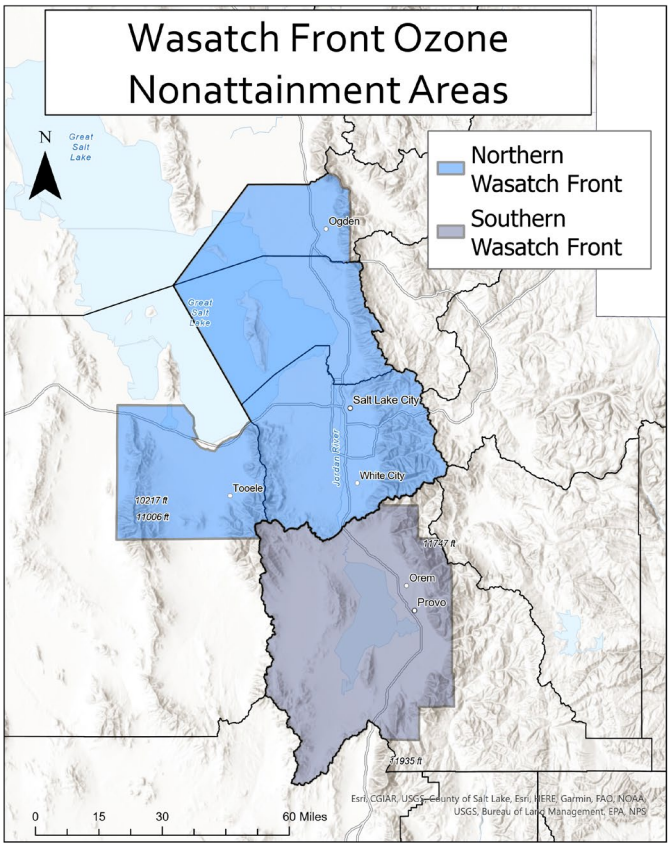

Figure 1: Wasatch Front Ozone NAAs

1.4.1 Northern Wasatch Front Ozone NAA

The boundaries for the NWF NAA include three valleys that are part of the Intermountain West's basin and range geological province: Tooele Valley, the North Salt Lake Valley, and the Salt Lake Valley. The majority of the approximately 1.8 million residents within the NAA reside in the Salt Lake valleys situated along the base of the Wasatch Mountains. The three valleys consist of a variety of complex topography including low and large valleys bordered by steep mountain terrain and a large body of water—the Great Salt Lake. The average elevation of the three valleys is 4,327 feet above sea level with the bordering Wasatch Mountains rising to elevations over 11,000 feet. The area experiences a dry-summer continental climate with hot and dry summers dominated by persistent high-pressure systems. The relatively high baseline elevation of over 4,000 feet, coupled with its warm and dry climate, and its prominent location in the Intermountain West, results in a naturally high contribution of background ozone in the NWF NAA[11] during the typical summer ozone season.

1.4.2 NWF Marginal Ozone NAA Requirements

The NWF NAA failed to attain the standard by the marginal attainment date but has met all statutory requirements for a marginal NAA under the CAA Section 182(a) as shown in Table 1.

[11] Scientific assessment of background ozone over the U.S.: Implications for air quality management. Jaffe et al.

Table 1: NWF NAA marginal requirements under the CAA.

CAA Requirement	Federal Register Approval
2017 Base Year Emission Inventory	86 FR 35404, July 6, 2021
Emission Inventory Statement Rule	87 FR 24273, April 25, 2022
Nonattainment New Source Review	87 FR 24273, April 25, 2022

The design value (DV) calculated from data collected from 2018-2020 was used to determine if the area attained the standard by the attainment date of August 3, 2021. Validated data in EPA's Air Quality System (AQS) shows a 3-year average of the 4th high maximum daily 8-hour ozone value at the NWF Bountiful monitor of 0.077 ppm, with exceedances also observed at all other monitoring sites in the NAA except Erda in Tooele County (Table 2).

Table 2: Ozone values in ppm from sites in NWF NAA from 2018 - 2020. Values calculated in accordance with 40 CFR Part 50, Appendix U.

Ozone Summary						
Site ID	**Site Name**	**County**	**Annual 4th Highest (ppm)**			**Three Year Average (ppm)**
			2018	**2019**	**2020**	**2018-2020**
49-057-1003	Harrisville	Weber	0.077	0.064	0.074	0.071
49-011-0004	Bountiful	Davis	0.080	0.073	0.080	0.077
49-035-2005	Copperview	Salt Lake	0.079	0.067	0.075	0.073
49-035-3006	Hawthorne	Salt Lake	0.074	0.073	0.075	0.074
49-035-3010	Rose Park	Salt Lake	0.080	0.071	0.080	0.077
49-035-3013	Herriman	Salt Lake	0.078	0.070	0.073	0.073
49-045-0004	Erda	Tooele	0.074	0.065	0.070	0.069

On October 7, 2022, the EPA finalized rulemaking where it determined that the NWF did not attain by the attainment date and reclassified the area to moderate with a new attainment date of August 3, 2024.[12] The effective date of this rulemaking was November 7, 2022, marking the effective date of moderate designation for the NWF NAA.

1.4.3 Utah's Request to Adjustment the NWF NAA Boundary

On February 27, 2023, Governor Spencer J. Cox submitted a letter[13] and supporting documentation[14] to EPA Region 8 administrator Kathleen Becker. In this letter, Governor Cox used his authority under Section 107(d)(3)(D) of the CAA to request an adjustment to the existing NWF NAA boundary (figure 1). The requested modification would extend the western edge of the existing boundary in Tooele County 7.6 miles further west. This adjustment would result in the inclusion of US

[12] Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Areas Classified as Marginal for the 2015 Ozone National Ambient Air Quality Standards, 87 Fed. Reg. 60,897 (Oct. 7, 2022).

[13] Utah's Request for Boundary Adjustment for the Northern Wasatch Front NAA. Feb. 27, 2023: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-002065.pdf

[14] Request for Adjustment of the Northern Wasatch Front NAA Boundary for the 2015 8-hour Ozone National Ambient Air Quality Standard. Feb. 27, 2023: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-002086.pdf

Magnesium LLC (section 4.15) into the NWF NAA. US Magnesium's Rowley plant is currently one of the largest point sources of VOCs and NO_x in the greater Wasatch Front. US Magnesium is also a unique source of halogen emissions which have been shown to impact both summer and wintertime pollution.[15] Upon the receipt of the letter, EPA has 18 months to either approve or deny the state's request. EPA has not formally acted on this request and thus the extent of the NWF NAA remains as described in section 1.4.3 (Figure 1). However, given the magnitude of emissions from US Magnesium LLC, and their impacts on the NWF NAA, the Utah Division of Air Quality (UDAQ) has included US Magnesium LLC in this SIP revision where it is appropriate.

1.5 Responsible Air Agencies

1.5.1 Utah Division of Air Quality (UDAQ)

Section 19-2-104 of the Utah Code gives the Utah Air Quality Board the authority to promulgate rules "regarding the control, abatement, and prevention of air pollution from all sources and the establishment of the maximum quantity of air pollutants that may be emitted by an air pollutant source."[16] The UDAQ develops, prepares, and submits SIPs to the Utah Air Quality Board for consideration and promulgation. UDAQ is the primary state agency responsible for the development and implementation of SIPs once they are approved by the Utah Air Quality Board, and associated administrative rules, as required by the CAA.

1.5.2 Interagency Consultation Team

UDAQ works in close coordination with local Metropolitan Planning Organizations (MPOs) on relevant traffic and travel-related aspects of SIP and transportation conformity activities. The Interagency Consultation Team[17] (ICT) is a group of MPOs and transportation planning agencies, that undertake the interagency consultation process as it relates to the development of the SIP, applicable control measures related to transportation included in the SIP, transportation plans, the Transportation Improvement Program (TIP), and Transportation Conformity determinations. Within the NWF NAA, the Wasatch Front Regional Council (WFRC) serves as the MPO for Box Elder, Davis, Salt Lake, Tooele, and Weber Counties. The Utah Department of Transportation (UDOT), Federal Highway Transportation Administration, Federal Transit Administration, and the EPA, are all part of the ICT as well.

1.6 Moderate SIP Elements

As part of the reclassification to a moderate NAA, EPA has required that Utah submit a SIP revision.[18] A moderate SIP revision requires mandatory planning elements per CAA section 182(b) which are outlined in the final SIP Requirements Rule as well as in Table 3.[19]

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[15] Womack CC, Chace WS, Wang S, Baasandorj M, Fibiger DL, Franchin A, Goldberger L, Harkins C, Jo DS, Lee BH, Lin JC, McDonald BC, McDuffie EE, Middlebrook AM, Moravek A, Murphy JG, Neuman JA, Thornton JA, Veres PR, Brown SS. Midlatitude Ozone Depletion and Air Quality Impacts from Industrial Halogen Emissions in the Great Salt Lake Basin. Environ Sci Technol. 2023 Feb 7;57(5):1870-1881. doi: 10.1021/acs.est.2c05376. Epub 2023 Jan 25. PMID: 36695819.

[16] Utah Code Ann. § 19-2-104(1)(a).

[17] Utah State Implementation Plan Section XII; Transportation Conformity Consultation (May 2, 2007), available at https://documents.deq.utah.gov/legacy/laws-and-rules/air-quality/sip/docs/2007/05May/SECXII.PDF

[18] 87 Fed. Reg. 60,897.

[19] Implementation of the 2008 National Ambient Air Quality Standards for Ozone: NAA Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes, 77 Fed. Reg. 30,160 (May 21, 2012).

Table 3: SIP Requirements

Category	Requirement	Reference	Addressed in Section
Reasonable Further Progress (RFP)	Demonstrate a 15% reduction of VOCs from the base year inventory to the attainment year.	CAA §182(b)(1)(A)(i) and 40 CFR §51.1310	Chapter 7 (IX D.11)
Base Year and Projected Emission Inventories	Establish the base year emission inventory (2017) and attainment year inventory (2023) for use in establishing RFP and demonstration of attainment.	CAA §182(b)(1)(B) and 40 CFR §51.1315	Chapter 3 (IX D.11)
Attainment Demonstration	Demonstration that the NAA will attain the standard using a photochemical model and methods approved in EPA modeling guidance.	CAA §182(c)(2)(A) and 40 CFR §51.1308	Chapter 8 (IX D.11)
Reasonable Available Control Technology (RACT)	Evaluation of the application of reasonable control technology (technically and economically feasible) at major sources.	CAA §182(b)(2) and 40 CFR §51.1312	Chapter 4 (IX D.11)
Reasonable Available Control Measure (RACM)	Evaluation of application of RACM for all other sources of ozone precursors.	CAA §182(b)(2) and 40 CFR §51.1312	Chapter 5 (IX D.11)
Motor Vehicle Inspection and Maintenance (I/M) Program	Evaluate if current I/M program meets CAA requirements.	CAA §182(b)(4)	Chapter 6 (IX D.11)
Nonattainment New Source Review (NNSR) Program	General offsets for VOCs [~~increase to~~]shall be a ratio of at least 1.15 to 1.0.	CAA §182(b)(5) and 40 CFR §51.1314	Chapter 4 (IX D.11)
Contingency Measures	Emission reduction measure triggered if the NAA fails to attain the standard by the attainment date.	CAA §182(c)(9)	Chapter 11 (IX D.11)

Motor Vehicle Emission Budgets	Establishment of maximum allowable emissions from on-road mobile sector for ozone precursor emissions used in transportation conformity analysis.	CAA §182(c)(5)	Chapter 10 (IX D.11)

1.7 Moderate Area SIP Development Process

UDAQ led the development of the moderate SIP and coordinated with the MPOs and EPA on the development of the various SIP elements. Work began in September 2019 in anticipation of the reclassification of the area from marginal to moderate status. Throughout the SIP development, public stakeholder meetings were held to solicit comment and engagement from interested parties as detailed in Chapter 10 of this SIP revision. The UDAQ holds regular bi-monthly meetings with both industry representatives and environmental advocates. These meetings provide the opportunity to maintain open dialogue and transparency in the development of a SIP with interested parties. Once aspects of the SIP were developed to the point where they could be shared, UDAQ scheduled public outreach meetings to present data and information to the public, and the public was provided with the opportunity to comment or make suggestions. UDAQ also posted all documents related to the development of this SIP revision, including all technical supporting documentation, to its public webpage[20] as soon as they became available.

[20] https://deq.utah.gov/air-quality/northern-wasatch-front-moderate-ozone-sip-technical-support-documentation#supporting-tsd

Chapter 2 – NWF Monitoring Network

2.1 Monitoring Network

The UDAQ maintains a highly reliable, continuous near-surface ambient air monitoring network that meets the requirements of 40 CFR Parts 50, 53, and 58.[21] The 1970 CAA and subsequent amendments provide the framework for an ambient air monitoring network that is designed to collect data addressing five basic needs to:

1. Activate emergency control procedures that prevent or alleviate air pollution episodes.
2. Provide air pollution data to the public in a timely manner.
3. Judge compliance with and progress towards meeting ambient air quality standards.
4. Observe pollution trends throughout the region, including non-urban areas.
5. Provide a database for research evaluation of the following effects: urban, land-use, transportation planning, development and evaluation of abatement strategies, and development and validation of diffusion models.

The UDAQ collects monitoring data for five NAAQS criteria pollutants including: sulfur dioxide (SO_2), CO, ozone (O_3), nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). In addition, UDAQ currently operates one continuous gas chromatograph for the collection and analysis of ozone precursor data for the Photochemical Assessment Monitoring Station (PAMS) program. Each year, a network review is performed by staff and the Annual Monitoring Network Plan is submitted as a separate document to EPA Region 8 for approval. In addition, Utah has established a comprehensive meteorological monitoring network to supply data for modeling activities, including measurements of temperature, relative humidity, wind speed, and wind direction.

As part of the air monitoring network, the UDAQ specifically operates an extensive network of ground level in-situ ambient air quality monitoring stations throughout the NWF NAA. The network consists of eight active sites that monitor atmospheric concentrations of ozone that are used for regulatory purposes, as well as two historic sites which help provide context for the extent and length of UDAQs monitoring network (Figure 2). Beyond the UDAQ operated network of sites, there are several research grade ozone monitoring stations within the NAA boundary that are supported by UDAQ including: The Red Butte Ozone Monitoring Network, the mobile based TRAX Air Quality Observation Project platform and the Mobile Electric Bus Air Quality Monitoring Project. While these projects are not regulatory and are not included in the EPA's Air Quality System and determination of a DV for the NAA, they significantly contribute to the understanding of transport, production, and the spatiotemporal patterns of ozone throughout the NAA.

[21] Title 40 Protection of the Environment, Chapter 1 Environmental Protection Agency, Subchapter C Air Programs, Part 50 National Primary and Secondary Ambient Air Quality Standards, Part 53 Ambient Air Monitoring Reference and Equivalent Methods and Part 58 Ambient Air Quality Surveillance.

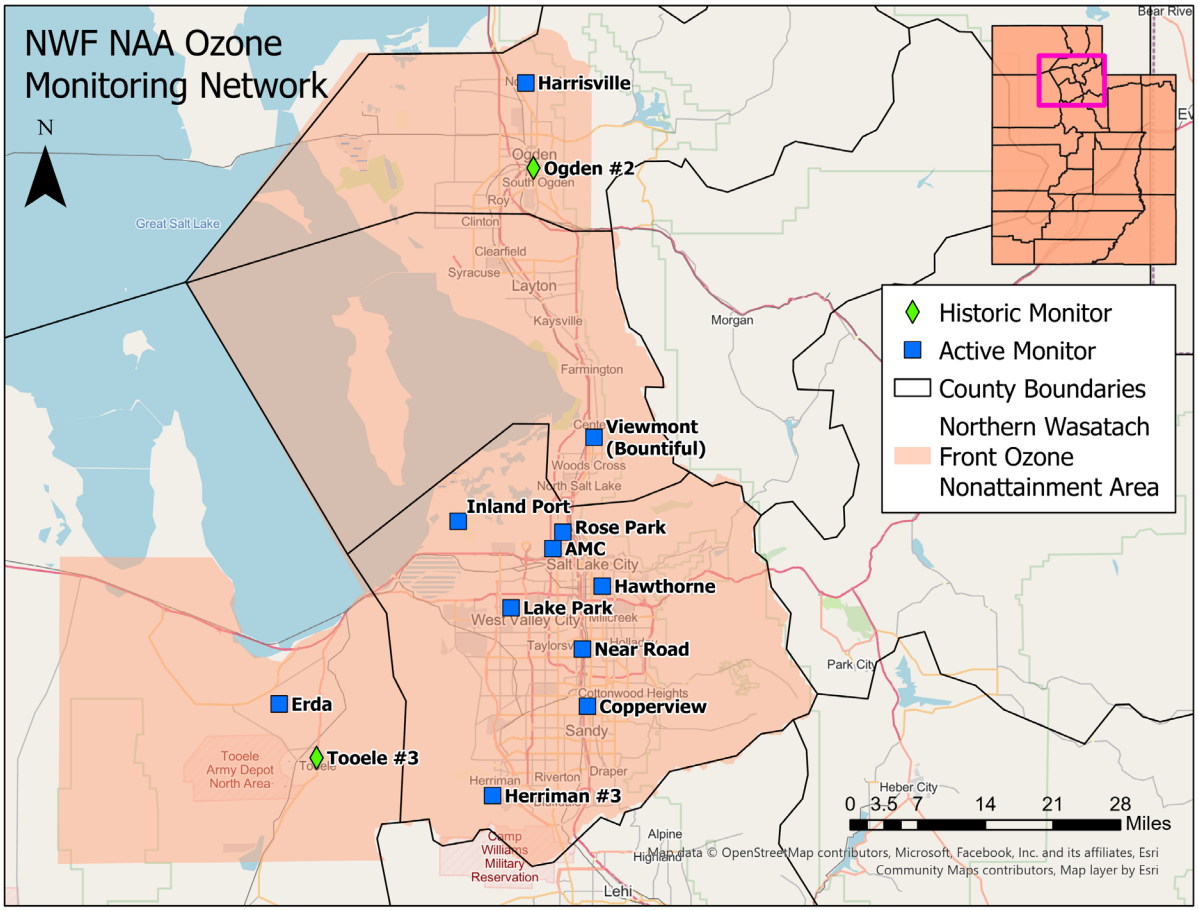

Figure 2: Monitoring sites in the NWF NAA

The UDAQ currently operates one PAMS site at Hawthorne, located in Salt Lake County. The PAMS program is a subset of the State or Local Air Monitoring Stations (SLAMS) network for enhanced monitoring of ozone precursor chemicals at sites located in an area with a population over 1,000,000 and in areas of moderate and above nonattainment status. The PAMS program is designed with the objective to produce an air quality database to be used to evaluate and refine ozone prediction models. In addition, the program will assist to identify and quantify the ozone precursors and establish the temporal patterns and associated meteorological conditions to assist and refine the control strategies. UDAQ is measuring the following parameters at the PAMS required site:

- Carbonyls
- Meteorological parameters: ambient temperature, wind direction, wind speed, atmospheric pressure, relative humidity, precipitation, mixing layer height, solar radiation, and UV radiation[7]
- Speciated VOCs
- True NO_2
- NO & NO_y

- Ozone

Since significant portions of the NWF NAA overlap with the Salt Lake City $PM_{2.5}$ NAA, the UDAQ operates the PAMS site for the full calendar year to account for both wintertime $PM_{2.5}$ and summertime ozone seasons.

In order to meet the Enhanced Monitoring Plan (EMP) requirements for a moderate NAA the UDAQ is developing an EMP in fulfillment of federal regulations, 40 CFR Part 58, Appendix D 5(h). These regulations require that a state with any area designated moderate or above for the 8-hour ozone standard, and any state within the Ozone Transport Region (OTR), develop, implement, and submit an EMP for ozone to the regional EPA office two years following the effective date of a designation to a classification of moderate or above. The EMP is intended to provide monitoring organizations the flexibility to implement any additional monitoring beyond the minimum requirements for the SLAMS to complement the needs of their area.

As part of UDAQ's proposed EMP, UDAQ plans to expand PAMS monitoring beyond the existing site at Hawthorne to include 5 additional sites throughout the NWF NAA. These sites will represent an array of land use types and will be distributed to provide insight into the underlying atmospheric chemical regimes present at a variety of locations.

2.2 Ozone Monitoring Data

Table 4 and Table 5 show the monitoring data for the past twelve years for the NWF ozone monitoring sites. The MDA8, and the 3-year averages of the MDA8 at each site are shown, respectively. A trend graph of data from 2002 – 2021 for the key sites in the NWF is presented in Figure 3.

Table 4: NWF MDA8 reported in ppm.

NWF NAA Ozone MDA8 (ppm)														
Site	**ID**	**AQS #**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Bountiful	BV	49-011-0004	0.074	0.068	0.067	0.062*	0.074	0.073*	0.076	0.078	0.080	0.073	0.080	0.082
Copperview	CV	49-035-2005	---	---	---	---	---	---	---	---	0.079*	0.067	0.075	0.086
Hawthorne	HW	49-035-3006	0.073	0.075	0.078	0.077	0.072	0.081	0.074	0.081	0.074	0.073	0.075	0.081
Rose Park	RP	49-035-3010	---	---	---	---	---	---	---	---	0.080	0.071	0.080	0.079
Herriman	H3	49-035-3013	---	---	---	---	---	0.074	0.076	0.078	0.078	0.070	0.073	0.087
Lake Park	LP	49-035-3014	---	---	---	---	---	---	---	---	---	---	0.062*	0.082
Tech Center	UT	49-035-3015	---	---	---	---	---	---	---	---	---	0.038*	0.071*	0.083
Near Road	NR	49-035-4002	---	---	---	---	---	---	---	---	---	0.064	0.072	0.083
Tooele #3	T3	49-045-0003	0.074	0.071	0.074	0.072	0.069	---	---	---	---	---	---	---
Erda	ED	49-045-0004	---	---	---	---	---	0.071*	0.072	0.077	0.074	0.065	0.070	0.075
Harrisville	HV	49-057-1003	0.070	0.074	0.076	0.073	0.070	0.074	0.073	0.073	0.077	0.064	0.074	0.077
Ogden	O2	49-057-0002	0.073	0.074	0.066	0.076	0.070	0.072	0.072	0.075	0.079	0.059*	---	---

*** Indicates numbers that do not meet the data completeness requirements**

Table 5: NWF 8-Hour Ozone Three-Year Average 4th Maximum Ozone Values.

3-yr. Average MDA8 (ppm)												
Site	**ID**	**AQS #**	**2010-2012**	**2011-2013**	**2012-2014**	**2013-2015**	**2014-2016**	**2015-2017**	**2016-2018**	**2017-2019**	**2018-2020**	**2019-2021**
Bountiful	BV	49-011-0004	0.069	0.065*	0.067*	0.069*	0.074*	0.075*	0.078	0.077	0.077	0.078
Copperview	CV	49-035-2005	---	---	---	---	---	---	0.079*	0.073*	0.073*	0.076*
Hawthorne	HW	49-035-3006	0.075*	0.076	0.075	0.076	0.075	0.078	0.076*	0.076	0.074	0.076
Rose Park	RP	49-035-3010	---	---	---	---	---	---	0.08*	0.075*	0.077*	0.076*
Herriman	H3	49-035-3013	---	---	---	0.074	0.075	0.076	0.077	0.075	0.073	0.076
Lake Park	LP	49-035-3014	---	---	---	---	---	---	---	---	---	---
Tech Center	UT	49-035-3015	---	---	---	---	---	---	---	---	---	0.064*
Near Road	NR	49-035-4002	---	---	---	---	---	---	---	---	---	0.073*
Tooele #3	T3	49-045-0003	0.073	0.072	0.071	0.07	---	---	---	---	---	---
Erda	ED	49-045-0004	---	---	---	0.071*	0.071*	0.073*	0.074	0.072	0.069	0.07
Harrisville	HV	49-057-1003	0.073	0.074	0.073	0.072	0.072	0.073	0.074	0.071	0.071	0.071
Ogden	O2	49-057-0002	0.071	0.072	0.07	0.072	0.071	0.073	0.075	0.071*	---	---
*** Indicates numbers that do not meet the data completeness requirements**												

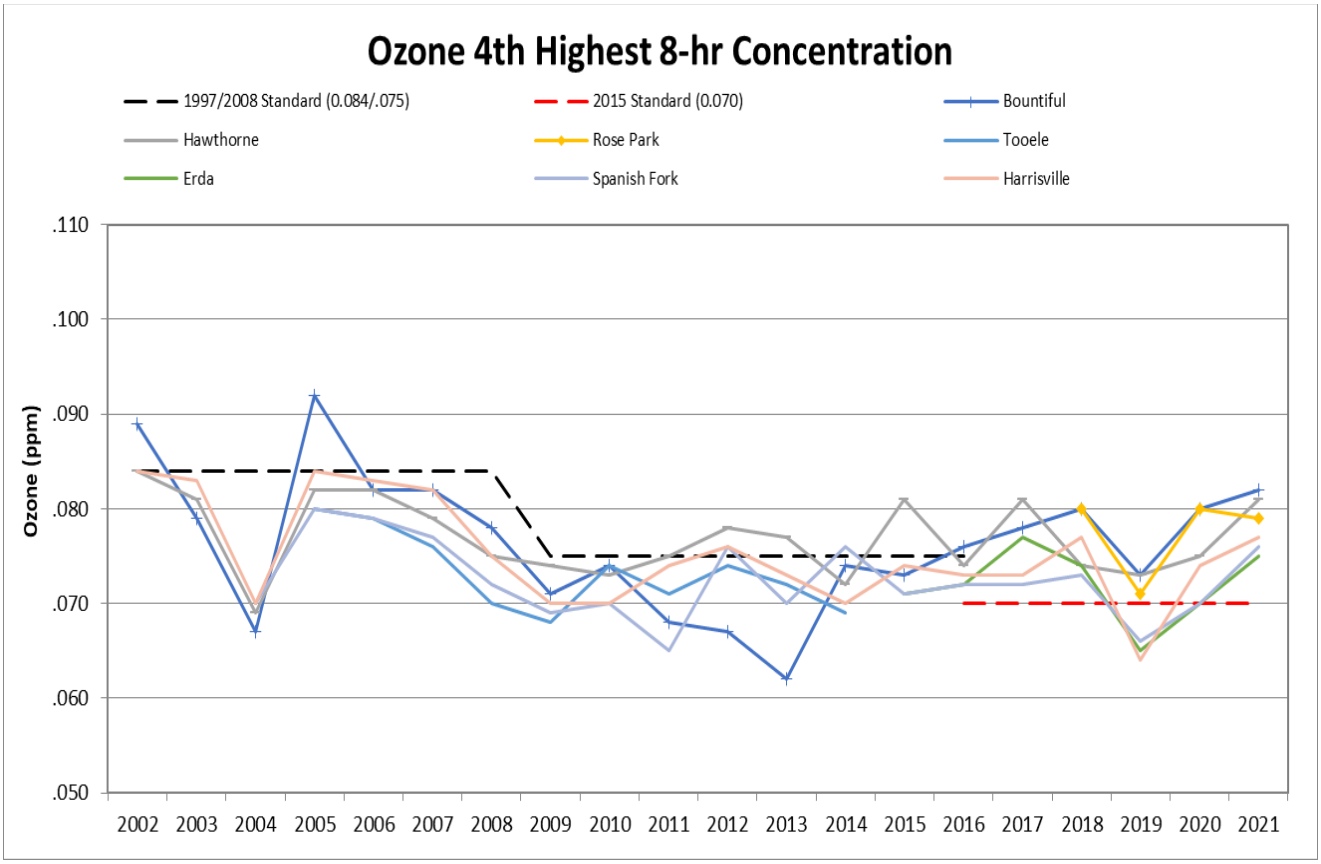

Figure 3: MDA8 in Wasatch Front

As shown in Figure 3, the combined state air agency and federal regulatory actions have been successful at reducing ozone values in the NWF. However, the area is still experiencing exceedances of the ozone standard at all regulatory air monitors within the NAA. Ozone represents a unique challenge in the Intermountain West. Despite years of success in reducing precursor emissions of NO_X and VOCs, the region still faces significant and unique challenges in meeting ambient ozone concentration health-based standards. These regionally specific challenges include significantly elevated background ozone levels,[22] increasing instances and contributions of emissions from wildfire events,[23] significant biogenic contributions,[24] as well as both interstate and international[25] transport.

2.3 Data Quality Assurance

The primary purpose of UDAQ's ambient air monitoring network is to determine whether the area is meeting the criteria pollutant NAAQS. Other purposes for air monitoring include, but are not limited to, determining the impact of sources on air quality, establishing background concentrations, and determining the extent of regional ozone transport. The goal of UDAQ's Air Monitoring Section is to

[22] Scientific Assessment of background ozone over the U.S.: Implications for air quality management

[23] Influence of Fires on O3 Concentrations in the Western U.S.; Dan Jaffe, Duli Chand, Will Hafner, Anthony Westerling, and Dominick Spracklen; Environmental Science & Technology 2008 42 (16), 5885-5891. DOI: 10.1021/es800084k

[24] EPA Webinar; Description and preliminary evaluation of BELD 6 and BEIS 4. ORD. Jesse O. Bash and Jeff Vukovich

[25] Entrainment of stratospheric air and Asian pollution by the convective boundary layer in the southwestern U.S.; Langford, A.O. et al. (2017), J. Geophysics. Res. Atmos., 122, 1312-1337, doi:10.1002/2016JD025987

produce data that are complete, comparable, representative, precise, and accurate in accordance with 40 CFR Part 58, Appendix A. Data quality is calculated at least annually according to EPA's accepted statistical procedures to determine compliance with the recommended limits. Data outside these limits are still reported to Air Quality System (AQS), but UDAQ flags the data internally and attempts to determine the source of the problems. The UDAQ Air Monitoring Quality Assurance Program Plan provides details of how UDAQ meets the requirements of 40 CFR Part 58, Appendix A and is made available to the public for review.[26]

Table 6 shows the data recovery rates for each monitoring site in the NWF NAA as a percentage. The percent of data recovery is the number of valid sampling hours occurring within the ozone season divided by the total number of hours encompassing the ozone season. The ozone season for Utah was defined as from January 1 to December 31, thus is year-round.[27] A valid sampling day is one in which at least 75% of the hourly averages are recorded.

Table 6: NWF Ozone Data Recovery Rates shown as percentages.

Site	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bountiful 49-011-0004	99%	97%	98%	64%	99%	53%	100%	99%	99%	98%	99%	99%
Copperview 49-035-2005	---	---	---	---	---	---	---	---	96%	93%	98%	97%
Hawthorne 49-035-3006	99%	97%	98%	64%	99%	53%	100%	99%	99%	98%	99%	96%
Rose Park 49-035-3010	---	---	---	---	---	---	---	---	87%	80%	98%	99%
Herriman 49-035-3013	---	---	---	---	---	100%	98%	98%	97%	99%	99%	98%
Lake Park 49-035-3014	---	---	---	---	---	---	---	---	---	---	99%	98%
Tech Center 49-035-3015	---	---	---	---	---	---	---	---	---	99%	99%	98%
Near Road	---	---	---	---	---	---	---	---	---	99%	98%	99%
Tooele 49-045-0003	64%	98%	99%	100%	99%	100%	83%	83%	97%	99%	92%	---
Erda 49-045-0004	---	---	---	---	---	61%	100%	99%	93%	97%	99%	99%
Harrisville 49-057-1003	83%	99%	98%	99%	100%	96%	99%	89%	99%	82%	98%	96%
Ogden 49-057-0002	98%	94%	96%	99%	100%	100%	99%	99%	99%	99%	---	---

As shown in Table 6, the UDAQ monitoring program is extremely robust with a consistently high level of data recovery. On an annual basis, the monitoring network is evaluated, assessed, and adjusted as necessary to ensure that the agency and the public have an accurate understanding of local air quality

[26] https://documents.deq.utah.gov/air-quality/planning/air-monitoring/DAQ-2022-007189.pdf

[27] 83 FR 25776

concentrations and trends. What these monitoring values represent and how they are impacted will be evaluated and discussed in other SIP chapters.

Chapter 3 - Baseline and Future Year Emission Inventories

3.1 Emission Inventory Background

3.1.1 2017 Base Year Inventory

In accordance with the CAA and 40 CFR §51.1315, when the NWF was designated as a marginal ozone NAA, the UDAQ was required to submit a base year emission inventory 24 months after the effective date of designation. A base year inventory is comprised of a comprehensive, accurate, current inventory of actual emissions from sources of VOCs and NO_X emitted within the boundaries of the NAA as required by CAA Section 182(a)(1). The base year for this SIP submittal is 2017, which is the most recent calendar year for which a complete triennial inventory was submitted to the EPA. The inventory is compiled in ozone season day emissions, which is an average day's emissions for a typical ozone season work weekday. This requirement was met and approved by EPA in 86 FR 35404, on July 6, 2021. As a result of being reclassified as a moderate ozone NAA, the 2017 base year inventory is being resubmitted as part of this NWF moderate SIP as some refinements have been made since the submittal of the marginal base year inventory. The methodology for each inventory source category will be provided in this chapter, with a more detailed description provided in the technical support document (TSD) for this SIP.

3.1.2 2023 Projected Year Inventory

To support the CAA requirement for a moderate NAA to demonstrate RFP towards attainment, UDAQ has developed a projected emission inventory for 2023 based on the base year inventory described in Section 3.1.1. 2023 is the year prior to the required attainment dat<u>e</u>[~~a~~] of August 3, 2024, thus the state is required to demonstrate a 15% reduction in VOCs between 2017 and 2023 in accordance with 40 CFR § 51.1310. The emission inventory presented here represents the projected inventory for sources with no additional emission controls implemented beyond actions taken under the $PM_{2.5}$ SIPs. A discussion of proposed or potential emission controls and how they will help achieve the required VOC reductions and demonstration of attainment will be discussed in Chapter 7, RFP. This chapter provides the methodology and results of developing the baseline and future year inventories in accordance with available EPA guidance.[28]

3.2 Baseline 2017 Emission Inventory and Projected 2023 Emission Inventory

Both inventories developed for the SIP are reported as an average day's emissions for a typical ozone season work weekday, in the unit of tons per day (tpd). This is an average summer day for the NWF. The 2017 inventory of actual emissions is the basis for any projections made to represent future years. Emission inventories are generally collected and reported as annual emissions. These annual inventories are processed through the Sparse Matrix Operating Kernel Emissions Model (SMOKE).[29] SMOKE modeling spatially allocates, temporalizes, and chemically speciates annual emissions estimations from the emissions inventories. <u>Post-SMOKE, annual emissions are temporalized and can be represented in tons per day. Spatial allocation, temporalization, and chemical speciation are SCC-specific operations.</u> UDAQ typically tabulates emissions from area and mobile sources on a county-by-county

[28] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

[29] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

basis, however the NAA includes two partial counties. To obtain the typical ozone season day, emission inventories are entered into the SMOKE model such that it is assigned a geographic location (grid cell). To report emissions specific to the NAA, UDAQ cropped the post-SMOKE processed gridded emissions using a Geographic Information System (GIS) tool using polygons representing the boundaries of the NAA.

An inventory of emissions was developed for the major source categories as presented in Table 7 for the 2017 emission inventory. Residential wood combustion is excluded as this source is not a significant emitter of ozone precursors when compared to more predominant sources in the NAA and is not seasonally relevant to summertime ozone production in the NWF. More detailed post-SMOKE emissions inventory tables can be found in the SMOKE TSD.[30]

Table 7: 2017 Nonattainment Emission Inventory (tons per day)

NWF NAA 2017 base year		
Sector	**NO_x TPD**	**VOC TPD**
Solvents	0.56	43.20
Area (non-point)	5.36	8.51
Livestock		0.69
Non-road	10.52	12.53
Rail	9.25	0.47
Airports	3.14	1.25
Electric Generating Units (EGUs)	0.44	0.03
Point Sources	20.43	5.85
On-road Mobile	55.53	20.47
ERC Bank	3.1	0.7
TOTAL ANTHROPOGENIC	**108.33**	**93.7**

The projection year emissions inventory was prepared for 2023 as this is the year prior to the attainment date of August 3, 2024. The emission projections reflect changes due to growth and existing controls. The 2023 emission inventories presented here do not account for controls put in place specifically from actions taken for this SIP.

[30] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

Table 8: 2023 Projected Nonattainment Emission Inventory (tpd)

NWF NAA 2023 future year		
Sector	**NO_X TPD**	**VOC TPD**
Solvents	0.71	44.52
Area (non-point)	4.85	8.26
Livestock		0.71
Non-road	8.05	12.62
Rail	8.77	0.44
Airports	3.74	1.42
Electric Generating Units (EGUs)	0.45	0.03
Point Sources	22.00	6.00
On-road Mobile	35.40	15.32
ERC Bank	3.1	0.7
TOTAL ANTHROPOGENIC	**87.07**	**90.02**

3.2.1 Fires and Biogenic Sources

Emissions from wildland and prescribed fires, and biogenic sources, which are dependent on meteorological conditions, are accounted for during the modeling phase and are not traditionally inventoried.[31] Emissions from wildfires are accounted for using the Blue-Sky Framework in the SMOKE model. Biogenic emissions are modeled with the Biogenic Emissions Inventory System (BEIS) version 3.6.1. BEIS creates gridded, hourly, model-species emissions from vegetation and soils. Forests are significant sources of VOCs, and the burning of forest material is a source of ozone precursors and particulate matter. These source categories are crucial to include in any ozone modeling demonstration. The emissions from biogenic sources are shown in Table 9 and are held constant between 2017 and 2023.

Table 9: Biogenic Emissions (tons per day)

NWF NAA COUNTIES (includes all of Tooele and Weber Counties) 2017 base year		
Sector	**NO TPD**	**VOC TPD**
TOTAL NAA COUNTY-WIDE BIOGENIC	**5.57**	**246.88**

3.2.2 Solvent Emissions

The solvents sector includes VOC emissions from everyday items such as cleaners, personal care products, adhesives, architectural and aerosol coatings, printing inks, asphalt, and pesticides. Emissions estimates were sourced from EPA's 2016v2 platform, which were generated with the VCPy framework. EPA's 2017 platform predates EPA's 2016v2 platform, and it does not include emissions from solvents according to the VCPy framework. The VCPy framework features better VOC[~~CP~~] emissions estimates than previous platforms, thus UDAQ made every effort to include improved emissions in the solvents inventory.[32] Since EPA's 2016 modeling base year did not align with the NWF SIP 2017 base year, the inventory was projected to 2017. The only relation expected to change between 2016 and 2017 base years is the mass of chemical products used. To determine a change in product used, UDAQ evaluated

[31] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

[32] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

the average Producer Price Index (PPI) across the summer months represented during our modeling episode: June, July, and August. In 2016, the average summer PPI for all commodities was 187.3. In 2017 the PPI was 193.6. This shows a 3% increase in PPI from 2016 to 2017, so all solvents emissions from the 2016v2 platform VCPy inventory were increased by 3% to produce the 2017 base year VCPy inventory used in this modeling demonstration. The 2016v2 platform includes projected emissions inventories for 2023 that were utilized by UDAQ. Table 10 and Table 11 provide the 2017 baseline inventory for solvents and the projected 2023 inventory respectively.

Emissions from hot mix asphalt (HMA) plants are submitted as point source inventories, however, all HMA plants in the NAA have 2017 NO_x and/or VOC emissions less than 100 tons per year (tpy). Point sources with NO_x and/or VOC emissions less than 100 tpy are assumed to be represented in nonpoint sectors, but emissions from asphalt plants are technically not represented in the solvents or nonpoint sectors. To accommodate planned rulemaking, UDAQ added emissions from HMA plants to the solvents sector. It is important to note that the emissions associated with HMA facilities discussed in this section represent UDAQ's best assumptions for actual annual emissions associated with the production of HMA products based on known metrics like annual production. Elsewhere in this SIP revision emissions may be reported based on the combined potential to emit based on permitted maximums from all HMA facilities, and thus represent the upper bounds of potential emissions from HMA facilities.

Table 10: Solvent Emissions Inventory

NWF NAA 2017 base year		
Sector	**NO_X TPD**	**VOC TPD**
Solvents	0.56	43.20
Consumer Products	-	18.23
HMA plants	0.56	0.06
Other Solvents	-	24.91

Table 11: 2023 Solvent Emissions Inventory

NWF NAA 2023 future year		
Sector	**NO_X TPD**	**VOC TPD**
Solvents	0.71	44.52
Consumer Products	-	18.80
HMA plants	0.71	0.11
Other Solvents	-	25.62

3.2.3 Area Sources

Nonpoint (area) sources are typically smaller, yet pervasive sources that do not qualify as point sources under the relevant emissions cutoffs. Area sources encompass more widespread sources that may be abundant, but that, individually, release small amounts of a given pollutant. These are sources for which emissions are estimated as a group rather than individually. Examples typically include residential heating and residential charcoal grilling. Area sources generally are not required to submit individual emissions estimates, and instead are reported as county totals.

Area source calculation methods are consistent with Utah's methods for reporting the EPA's tri-annual National Emissions Inventory. Area source emissions are calculated based on activity data, which

is gathered from sources such as Departments of Transportation, State Tax Commissions, State Data Centers, State Offices of Planning and Budget, State Energy Commissions, federal agencies such as the U.S. Census Bureau, county and local government agencies, airports, natural gas suppliers, and local trade associations. These data include population, employment, vehicle miles traveled (VMT), fuel usage, animal, crop, and other estimates. Area source calculations are often based on combining these activity data with emission factors. Emission factors were also gathered from similar sources, mostly EPA documents. Area sources were adjusted for potential overlaps and double counts with point sources.[33]

Emission projections for 2023 were based on 2017 data and projected forward. Projection methods were consistent with methods used in past Utah SIPs. Emission projections were based on activity data, similar to their baseline estimates. Depending on the specific source, emissions were projected to scale with population, manufacturing, agricultural, employment data, Energy Information Agency energy use projections, VMT, and other similar data sources.

Livestock emissions were calculated using EPA generated emission factors for livestock animals and multiplying them by the respective livestock populations for each county. Future emissions were forecast using a linear regression model to predict future year livestock emissions as based on agricultural employment.

Table 12: 2017 Area Source Emission Inventory

NWF NAA 2017 base year		
Sector	**NO_X TPD**	**VOC TPD**
Livestock	-	0.69
Nonpoint	5.36	8.51
2 - 5 MMBTU boilers	0.91	0.05
Other Nonpoint Sources	4.45	8.46

Table 13: Area Source Emission Inventory

NWF NAA 2023 future year		
Sector	**NO_X TPD**	**VOC TPD**
Livestock	-	0.71
Nonpoint	4.85	8.26
2 - 5 MMBTU boilers	0.87	0.05
Other Nonpoint Sources	3.99	8.21

3.2.4 Non-Road, Rail, and Airport Sources

EPA's [~~Mobile~~]Motor Vehicle Emission[~~s~~] Simulator (MOVES3) model was used to obtain emission inventories for non-road mobile vehicles and equipment that operate on unpaved roads and other areas but not on paved roads.[34] They include non-road engines and equipment, such as lawn and garden equipment, construction equipment, engines used in recreational activities, portable industrial, commercial, and agricultural engines. Emissions from MOVES3 for the month of July are input to SMOKE to obtain the typical ozone season day value.

[33] Area Source Inventories; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001348.pdf

[34] 2017 BASELINE, EPISODIC AND 2023 PROJECTION OZONE EMISSIONS INVENTORY NON-ROAD MOBILE SOURCE; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001585.pdf

Emissions from snow blowers and snowmobiles have been removed from the non-road sector, assuming that these emissions are zero during the summertime modeling episode. Emissions from pleasure craft (personal watercraft and recreational boats with outboard or inboard/sterndrive motors) are allocated to counties according to the number of watercraft registrations in each county. However, along the Wasatch Front, personal watercraft is not operated in the county of residence. Bodies of water on which pleasure craft may be operated exist in mainly rural counties beyond the urban corridor of the Wasatch Front. Assuming that pleasure craft owners transport their recreational vehicles to use them, UDAQ removes any pleasure craft emissions from Salt Lake, Davis, Weber, and Tooele counties. These four counties do not include any bodies of water on which pleasure craft may be operated. [35]

Emissions in the airports sector include all emissions from aircraft and associated ground support equipment. UDAQ's platform base year airport emissions are sourced from EPA's 2017 platform within Utah, and from EPA's 2016v2 platform outside Utah. All future year 2023 emissions were copied from EPA's 2016v2 platform future year emissions inventories (2023). Rail emissions within the state of Utah include all locomotives, railway maintenance locomotives, and point source yard locomotives.[36]

Table 14: Non-Road, Rail and Airports Emission Inventory

NWF NAA 2017 base year		
Sector	**NO_x TPD**	**VOC TPD**
Non-road	**10.52**	**12.53**
2-stoke Lawn/garden Equipment	0.11	3.33
Other Lawn/garden Equipment	1.48	4.35
Other Non-road Sources	8.94	4.86
Rail	**9.25**	**0.47**
Airports	**3.14**	**1.25**

Table 15: 2023 Non-Road, Rail and Airports Emission Inventory

NWF NAA 2023 future year		
Sector	**NO_x TPD**	**VOC TPD**
Non-road	**8.05**	**12.62**
2-stoke Lawn/garden Equipment	0.12	3.63
Other Lawn/garden Equipment	1.46	4.42
Other Non-road Sources	6.47	4.57
Rail	**8.77**	**0.44**
Airports	**3.74**	**1.42**

3.2.5 Point Sources and Electric Generating Units (EGUs)

The definition of a Type B Source under Title V of the CAA (as specified in 40 CFR Appendix A to Subpart A of Part 51) includes point source thresholds in the NAA. This definition includes all facilities with the potential to emit 100 tpy or more of VOC or NO_X. Emissions from sources under the Type B thresholds are included in the area source baseline inventory, as they do not have large enough

[35] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

[36] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

potential emissions to qualify for the point source inventory. According to the Type B Source definition, Utah had 53 major point sources of NO_x and VOC in 2017, 12 of which are located in the NWF NAA.

UDAQ has improved emissions inventory data management with the implementation of the State and Local Emissions Inventory System (SLEIS). This system has established an online emissions inventory system, whereby point sources can submit their air emissions inventories to UDAQ. SLEIS includes built-in calculation capabilities which simplify the process and reduce the workload for point sources. SLEIS also contains extensive Quality Assurance and Quality Control (QA/QC) tools which guide point sources as they submit their data, thereby greatly reducing oversight required by UDAQ staff. The 2017 triannual emissions inventory was submitted to UDAQ by point sources using the SLEIS online system. The submitted emissions inventories were thoroughly reviewed using additional QA/QC by UDAQ staff before being finalized. The QA/QC contained in the SLEIS online system along with the review performed by UDAQ staff greatly surpasses EPA guidance requiring 10% QA/QC as the minimum criteria necessary for a SIP inventory.

The 2017-point source emissions inventory was used for the baseline emissions inventory for the SIP.[37] Point source emissions were represented as the actual emissions from the 2017 triannual emissions inventory which coincides with the most recent triannual inventory that has been compiled and reviewed by UDAQ.

Point source emissions, as based on annual actual emissions, in the NAA and affecting the NWF NAA was grown on a case-by-case basis for each source and represented in the ozone SIP workbooks for 2023. Emission estimates were projected to future years and to display any control technologies that will be applied. Data from Kem C. Gardner Policy Institute County Projections were used for developing projected emissions for all major point sources. [38] More information on how the Kem C. Gardner data was used is found on page 3 of the 2023 Point Source TSD.

Point source operators provided a monthly percentage of annual emissions from January to December as part of their emissions inventory submission, which was used to generate source-specific monthly temporal profiles in SMOKE for point sources in Utah's emissions inventory. Emissions summaries are provided on a per-facility basis in the SMOKE TSD.[39]

Table 16: 2017 Point Sources and EGUs Emission Inventory

NWF NAA 2017 base year		
Sector	**NO_x TPD**	**VOC TPD**
EGUs	**0.44**	**0.03**
Point Sources	**20.43**	**5.85**
5+ MMBTU boilers	1.90	0.12
Other Point Sources	18.52	5.74

[37] Base Year Ozone SIP Point Source Inventory; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001356.pdf

[38] Projected Ozone SIP Point Source Inventory; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001361.pdf

[39] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

Table 17: 2023 Point Sources and EGUs Emission Inventory

NWF NAA 2023 future year		
Sector	**NO_x TPD**	**VOC TPD**
EGUs	**0.45**	**0.03**
Point Sources	**22.00**	**6.00**
5+ MMBTU boilers	1.48	0.14
Other Point Sources	20.52	5.86

3.2.6 On-Road Mobile

On-road mobile source emissions include vehicles that travel on paved roads that produce exhaust, evaporative, and road dust emissions. The on-road mobile inventory was compiled using Motor Vehicle Emissions Simulator (MOVES3) according to the document "MOVES3 Technical Guidance: Using MOVES to Prepare Emissions Inventories for SIPs and Transportation Conformity" November 2020. The baseline year and projection year inventories was compiled through the ICT. The interagency consultation team is primarily used to discuss and decide what MOVES modeling inputs should be used with the SIP modeling domain. The ICT includes representatives from EPA, Federal Highway Administration (FHWA), Federal Transit Authority, Utah Department of Transportation, Utah Transit Authority, Wasatch Front Regional Council (WFRC), Mountainland Association of Governments (MAG), Cache MPO, and UDAQ.[40]

On-road mobile source baseline and projection emission inventories are prepared for an average ozone season weekday based on average hourly temperatures and relative humidity from 2017 July data. VMT were reported as an average ozone season day weekday.

Table 18: 2017 On-road emission inventory for ozone weekday

NWF NAA 2017 base year		
Sector	**NO_x TPD**	**VOC TPD**
On-road Mobile	**55.53**	**20.47**
Heavy Duty Vehicles	27.21	3.65
Light Duty Vehicles	28.32	16.82

Table 19: 2023 On-road emission inventory for ozone weekday

NWF NAA 2023 future year		
Sector	**NO_x TPD**	**VOC TPD**
On-road Mobile	**35.40**	**15.32**
Heavy Duty Vehicles	23.41	2.74
Light Duty Vehicles	11.98	12.58

[40] 2017 THE NORTHERN WASATCH FRONT, UT NONATTAINMENT OZONE AREA SUMMER BASELINE OZONE INVENTORY ON-ROAD TECHNICAL SUPPORT DOCUMENTATION; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001725.pdf & 2023 NORTHERN WASATCH FRONT, UT NONATTAINMENT OZONE AREA SUMMER PROJECTION OZONE INVENTORY ON-ROAD TECHNICAL SUPPORT DOCUMENT; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001699.pdf

3.2.7 Emission Reduction Credit Bank

The NAA has Emission Reduction Credit Bank (ERC) from past ozone SIP revisions that include NO_x and VOC credits available. Emission credit banks for VOCs and NO_x were reviewed for the four NAA counties. All banked credits were reviewed for validity concerning applicable emission credits meeting 2017 RACT or better for controlled or reduced emissions. Upon review, the majority of credits were awarded as a result of a unit or facility closure or decommissioning. Credits are valid and remained in the bank if the applicable change was RACT or better. These credits are available in the ERC offset bank moving forward and were included in the ERC portion of both the baseline and projected year inventories to represent all potential emissions within the NAA boundary.[41]

Table 20: 2017 ERC Bank Emission Inventory

NWF NAA 2017 base year		
Sector	**NO_x TPD**	**VOC TPD**
ERC Bank	**3.10**	**0.70**

Table 21: 2023 ERC Bank Emission Inventory

NWF NAA 2023 future year		
Sector	**NO_x TPD**	**VOC TPD**
ERC Bank	**3.10**	**0.70**

[41] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

Chapter 4 – Reasonably Available Control Technology (RACT) Analysis and Nonattainment New Source Review (NNSR)

4.1 Reasonably Available Control Technology (RACT) Overview

Under the CAA 182(b)(2), all areas designated moderate nonattainment for the 2015 8-hour ozone NAAQS are required to implement RACT for all existing major sources of VOCs or NO_x that emit 100 tpy of either pollutant, as well as all VOC sources subject to an EPA Control Technique Guideline (CTG).

CTGs are documents issued by the EPA to provide states with recommendations on how to control VOC emissions from specific sources or products in an ozone NAA. When determining what is RACT, in addition to existing CTGs and alternative control techniques (ACTs), states should consider, "all relevant information (including recent technical information and information submitted by the public) that is available at the time they develop the RACT SIPs."[42]. "States may require VOC and NO_X reductions that are "beyond RACT" if such reductions are needed to provide for timely attainment of the ozone NAAQS."[43]

A RACT analysis identifies controls that could be implemented at the lowest emission limitation that a source is capable of meeting by the application of a control technology that is reasonably available, considering technological and economic feasibility.[44] Implementation of controls identified under the RACT process must be implemented by January 1, 2023, for emission reductions to be creditable towards RFP requirements (section 7).[45] A RACT analysis must include the latest information when evaluating control technologies. Control technologies evaluated for a RACT analysis can range from work practices to add-on controls. As part of the RACT analysis, current control technologies already in use for VOCs or NO_X sources can be taken into consideration. To conduct a RACT analysis, a top-down analysis is used to rank all control technologies.

4.1.1 Top Down RACT Analysis Steps

For sources that meet or exceed the applicable emission thresholds, the following steps are followed:

- Step 1. Identify all RACT options applicable to the source
- Step 2. Eliminate technically infeasible control technologies
- Step 3. Rank remaining control technologies based on capture and control efficiencies
- Step 4. Evaluate remaining control technologies based on economic, energy, and environmental feasibility
- Step 5. Select RACT options

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[42] Implementation of the 2015 National Ambient Air Quality Standards for Ozone: NAA State Implementation Plan Requirements, 83 Fed. Reg. 62,998, 63,007 (Dec. 6, 2018).

[43] Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements, 80 Fed. Reg. 12,264, 12,279 (March 6, 2015).

[44] 40 CFR § 51.1312 Requirements for reasonably available control technology (RACT) and reasonably available control measures (RACM).

[45] 87 Fed. Reg. 60,897.

All available control technologies must be included in a RACT analysis for all VOC and NO_x sources, with a thorough description and discussion of technological feasibility. Economic feasibility is determined through Step 4 of a RACT analysis using EPA's Air Pollution Control Cost Manual as guidance.[46]

4.2 Utah RACT Process

The UDAQ relied on multiple available analyses when determining if sources within the NWF NAA met RACT requirements, or if the implementation of additional RACT were required to demonstrate that the NWF NAA will attain the standard at the earliest possible date. First, the UDAQ reviewed and reconsidered control options submitted as part of the Salt Lake City, UT $PM_{2.5}$ serious SIP, which required the implementation of the more stringent Best Available Control Technologies (BACT) for both NO_x and VOCs.[47] BACT relies on more restrictive emission control requirements than RACT, and thus emission reduction strategies identified and implemented under BACT are more stringent than those identified through the RACT process. Therefore, by reexamining past BACT analyses, the UDAQ relied on a recently conducted analysis which implemented controls that conform to a higher economic and technological standard. In doing so, the UDAQ is remaining consistent with guidance provided by the EPA[48], in which the EPA concludes that states may conclude a source has already addressed RACT based on a RACT determination for a previous NAAQS SIP revision. For instance, the EPA proposes that in some instances a RACT analysis submitted for the 1997 NAAQS are appropriate for meeting RACT requirements for the 2008 NAAQS.[49] In this example, states are granted the discretion to rely on a like-for-like RACT analysis with a substantial time laps between respective SIP revisions under each NAAQS. For this SIP revision, the UDAQ reexamined the more stringent BACT analyses submitted with a shorter time lapse than that provided in the example, with BACT reports being submitted just 4 to 5 years earlier.

In addition to reexamining past BACT reports, the UDAQ identified three emission sources that were not evaluated as part of the $PM_{2.5}$ serious SIP. Those analyses were provided to UDAQ by Tesoro Refining and Marketing Company LLC[50], Holly Energy Partners Woods Cross Terminal[51], and Chevron Salt Lake Marketing Terminal[52]. These three RACT reports were later included in facility wide updated RACT analyses by each of the respective sources and therefore were analyzed in multiple rounds of RACT analysis conducted as part of this SIP revision.

Beyond the past $PM_{2.5}$ BACT reports, and three additional RACT reports submitted for review, the UDAQ notified sources that they could opt-in to submitting an updated facility wide RACT analysis for consideration in this SIP revision. Subsequently, 9 sources within the NAA provided UDAQ with new RACT analyses for emissions of both VOCs and NO_x. The UDAQ reviewed all analyses submitted in

[46] EPA's Air Pollution Control Cost Manual can be found at: https://www.epa.gov/sites/default/files/2020-07/documents/c_allchs.pdf

[47] Utah State Implementation Plan; Control Measures for Area and Point Sources, Fine Particulate Matter, Serious Area $PM_{2.5}$ SIP for the Salt Lake City, Utah NAA; Section IX. Part A.31: https://deq.utah.gov/air-quality/control-strategies-serious-area-pm2-5-sip

[48] 80 FR 12264 & 83 FR 62998

[49] 80 FR 12264 p.12278

[50] The RACT analysis from the Tesoro Refinery and Marketing Company can be found at: https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2022-011275.pdf

[51] The RACT analysis for the Holly Energy Partners Woods Cross Terminal can be found at: https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2022-011295.pdf

[52] The RACT analysis for the Chevron Salt Lake Marketing Terminal can be found at: https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2022-011292.pdf

conjunction with past BACT reports, and where warranted, requested updated RACT reports with additional or clarifying information. All RACT analyses, and all follow-up reports, were made available for public review at the earliest possible date[53].

UDAQ determined that one major source located outside the NWF NAA impacts the ability of the NAA to attain the NAAQS, and as such was required to provide a RACT analysis to UDAQ. This source, US Magnesium, its RACT analysis, and identified control options, will be discussed in detail in Section 4.15.

4.2.1 Actual Emissions and Potential to Emit (PTE)

Utah Administrative Rule R307-101; General Requirements, contains the definitions for the terms "Actual Emissions", "Potential to Emit", and "Enforceable". Thus, the actual emissions of a source refers to the actual rate of emissions of an air pollutant from an emissions unit. Actual emissions are calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period. The actual emissions of a source can fluctuate from year-to-year due to changes in a source's year-to-year operations.

The PTE of a source means the estimated maximum capacity of a source to emit an air pollutant under its physical and operational design. A source's PTE is not an enforceable limitation in itself, but is instead the maximum amount of air pollutants a source could emit if each emission unit operated at 100% of its design capacity, 24 hours a day, 365 days a year. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and operational or process restrictions or limitations, are treated as part of a source's design if the limitation is enforceable.

Enforceable limitations and conditions include requirements developed pursuant to 40 CFR Parts 60 and 61, requirements within the Utah SIP and Utah Administrative Rule Series R307, and any permit requirements established pursuant to Utah Administrative Rule R307-401; Permit: New and Modified Sources.

4.3 Big West Oil LLC - Refinery

4.3.1 Introduction

This section specifically serves as an evaluation of Big West Oil LLC – Big West Oil Refinery (Big West). The UDAQ relied on past submitted BACT reports and an additional RACT analysis submitted by Big West for evaluation on January 31, 2023; specific sections from this analysis are referenced in the RACT analysis. Specific ozone SIP conditions for Big West can be found in Section IX, Part H.32.a.

4.3.2 Facility Process Summary

The Big West Oil Refinery is a petroleum refinery capable of processing 30,000 barrels per day of crude oil. The source consists of a specific type of Fluidized Catalytic Cracking Unit (FCCU), a Millisecond Catalytic Cracker (MSCC); catalytic reforming unit; hydrotreating units; and a sulfur recovery unit. The source also has an assortment of heaters, boilers, cooling towers, storage tanks, flares, and fugitive emissions.

[53] https://deq.utah.gov/air-quality/northern-wasatch-front-moderate-ozone-sip-technical-support-documentation#supporting-tsd

4.3.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from Big West processes and equipment are summarized in Table 22. The 2017 actual emissions were used as the baseline emissions. The current PTE values for Big West were established by the most recent active Approval Orders (AOs) issued to the source. Big West currently has several open AO modifications that will include updating their PTE to more accurately reflect their operations.

- AO DAQE-AN101220077-22 issued January 13, 2022 (0077-22)
- AO DAQE-AN101220074-19 issued October 23, 2019 (0074-19)
- AO DAQE-AN101220072-19 issued July 10, 2019 (0072-19)

Table 22: Big West Oil LLC Refinery Facility-Wide Emissions

Big West Oil LLC Refinery Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**115.15**	**195.00**
VOC	**676.59**	**432.78**

4.3.4 RACT Analysis

The RACT evaluations were performed using data from Big West Oil, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 23.

Table 23: Big West Oil LLC - Refinery

Big West Oil LLC - Refinery						
RACT Section #[54]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
3.1	FCCU (MSCC) Regenerator	NO_x	Low-NO_x regeneration with low-NO_x promoter catalyst - meets MACT Subpart UUU.	(0077-22) II.B.3.b	H.12.b.ii & H.12.b.vi	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices, no	(0077-22) I.5	No	

[54] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001493.pdf

			additional controls.			
3.2 - 3.4	Process Heaters and Boilers	NO_x	LNB & ULNB required on various units, & refinery-wide NO_x limit.	(0077-22) II.B.1.d & II.B.8.d	H.12.b.ii & H.12.b.vi	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices, no additional controls.	(0077-22) I.5	No	
3.5	Refinery Flares	NO_x VOCs	Evaluated through control of flare gases, not through individual pollutants, requirement to meet New Source Performance Standards (NSPS) Subpart Ja and MACT Subpart CC for flares.	(0077-22) II.B.4 & II.B.7.c	H.11.g.v, H.12.b.ii, & H.12.b.vi	Current operations meet RACT, no further action warranted.
3.4	SRU	NO_x	Existing tail gas incinerator & refinery-wide NO_x limit.	(0077-22) II.B.8.d	H.12.b.ii & H.12.b.vi	Current operations meet RACT, no further action warranted.
3.13	Cooling Towers	VOCs	MACT Subpart CC requirements on cooling towers servicing high VOC heat exchangers.	(0077-22) II.B.7.a	H.11.g.iii	Current operations meet RACT, no further action warranted.
3.7	Fugitive emissions	VOCs	Low leak LDAR requirements of NSPS Subpart GGGa.	(0077-22) II.B.1.a & II.B.7.b	H.11.g.iv	Current operations meet RACT, no further action warranted.

3.10 & 3.11	Tanks	VOCs	Submerged fill operations & tank degassing requirements - eventual compliance with NSPS Subpart Kb or MACT Subpart CC.	(0072-19) II.B.1.a & II.B.1.b	H.11.g.vi	Current operations meet RACT, no further action warranted.
3.12	Wastewater System	VOCs	API separator with fixed cover, carbon canisters for VOC control, 90% removal efficiency.	No	H.12.b.vi	Current operations meet RACT, no further action warranted.
3.6	Standby Fire Pumps	VOCs	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0074-19) I.5	H.12.b.iv	Current operations meet RACT, no further action warranted.
		NO_x		(0074-19) II.B.1.c		
3.8	Truck Loading Rack	VOCs	Vapor recovery unit with carbon adsorption in compliance with MACT Subpart CC.	(0077-22) I.5	H.12.b.vi	Current operations meet RACT, no further action warranted.
3.9	Railcar Loading Rack	VOCs	Vapor recovery with vapor combustion unit in compliance with MACT Subpart R.	(0077-22) I.5	H.12.b.vi	Current operations meet RACT, no further action warranted.
N/A	Refinery General Approach	NO_x	Refinery-wide NO_x limit.	(0077-22) II.B.8.d	H.12.b.ii	Current operations meet RACT, no further action warranted.

4.3.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emission limitations are considered RACT for the Big West Oil Refinery. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for Big West Oil Refinery as required by this SIP revision.

4.4 Chevron Products Company – Salt Lake Refinery

4.4.1 Introduction

This section specifically serves as an evaluation of Chevron Products Company – Salt Lake Refinery (Chevron Refinery). In addition to its past submitted BACT reports, Chevron Refinery submitted an additional RACT analysis for evaluation January 31, 2023, with supporting information submitted February 23, 2023, and February 24, 2023; specific sections from this analysis are referenced in the RACT analysis. Specific Ozone SIP conditions for Chevron Refinery can be found in Section IX, Part H.32.b.

4.4.2 Facility Process Summary

The Chevron Refinery is a petroleum refinery with a nominal capacity of approximately 50,000 barrels per day of crude oil. The source consists of two FCCUs, a delayed coking unit, a catalytic reforming unit, hydrotreating units, and two sulfur recovery units. The source also has an assortment of heaters, boilers, cooling towers, storage tanks, flares, and fugitive emissions. The refinery operates with a flare gas recovery system on its hydrocarbon flares.

4.4.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the Chevron Refinery processes and equipment are summarized in Table 24. The 2017 baseline actual emissions were used as the baseline emissions. The current PTE values for Chevron Refinery were established by the most recent active AOs issued to the source.

- AO DAQE-AN101190106-22 issued August 24, 2022 (0106-22)
- AO DAQE-AN101190104-22 issued September 26, 2022 (0104-22)

Table 24: Chevron Products Company – Salt Lake Refinery Facility-Wide Emissions

Chevron Products Company – Salt Lake Refinery Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**265.50**	**766.50**
VOC	**339.60**	**1,242.06**

4.4.4 RACT Analysis

The RACT evaluations were performed using data from Chevron Refinery, AOs and supporting documentation, and Section IX, Utah SIP Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPs. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 25.

Table 25: Chevron Products Company – Salt Lake Refinery

Chevron Products Company – Salt Lake Refinery						
RACT Section #[55]	**Emission Unit / Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
II.A	FCCU Regenerator	NO_x	Feed hydrotreating & refinery-wide NO_x limit.	(0106-22) II.B.1.h & II.B.7.b	H.12.d.ii	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices, no additional controls.	(0106-22) I.5	No	
II.B	Process Heaters and Boilers	NO_x	LNB, FGR (Boilers 5, 6,7), & refinery-wide NO_x limit, compliance with NSPS Subpart Ja.	(0106-22) II.B.1.h, II.B.2, & II.B.3	H.12.d.ii & H.12.d.vii	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices,	(0106-22) I.5	No	

[55] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001911.pdf

			no additional controls, compliance with NSPS Subpart Ja.			
II.B	Crude Heaters	NO_x	[~~Installation of ULND for Crude Unit Heaters F21001 & F21002.~~]LNB & refinery-wide NO_x limit	(0106-22) II.B.1.h	H.12.d.ii & H.12.d.vii	[~~Installation of ULNB that meet an emission rate of 0.025 lb/MMBtu [May 1, 2026]. Required by SIP Section IX, Part H.32.b.~~] Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices.	(0106-22) I.5	No	
II.C	SRU	NO_x	Existing tail gas treatment unit and thermal oxidizer & refinery-wide NO_x limit.	(0106-22) II.B.1.h	H.12.d.ii & H.12.d.vii	Current operations meet RACT, no further action warranted.
II.D	Cooling Towers	VOCs	MACT Subpart CC requirements on	(0106-22) II.B.10.a	H.11.g.iii	Current operations meet RACT, no further

			cooling towers servicing high VOC heat exchangers.			action warranted.
II.E	Fugitive emissions	VOCs	Low leak LDAR requirements of NSPS Subpart GGGa.	(0106-22) II.B.10.b	H.11.g.iv	Current operations meet RACT, no further action warranted.
II.F	Tanks	VOCs	Submerged fill operations & tank degassing requirements - compliance with NSPS Subpart Kb or MACT Subpart CC.	(0106-22) II.B.10.c1 & (0104-22) II.B.2.c2	H.11.g.vi	Current operations meet RACT, no further action warranted.
II.G	Wastewater System	VOCs	Induced air floatation & RTO, compliance with NSPS Subpart QQQ and National Emission Standards for Hazardous Air Pollutants (NESHAP)	(0104-22) II.B.2.a & II.B.2.b	H.12.d.vii	Current operations meet RACT, no further action warranted.

			Subpart FF.			
II.H	Refinery Flares	NO_x	Evaluated through control of flare gases, not through individual pollutants, requirement to meet NSPS Subpart Ja for flares.	(0106-22) II.B.10.d	H.11.g.v, H.12.d.ii, & H.12.d.vii	Current operations meet RACT, no further action warranted.
		VOCs				
II.I	Standby Fire Pumps and Emergency Diesel Engines	VOCs	Proper maintenance and operation, and compliance with NESHAP Subpart ZZZZ.	(0106-22) I.5	H.12.d.iv	Current operations meet RACT, no further action warranted.
		NO_x		(0106-22) II.B.8.c		
II.L	Reformer Compressor Engines	NO_x	Use of NSCR meeting NOx emission limits in SIP Section IX, Part H.12.d.v.	(0106-22) II.B.9.a	H.12.d.v & H.12.d.vii	SCR incorrectly required in SIP Section IX, Part H.12.d.vii. Correct control required is NSCR. Current operations meet RACT, no further action warranted.
II.J	Crude Oil Loading Racks	VOCs	Vapor Combustion Unit	(0104-22) II.B.3.a	H.12.d.vii	Current operations meet

			with a 98% VOC control efficiency.			RACT, no further action warranted.
N/A	Refinery General Approach	NO_x	Refinery-wide NO_x limit.	(0106-22) II.B.1.h	H.12.d.ii	Current operations meet RACT, no further action warranted.

4.4.5 Conclusion of RACT Implementation

The emission units/activities examined in this RACT analysis indicates that all activities currently meet all RACT requirements, and all other existing controls and emissions limitations are considered RACT for the Chevron Refinery. No other additional add-on controls or limitations are technically or economically feasible options at this time.

[~~However, evaluations showed that the installation of ultra-low NOx burners (ULNB) that meet a NO_x emission rate of 0.025 lb/MMBtu on Crude Heaters F21001 and F21002 is technically feasible. The UDAQ has determined that these controls are necessary for the NWF NAA to demonstrate attainment of the 2015 8-hour ozone NAAQS as expeditiously as practicable. While the financial feasibility of the identified controls may be beyond previously established RACT thresholds, the CAA provides states with "discretion to require beyond-RACT reductions from any source" if those reductions are necessary to "demonstrate attainment as expeditiously as practicable".~~[56]

~~The installation of ULNB on Crude Heaters F21001 and F21002 will control emissions from these two heaters by approximately 62%. The installation of ULNB will result in a reduction of 4.7 tpy of NO_x emissions for Crude Heater F21001, and 4.2 tpy of NO_x emissions reductions for Cruder Heater F21002. The ULNBs shall be installed and operational [by May 1, 2026]. All requirements for Crude Heaters F21001 and F21002 are incorporated into SIP Section IX, Part H.32.b. No other additional control measures were identified, and all other RACT determinations are already being implemented.~~]

4.5 Hexcel Corporation

4.5.1 Introduction

This section specifically serves as an evaluation of Hexcel Corporation (Hexcel). In addition to its past BACT reports, Hexcel submitted an additional RACT analysis for evaluation January 31, 2023. Specific Ozone SIP conditions for Hexcel can be found in Section IX, Part H.32.c.

4.5.2 Facility Process Summary

Hexcel owns and operates a carbon fiber and fabric pre-impregnation manufacturing plant in West Valley City. Products made at Hexcel are used in commercial aerospace primary and secondary structures, helicopters, defense aircraft, satellites, and sporting equipment. The facility consists of

[56 ~~80 FR 12279 & 83 FR 62998~~]

twelve production buildings, two raw material receiving warehouses, and a material testing laboratory. The plant manufactures carbon fibers and hot melt pre-impregnation fabrics. The plant also produces epoxy resins, adhesive films, and solvated fabrics.

4.5.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the Hexcel industrial processes and equipment are summarized in Table 26. The 2017 actual emissions were used as the baseline emissions. The current PTE values for Hexcel were established by the most recent active AOs issued to the source.

- AO DAQE-AN113860032-19 issued May 13, 2019 (0032-19)

Table 26: Hexcel Corporation Facility-Wide Emissions

Hexcel Corporation Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**187.90**	**197.51**
VOC	**154.20**	**168.34**

4.5.4 RACT Analysis

The RACT evaluations were performed using data from Hexcel, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 27.

Table 27: Hexcel Corporation

Hexcel Corporation						
RACT Section #[57]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
4.0 - 4.2	All Fiber Lines	All	Consumption and production limits.	(0032-19) II.B.1.b	H.12.f.i & H.12.f.vi	Current operations meet RACT, no further action warranted.
4.0 - 4.2	Fiber Lines 2 thru 8, 10 thru 12	VOCs	Good combustion practices, natural gas as fuel, incineration	(0032-19) I.5; II.B.1.d - II.B.1.l; II.B.3.a - II.B.3.d; II.B.4.a -	No	Current operations meet RACT, no further action warranted.
	Fiber Lines 2, 5, 6, 8, 10 thru 12	NO_x				

[57] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001511.pdf

			and flaring technology.	II.B.4.c; & II.B.5.a - II.B.5.b		
4.0 - 4.2	Fiber Lines 3, 4, and 7	NO_x	ULNB with FGR required to be installed by December 31, 2024.	No	H.12.f.iv	Current operations meet RACT, no further action warranted.
4.0 - 4.2	Fiber Lines 13 thru 16	VOCs	RTO, incineration and flaring technology.	(0032-19) I.5; II.B.1.d - II.B.1.l; II.B.6.a; & II.B.7.a	H.12.f.ii	Current operations meet RACT, no further action warranted.
		NO_x	LNB on thermal oxidizer and RTO, good combustion practices, natural gas as fuel.		H.12.f.ii, H.12.f.v	
4.3	Pilot	VOCs	Good combustion practices, natural gas as fuel, proper maintenance, incineration and flaring technology.	(0032-19) I.5 & II.B.1.d - II.B.1.l	No	Current operations meet RACT, no further action warranted.
		NO_x				
5.0	Matrix (Solvent Coating Operations)	VOCs	Good combustion practices, natural gas as fuel, proper maintenance, incineration and flaring technology.	(0032-19) I.5; II.B.1.j; II.B.1.o; & II.B.1.p	No	Current operations meet RACT, no further action warranted.
		NO_x				
6.0	Boilers	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0032-19) I.5	No	Current operations meet RACT, no further action warranted.

		NO_x	Compliance with a NO_x emission rate of 9 ppm.	(0032-19) I.5	No	
7.0	Emergency Generators	VOCs	Proper maintenance and operation, Subpart IIII and Subpart ZZZZ.	(0032-19) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x				
8.0	HVAC	VOCs	Proper maintenance and operation	(0032-19) I.5 & II.B.1.o	No	Current operations meet RACT, no further action warranted.
		NO_x				

4.5.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for Hexcel. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for Hexcel as required by this SIP revision.

4.6 Hill Air Force Base

4.6.1 Introduction

This section specifically serves as an evaluation of Hill Air Force Base (Hill AFB). Hill AFB did not submit an additional RACT analysis for evaluation, and thus UDAQ relied on the more stringent BACT analysis submitted for NO_x and VOC emissions as evaluated for the Salt Lake City $PM_{2.5}$ serious SIP. Specific conditions as they relate to this SIP revision for Hill AFB can be found in Section IX, Part H.32.d.

4.6.2 Facility Process Summary

Hill AFB is a large U.S. Air Force base located in northern Utah, just south of the city of Ogden. Hill AFB is the home of the Air Force Material Command's Ogden Air Logistics Complex, which is the worldwide manager for a wide range of aircraft, engines, missiles, software, avionics, and accessories components, and provides worldwide logistics support for Air Force and Defense Department weapon systems. Additional tenant units include the Air Combat Command and the Air Force Reserve Command. Hill AFB has extensive industrial facilities for painting, paint stripping, plating, parts warehousing/distribution, wastewater treatment, and manages and maintains air munitions, solid propellants, landing gear, and training devices.

4.6.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the Hill AFB processes and equipment are summarized in Table 28. The 2017 actual emissions were used as the baseline emissions. The current PTE values for Hill AFB were established by the most recent active AOs issued to the source.

- AO DAQE-AN101210245-16 issued September 1, 2016 (0245-16)
- AO DAQE-AN101210200A-09 issued December 17, 2009 (0200A-09)
- AO DAQE-AN0121175-06 issued October 16, 2006 (175-06)
- AO DAQE-AN101210266-19 issued May 8, 2019 (0266-19)
- AO DAQE-AN0101210195-09 issued August 10, 2009 (0195-09)
- AO DAQE-AN101210233-12 issued January 27, 2012 (0233-12)
- AO DAQE-AN101210225-12 issued April 19, 2012 (0225-12)
- AO DAQE-AN101210248-17 issued June 7, 2017 (0248-17)
- AO DAQE-AN101210228-12 issued June 13, 2012 (0228-12)
- AO DAQE-AN0101210214-11 issued June 28, 2011 (0214-11)
- AO DAQE-AN101210229-12 issued October 29, 2012 (0229-12)
- AO DAQE-AN101210233-14 issued June 26, 2014 (0233-14)
- AO DAQE-AN101210237-15 issued March 9, 2015 (0237-15)
- AO DAQE-AN101210241-15 issued November 5, 2015 (0241-15)
- AO DAQE-AN101210260-19 issued April 3, 2019 (0260-19)
- AO DAQE-AN101210240B-16 issued February 8, 2016 (0240B-16)

Table 28: Hill Air Force Base Facility-Wide Emissions

Hill Air Force Base Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**101.43**	**279.81**
VOC	**140.24**	**330.41**

4.6.4 RACT Analysis

The RACT evaluations were performed using data from Hill AFB, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 29.

Table 29: Hill Air Force Base

Hill Air Force Base						
TSD Section #[58]	**Emission Unit/Activity**	**Pollutant**	**BACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
2.1.1	Boilers	VOCs	Use of pipeline quality natural gas (low sulfur fuel), good combustion practices, good design, and proper operation.	(0245-16) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x	All boilers older than January 1, 1989, will be removed. The combined heat NO_x emissions for all boilers (except those less than 5 MMBtu/hr) shall not exceed 95 lb/hr.	(0245-16) II.B.1.a & II.B.2.a	H.12.q.ii	Current operations meet RACT, no further action warranted.
2.1.2	Surface Coating, Cleaning & Chemically De-painting Operations	VOCs	Low VOC coatings, work practice standards, emissions limit of 0.58 tpd, and proper maintenance.	(0200A-09) II.B.1.a through II.B.1.m	H.12.q.i	Current operations meet RACT, no further action warranted.

[58] https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-007651.pdf

2.1.3	Emergency Equipment Operations	VOCs NO_x	Limited hours of operation for maintenance and testing, good combustion practices, use of a tier-certified engine when required under NSPS Subpart IIII and JJJJ, the use of ULSD and proper equipment operation, maintenance schedules and protocols.	(175-06) I.E & II.C (0266-19) I.5 & II.B.1.b	No	Current operations meet RACT, no further action warranted.
2.1.4	Testing Operations	VOCs NO_x	Site-wide fuel limit and proper operation, maintenance, and protocols.	(0195-09) I.5, II.B.1.a, II.B.2.a, & II.B.3.a (0233-12) I.5 & II.B.1.b (0225-12) I.5 & II.B.1.a (0248-17) I.4, II.B.1.a, & II.B.1.b	No	Current operations meet RACT, no further action warranted.
2.1.5	Degreasing Operations	VOCs	Use of low volatility solvents, proper operation, maintenance and operation protocols with	(0228-12) I.6, II.B.1.a through II.B.1.f	No	Current operations meet RACT, no further action warranted.

			a limit on VOC emissions.			
2.1.6	Misc. Coating and Blasting	VOCs	Scrubbers, low-sulfur fuel, limited use, proper operation, maintenance and protocols.	(0214-11) I.5 & II.B.1.a (0229-12) I.5 (0233-14) I.5 & II.B.1.a	No	Current operations meet RACT, no further action warranted.
		NO_x	Limited use, proper operation, maintenance, and protocols.			
2.1.7	Air Handlers & Heaters	VOCs	LNBs, low sulfur fuel, limited use, proper operation, maintenance, and protocols.	(0237-15) I.5 & II.B.1.a	No	Current operations meet RACT, no further action warranted.
		NO_x				
2.1.8	Fuel Operations	VOCs	Fuel storage: vapor balancing system and submerged loading as required by R307-328, limited use, proper operation, maintenance and protocols. Distillation: Limited use, proper operation, Maintenance and protocols.	(0241-15) I.5 and II.B.1.a (0260-19) I.5, II.B.1.a, & II.B.1.b	No	Current operations meet RACT, no further action warranted.
2.1.10	Industrial Wastewater Operation	VOCs	Limiting VOC emission, proper operation,	(0240B-16) I.5, II.B.1.a, & II.B.1.b	No	Current operations meet RACT, no further action warranted.

			maintenance and protocols.			

4.6.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for Hill AFB. Re-evaluation of BACT showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for Hill AFB as required by this SIP revision.

4.7 Holly Frontier Sinclair Woods Cross Refinery

4.7.1 Introduction

This section specifically serves as an evaluation of Holly Frontier Sinclair Woods Cross Refinery (HF Sinclair Refinery). In addition to its BACT report submitted as part of the Salt Lake City $PM_{2.5}$ serious SIP, HF Sinclair Refinery submitted an additional RACT analysis for evaluation on January 31, 2023, with supporting information submitted February 23, 2023. Specific conditions related to this SIP revision for HF Sinclair Refinery can be found in Section IX, Part H.32.e.

4.7.2 Facility Process Summary

The HF Sinclair Refinery is a petroleum refinery capable of processing 60,000 barrels per day of crude oil, primarily heavier black wax and yellow wax crudes from eastern Utah. The refinery produces a variety of products including gasoline, natural gas liquids, propane, butanes, jet fuels, fuel oils, and kerosene products. The refinery receives and distributes products by tanker truck, rail car, and pipeline. The source consists of two FCCUs, both controlled with wet gas scrubbers. A single sulfur recovery unit controls the sulfur content of the fuel gas. The source also has an assortment of heaters, boilers, cooling towers, storage tanks, flares, and related fugitive emissions.

4.7.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the HF Sinclair Refinery processes and equipment are summarized in Table 28. The 2017 actual emissions were used as the baseline emissions. The current PTE values for HF Sinclair Refinery were established by the most recent active AOs issued to the source.

- AO DAQE-AN101230053-22 issued September 1, 2022 (0053-22)

Table 30: Holly Frontier Sinclair Woods Cross Refinery Facility-Wide Emissions

Holly Frontier Sinclair Woods Cross Refinery Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**170.51**	**347.10**
VOC	**217.45**	**223.63**

4.7.4 RACT Analysis

The RACT evaluations were performed using data from HF Sinclair Refinery, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to

identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 31.

Table 31: Holly Frontier Sinclair Woods Cross Refinery

Holly Frontier Sinclair Woods Cross Refinery						
RACT Section #[59]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
3.4 & 4.5	FCCU Regenerator	NO_x	Wet gas scrubber with use of LoTOx add-on & refinery-wide NO_x limit.	(0053-22) II.B.4 & II.B.8.b	H.12.g.ii & H.12.g.vi	Current operations meet RACT, no further action warranted.
4.5		VOCs	Good combustion practices, no additional controls.	(0053-22) I.5	No	
3.1 & 4.1	Process Heaters and Boilers	NO_x	LNB, ULNB, some use of SCR, & refinery-wide NO_x limit.	(0053-22) II.B.4.a & II.B.6.b	H.12.g.ii & H.12.g.vi	Current operations meet RACT, no further action warranted.
4.1		VOCs	Good combustion practices, no additional controls.	(0053-22) I.5 & II.B.6.d	No	
3.3 & 4.4	Sulfur Recovery Unit Tail Gas incinerator	NO_x	Wet Gas Scrubber, Low-NO_x burner & refinery-wide NO_x limit.	(0053-22) I.5 & II.B.4.a	H.12.g.ii & H.12.g.vi	Current operations meet RACT, no further action warranted.
4.4		VOCs	Wet Gas Scrubber.			
4.3	Cooling Towers	VOCs	MACT Subpart CC requirements on cooling	(0053-22) II.B.12.a	H.11.g.iii	Current operations meet RACT, no further

[59] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001865.pdf

			towers servicing high VOC heat exchangers.			action warranted.
4.9	Fugitive emissions/ Equipment Leaks	VOCs	Low leak LDAR requirements of NSPS Subpart GGGa.	(0053-22) II.B.1.h	H.11.g.iv	Current operations meet RACT, no further action warranted.
4.6	Fixed Roof Tanks	VOCs	Compliance with NSPS Subpart Kb, MACT Subpart WW, and LDAR.	(0053-22) I.5	H.11.g.vi	Current operations meet RACT, no further action warranted.
4.7	Internal Floating Roof Storage tanks	VOCs	Submerged fill operations & tank degassing requirements - eventual compliance with NSPS Subpart Kb or MACT Subpart CC and MACT Subpart WW.	(0053-22) I.5	H.11.g.vi	Current operations meet RACT, no further action warranted.
4.8	External Floating Roof	VOCs	Compliant with NSPS Subpart Kb or MACT Subpart CC and MACT Subpart WW.	(0053-22) I.5	H.11.g.vi	Current operations meet RACT, no further action warranted.
4.10	Wastewater System	VOCs	Closed vent system with carbon adsorption. Compliance with NSPS Subpart QQQ and MACT Subpart FF.	(0053-22) I.5	H.12.g.vi	Current operations meet RACT, no further action warranted.
3.2 & 4.2	Refinery Flares	NO_x	Flare Gas recovery system, requirement to	(0053-22) II.B.1.g	H.11.g.v, H.12.g.ii, & H.12.g.vi	Current operations meet RACT, no further action warranted.
4.2		VOCs				

			meet NSPS Subpart Ja.			
3.5 & 4.12	Standby Diesel Engines	VOCs	Proper maintenance and operation, compliance with MACT Subpart ZZZZ.	(0053-22) I.5	H.12.g.iv	Current operations meet RACT, no further action warranted.
4.1		NO_x				
3.6 & 4.13	Standby Emergency Nat Gas Engines	VOCs	Proper maintenance and operation, compliance with NSPS Subpart JJJJ and MACT Subpart ZZZZ.	(0053-22) I.5	No	Current operations meet RACT, no further action warranted.
4.1		NO_x				
4.11	Product Loading	VOCs	Submerged or bottom loading as well as vapor balancing.	(0053-22) I.5	No	Current operations meet RACT, no further action warranted.
N/A	Refinery General Approach	NO_x	Refinery-wide NO_x limit.	(0053-22) II.B.4	H.12.g.ii	Current operations meet RACT, no further action warranted.

4.7.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for the HF Sinclair Refinery. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for the HF Sinclair Refinery as required by this SIP revision.

4.8 Kennecott Utah Copper Bingham Canyon Mine and Copperton Concentrator

4.8.1 Introduction

This section specifically serves as an evaluation of Kennecott Utah Copper (KUC) – Bingham Canyon Mine (BCM) and Copperton Concentrator (CC). In addition to past submitted BACT reports, KUC submitted an additional RACT analysis for evaluation January 30, 2023. Specific conditions for this SIP revision for KUC BCM & CC can be found in Section IX, Part H.32.f.

4.8.2 Facility Process Summary

The KUC BCM is an open pit mining operation located in the southwest corner of Salt Lake County. The ore and waste rock at the BCM are transferred from the mining areas to other areas of the mine through a series of transfers using haul trucks and conveyor belts. Ore is crushed in the in-pit crusher. After the ore is crushed, it is conveyed to the KUC CC located approximately five miles north of the open pit. At the CC, semi-autogenous grinding mills and ball mills grind the ore into a slurry. The slurry is sent through cyclone clusters, and the cyclone overflow is fed into flotation circuits and mixed with reagents. The flotation circuits are aerated to float copper and other valuable by-products from the ore. Once the ore is processed at the concentrator, it is transferred to the smelter.

4.8.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the KUC BCM & CC processes and equipment are summarized in Table 32. The 2017 actual emissions were used as the baseline emissions. The current PTE values for KUC BCM & CC were established by the most recent active AOs issued to the source.

- AO DAQE-AN105710047-21 issued May 10, 2021 (0047-21)
- AO DAQE-AN105710044-18 issued August 21, 2018 (0044-18)

Table 31: KUC Bingham Canyon Mine and Copperton Concentrator Facility-Wide Emissions

KUC Bingham Canyon Mine & Copperton Concentrator Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**4,209.19**	**5,852.77**
VOC	**210.03**	**318.17**

4.8.4 RACT Analysis

The RACT evaluations were performed using data from KUC, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPs. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 33.

Table 33: Kennecott Utah Copper: Bingham Canyon Mine and Copperton Concentrator

Kennecott Utah Copper: Bingham Canyon Mine & Copperton Concentrator						
Bingham Canyon Mine						
RACT Section #[60]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Condition	**$PM_{2.5}$ SIP Conditions**	

[60] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001509.pdf

2.1.1	Tailpipe Emissions from Mobile Sources	NO_x	Compliance with non-road EPA Standards.	(0047-21) II.B.1.f	H.12.h.i.A	Current operations meet RACT, no further action warranted.
2.1.5	Solvent Extraction and Electrowinning Process	NO_x	Use of mist eliminators and covers in tanks, mixers, and settlers.	(0047-21) II.B.2.f & II.B.2.g	No	Current operations meet RACT, no further action warranted.
		VOCs				
2.1.2	Gasoline Fueling	VOCs	Stage I and Stage 2 recovery systems.	(0047-21) I.5	No	Current operations meet RACT, no further action warranted.
2.1.3	Cold Solvent Degreasing Washers	VOCs	Compliance with R307-335.	(0047-21) I.5	No	Current operations meet RACT, no further action warranted.
2.1.4	Propane Communications Generator	VOCs	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0047-21) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x				
$PM_{2.5}$ BACT TSD 1.4[61]	Diesel-Fired Emergency Generators	VOCs	BACT determination: proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0047-21) I.5	No	Equipment not operated during evaluation period, no additional RACT submitted. Current operations meet RACT, no further action warranted.
		NO_x				
	[~~Blasting~~]	[~~VOCs~~]		[~~(0047-21)~~	[~~No~~]	

[61] https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-007709.pdf

[~~$PM_{2.5}$ BACT TSD 1.4~~]		[~~NO_x~~]	[~~BACT determination: limiting area of blasting~~]	~~H.B.3.b~~]		[~~Equipment not operated during evaluation period, no additional RACT submitted. Current operations meet RACT, no further action warranted.~~]
Copperton Concentrator						
RACT Section #	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Condition	**$PM_{2.5}$ SIP Conditions**	
2.2.1	Tioga Heaters	VOCs	Use of pipeline quality natural gas, good combustion practices, and good design and proper operation	(0044-18) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x				
2.2.4	Feed and Product Dryer Oil Heaters	VOC_s	Use of pipeline quality natural gas and good combustion practices.	(0044-18) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x	LNBs		H.12.h.ii.A	
2.2.2	Degreasing Parts Washers	VOCs	Compliance with the requirements of R307-335.	(0044-18) I.5	No	Current operations meet RACT, no further action warranted.
2.2.3	Gasoline Fueling Stations	VOCs	Stage I and Stage 2 recovery systems.	(0044-18) I.5	No	Current operations meet RACT, no further action warranted.
$PM_{2.5}$ BACT TSD 1.4	Three Storage Tanks (Sodium Cyanide)	VOCs	BACT determination: use of submerged pipes.	(0044-18) I.5	No	Equipment not operated during evaluation period, no

						additional RACT submitted. Current operations meet RACT, no further action warranted.
2.1.4	Liquid Propane-Fired Emergency Generator	VOCs NO_x	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0044-18) I.5	No	Current operations meet RACT, no further action warranted.

4.8.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for KUC BCM & CC. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for KUC BCM & CC as required by this SIP revision.

4.9 KUC Smelter and Refinery

4.9.1 Introduction

This section specifically serves as an evaluation of KUC – Smelter and Refinery. In addition to past BACT reports, KUC submitted an additional RACT analysis for evaluation January 30, 2023. Specific conditions for this SIP revision for the KUC Smelter and Refinery can be found in Section IX, Part H.32.g.

4.9.2 Facility Process Summary

KUC operates a copper smelter and refinery in Salt Lake County. The Smelter employs flash smelting technology with flash converting technology to produce copper anodes and high concentration sulfur dioxide gases. Copper ore concentrates from the Copperton Concentrator are first dewatered, dried, blended with fluxes and secondary copper-bearing materials, then fed to a flash smelting furnace where the ore is melted and reacts to produce copper matte. The copper matte is converted to blister copper by oxidization, reduced in the anode furnace to produce a high purity copper, and then poured in molds to cast solid copper ingots (anodes). The anodes are moved to the Refinery co-located near the Smelter. The Refinery uses an electrolytic refining process to convert the Smelter-produced anodes to high-purity cathode copper and also recover precious metals from the electrolytic refinery slimes in a precious metals circuit.

4.9.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the KUC Smelter and Refinery processes and equipment are summarized in Table 34. The 2017 actual emissions were used as the baseline emissions. The current PTE values for the KUC Smelter and Refinery were established by the most recent active AOs issued to the source.

- AO DAQE-AN103460058-20 issued November 12, 2020 (0058-20)
- AO DAQE-AN103460061-22 issued June 23, 2022 (0061-22)

Table 34: KUC Smelter and Refinery Facility-Wide Emissions

KUC Smelter and Refinery Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**154.87**	**198.13**
VOC	**10.94**	**20.47**

4.9.4 RACT Analysis

The RACT evaluations were performed using data from KUC, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 35.

Table 35: Kennecott Utah Copper: Smelter and Refinery

Kennecott Utah Copper: Smelter and Refinery						
Refinery						
RACT Section #[62]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Condition	**$PM_{2.5}$ SIP Conditions**	
3.2.1	Boiler[~~s~~]	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0058-20) I.5 & II.B.4.a	No	Current operations meet RACT, no further action warranted.
		NO_x	Installation of ULNB (9 ppmvd) on [~~one~~]the	(0058-20) II.B.1.A	H.12.j.ii.A & H.12.j.ii.C	

[62] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001509.pdf

			boiler & [~~placing the other boiler on stand-by,~~]continued use of FGR.			
3.2.2	CHP	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0058-20) I.5 & II.B.4.d	H.12.j.ii.D	Current operations meet RACT, no further action warranted.
		NO_x	Use of [~~ULNB (9ppmvd) on duct burner,~~]SoLoNO$_x$ burner technology (9 ppmv) on turbine.	(0058-20) II.B.1.A	H.12.j.ii.A	
3.1.8	Space Heaters	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0058-20) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x				
3.1.6	Gasoline Fueling	VOCs	Stage I and Stage 2 recovery systems.	(0058-20) I.5	No	Current operations meet RACT, no further action warranted.
$PM_{2.5}$ BACT TSD 1.4[63]	Degreasing	VOCs	BACT determination: compliance with R307-335.	(0058-20) I.5	No	Equipment not operated during evaluation period, no additional RACT submitted. Current operations meet RACT, no further action warranted.

[63] https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-007702.pdf

3.2.8	Paint	VOCs	Enclosures.	(0058-20) I.5	No	Current operations meet RACT, no further action warranted.
3.2.7	Prime Diesel Generators	VOCs	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0058-20) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x				
3.1.4	Refinery LPG Emergency Communication Generator	VOCs	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0058-20) I.5 & II.B.4.e	No	Current operations meet RACT, no further action warranted.
		NO_x				
Smelter						
RACT Section #	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Condition	**$PM_{2.5}$ SIP Conditions**	
3.1.1	Main Stack	NO_x	Controls are described for each source that vents to the Main Stack. The following sources vent to the Main Stack: anode furnaces, secondary gas system, matte grinding, concentrate dryer, acid plant, and vacuum cleaning system. Compliance with MACT Subpart EEEEEE.	(0061-22) II.B.1.a & II.B.3.a	H.12.j.i.A.I.3	Current operations meet RACT, no further action warranted.
3.1.1.1	Anode Furnaces	NO_x	LNB (30 ppmvd)	(0061-22)	No	Current operations meet

				II.B.1.a & II.B.3.a		RACT, no further action warranted.
		VOCs	Use of pipeline quality natural gas and oxy-fuel, good combustion practices, good design, & proper operation.	(0061-22) I.5		
3.1.1	Concentrate Dryer	NO_x	Use of LNB & good combustion practices.	(0061-22) II.B.1.a & II.B.3.a	No	Current operations meet RACT, no further action warranted.
		VOCs	Use of pipeline quality natural gas and oxy-fuel, good combustion practices, good design, & proper operation.	(0061-22) I.5		
3.1.2	Powerhouse Holman Boiler	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, proper operation, & limited natural gas consumption.	(0061-22) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x	Use of continuous monitoring to ensure NO_x emissions do not exceed 14 lbs/hr (calendar-day average); FGR.	(0061-22) II.B.1.a & II.B.2	H.12.j.i.A.II	
3.1.3	Powerhouse Foster Wheeler Boiler (Now Rentech Boiler)	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, proper operation, & limited natural gas consumption.	(0061-22) I.5	No	Replaced by Rentech Boiler in AO DAQE-AN103460056-20 issued January 10, 2020. Current operations meet RACT, no further

		NO_x	ULNB, 15 ppm	(0061-22) II.B.1.a & II.B.2		action warranted.
3.1.5	Cold Solvent Degreaser	VOCs	Compliance with R307-335	(0061-22) I.5	No	Current operations meet RACT, no further action warranted.
3.1.8	Space Heaters	VOCs NO_x	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0061-22) I.5	No	Current operations meet RACT, no further action warranted.
3.1.6	Fueling	VOCs	Stage I and Stage 2 recovery systems.	(0061-22) I.5	No	Current operations meet RACT, no further action warranted.
3.2.7, 3.1.7	Emergency Backup Power Generators	VOCs NO_x	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0061-22) I.5	No	Current operations meet RACT, no further action warranted.
$PM_{2.5}$ BACT TSD 1.4	Diesel Compressor	VOCs NO_x	BACT determination: proper maintenance and operation.	(0061-22) I.5	No	Equipment not operated during evaluation period, no additional RACT submitted. Current operations meet RACT, no further action warranted.
3.1.4	Smelter LPG Emergency Communication Generator	VOCs NO_x	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0061-22) I.5	No	Current operations meet RACT, no further action warranted.

3.1.9	Hot Water Boilers	VOCs NO_x	Proper maintenance and operation.	(0061-22) I.5	No	Current operations meet RACT, no further action warranted.

4.9.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for the KUC Smelter and Refinery. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for the KUC Smelter and Refinery as required by this SIP revision.

4.10 LHoist North America of Arizona, Inc.

4.10.1 Introduction

This section specifically serves as an evaluation of LHoist North America of Arizona, Inc. (LHoist). LHoist did not submit an additional RACT analysis for evaluation. UDAQ referenced the more stringent BACT for NO_x and VOCs evaluated as part of the Salt Lake City $PM_{2.5}$ serious SIP. Specific conditions for this SIP revision for LHoist can be found in Section IX, Part H.32.h.

4.10.2 Facility Process Summary

LHoist operates a lime production facility near Grantsville that consists of a Quarry and Lime Plant. Kiln operations were placed in temporary care and maintenance mode November 14, 2008, with support operations having had limited operation since that date. Activities at the facility include mining of limestone ore, limestone processing through various crushing and screening processes, operation of a rotary kiln that heats the crushed limestone ore and converts it into quicklime, lime hydration equipment to create hydrated lime, bagging facilities, and load-out operations. When operating, the facility produces a variety of products including quicklime, hydrate, aggregate kiln-grade limestone, overburden/low-grade limestone, and limestone chat.

4.10.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the LHoist processes and equipment are summarized in Table 36. The 2017 actual emissions were used as the baseline emissions. The current PTE values for LHoist were established by the most recent active AOs issued to the source.

- AO DAQE-AN0707015-06 issued August 14, 2006 (015-06)

Table 36: LHoist North America of Arizona Facility Facility-Wide Emissions

LHoist North America of Arizona Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**0.11**	**328.66**
VOC	**0.07**	**3.01**

4.10.4 RACT Analysis

The RACT evaluations were performed using data from LHoist, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 37.

Table 37: Lhoist North America of Arizona, Inc.

LHoist North America of Arizona, Inc.						
TSD Section #[64]	**Emission Unit/Activity**	**Pollutant**	**BACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
4.0	Rotary Kiln System	NO_x	SNCR required upon facility startup.	No	H.12.c.i & H.12.c.ii	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices and burner/process optimization.	(015-06) #22	No	
5.0	Pressure Hydrator	NO_x	Good combustion practices and natural gas as fuel.	(015-06) #22	No	Current operations meet RACT, no further action warranted.
		VOCs				
7.0	Kiln Shaft Motor	NO_x	Good combustion practices and proper maintenance.	(015-06) #22	No	Current operations meet RACT, no further action warranted.
		VOCs				

[64] https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-007681.pdf

4.10.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for LHoist. Re-evaluation of BACT showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for LHoist as required by this SIP revision.

4.11 Pacificorp Energy Gadsby Power Plant

4.11.1 Introduction

This section specifically serves as an evaluation of Pacificorp Energy – Gadsby Power Plant (Pacificorp Gadsby). Pacificorp Gadsby did not opt to submit an additional RACT analysis for evaluation, therefore UDAQ referenced the more stringent BACT for NO_x and VOCs evaluated as part of the $PM_{2.5}$ serious SIP, with support information submitted by Pacificorp Gadsby March 10, 2023. Specific conditions for this SIP revision for Pacificorp Gadsby can be found in Section IX, Part H.32.i.

4.11.2 Facility Process Summary

Pacificorp Energy operates the Gadsby Power Plant located in Salt Lake City. The Gadsby Power Plant is a natural gas-fired electric generating plant consisting of three steam boilers (Units #1-3) and three simple-cycle combustion turbines (Units #4-6). Unit #1 is a 65 MW unit equipped with low NO_x burners; Unit #2 is an 80 MW unit equipped with low NO_x burners; and Unit #3 is a 105 MW unit. All three units are capable of using fuel oil as a back-up fuel during natural gas curtailments. Units #4-6 are 43.5 MW combustion turbine engines. The plant also has small emergency generators, cooling towers, and small storage tanks.

4.11.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from Pacificorp Gadsby processes and equipment are summarized in Table 38. The 2017 actual emissions were used as the baseline emissions. The current PTE values for Pacificorp Gadsby were established by the most recent active AOs issued to the source.

- AO DAQE-AN103550015-09 issued January 12, 2009 (0015-09)

Table 38: Pacificorp Energy Gadsby Power Plant Facility-Wide Emissions

Pacificorp Energy Gadsby Power Plant Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**38.81**	**716.10**
VOC	**2.26**	**23.00**

4.11.4 RACT Analysis

The RACT evaluations were performed using data from Pacificorp Gadsby, AOs and supporting documentation, and SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact

sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 39.

Table 39: PacifiCorp Energy: Gadsby Power Plant

PacifiCorp Energy: Gadsby Power Plant						
TSD Section #[65]	**Emission Unit/Activity**	**Pollutant**	**BACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
4.0	Steam Generating Units (Boilers 1-3)	NO_x	Natural gas as fuel, good combustion practices, ULSD as backup fuel, NO_x emission limits.	(0015-09) II.B.4	H.12.l.i, H.12.l.ii, H.12.l.iii, & H.12.l.iv	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices, proper design.	(0015-09) I.5	No	
5.0	Combustion Turbines (Units 4-6)	NO_x	SCR, water/steam injection.	(0015-09) II.B.3	H.12.l.v	Current operations meet RACT, no further action warranted.
		VOCs	GCP and oxidation catalysts.	(0015-09) I.5	No	
6.3	Fuel Storage Tanks	VOCs	Submerged fill operations, no additional controls.	(0015-09) I.5	No	Current operations meet RACT, no further action warranted.
6.5	Misc. Painting Operations	VOCs	Use of low-VOC compliant coatings, high transfer efficiency applications, & proper operation.	(0015-09) I.5	No	Current operations meet RACT, no further action warranted.
6.2	Standby Emergency Engines	VOCs	Proper maintenance and operation.	(0015-09) I.5	No	Current operations meet RACT, no further action warranted.
		NO_x				

[65] https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-006882.pdf

5.5	Startup/Shutdown at Combustion Turbines	NO_x	Limitation of hours of operation for startup/shutdown to limit NOx, alternative operating scenarios included.	(0015-09) I.5	H.12.l.vi	Current operations meet RACT, no further action warranted.

4.11.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for Pacificorp Gadsby. Re-evaluation of BACT showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for Pacificorp Gadsby as required by this SIP revision.

4.12 Tesoro Refining & Marketing Company LLC dba Marathon Refinery

4.12.1 Introduction

This section specifically serves as an evaluation of Tesoro Refining and Marketing Company LLC dba Marathon Refinery (Marathon Refinery). In addition to past BACT reports, Marathon Refinery submitted an additional RACT analysis for evaluation January 31, 2023, with a subsequent submission including additional information submitted on March 31, 2023. Specific conditions for this SIP revision for Marathon Refinery can be found in Section IX, Part H.32.j.

4.12.2 Facility Process Summary

The Marathon Refinery is a petroleum refinery capable of processing 57,500 barrels per day of crude oil. The source consists of one FCCU, a catalytic reforming unit, hydrotreating units, a sulfur recovery unit, and cogeneration units. The source also has assorted heaters, boilers, cooling towers, storage tanks, flares, and similar fugitive emissions.

4.12.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the Marathon Refinery processes and equipment are summarized in Table 40. The 2017 actual emissions were used as the baseline emissions. The current PTE values for Marathon Refinery were established by the most recent active AOs issued to the source.

- AO DAQE-AN103350075-18 issued January 11, 2018 (0075-18)
- AO DAQE-AN103350081A-21 issued January 12, 2021 (0081A-21)

Table 40: Tesoro Marathon Refinery Facility-Wide Emissions

Tesoro Marathon Refinery Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**313.27**	**638.05**
VOC	**230.77**	**769.88**

4.12.4 RACT Analysis

The RACT evaluations were performed using data from Marathon Refinery, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 41.

Table 41: Tesoro Refining and Marketing Company LLC dba Marathon Refinery

Tesoro Refining and Marketing Company LLC dba Marathon Refinery						
RACT Section #[66]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
4.0	FCCU Regenerator & CO Boiler	NO_x	Wet gas scrubber with use of LoTOx add-on & refinery-wide NO_x limit.	(0075-18) II.B.1.g, II.B.4.a, II.B.4.f, & II.B.7.a	H.12.m.ii & H.12.m.vi	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices, no additional controls.	(0075-18) I.5	No	

[66] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001490.pdf

5.0	Process Heaters and Boilers	NO_x	LNB & ULNB required on various units, & refinery-wide NO_x limit.	(0075-18) II.B.1.g, II.B.3.a, & II.B.7.a	H.12.m.ii & H.12.m.vi	Current operations meet RACT, no further action warranted.
		VOCs	Good combustion practices, no additional controls.	(0075-18) I.5	No	
6.0	Cogeneration Turbines	NO_x	Good combustion practices, use of gaseous fuels, & refinery-wide NO_x limit. SCR installation required.	(0075-18) II.B.1.g & II.B.7.a	H.12.m.ii	Installation of SCR that meets a [~~2~~]5 ppm NO_x limit [~~by May 1, 2026~~] by October 1, 2028. Required by SIP Section IX, Part H.32.j.
		VOCs	Good combustion practices, no additional controls.	(0075-18) I.5	No	
7.0	SRU	NO_x	Good combustion practices & refinery-wide NO_x limit.	(0075-18) II.B.1.g	H.12.m.ii & H.12.m.vi	Current operations meet RACT, no further action warranted.

13.0	Cooling Towers	VOCs	MACT Subpart CC requirements on cooling towers servicing high VOC heat exchangers.	(0075-18) I.5	H.11.g.iii	Current operations meet RACT, no further action warranted.
8.0	Fugitive emissions	VOCs	Low leak LDAR requirements of NSPS Subpart GGGa.	(0075-18) I.5	H.11.g.iv	Current operations meet RACT, no further action warranted.
16.0 - 18.0	Tanks	VOCs	Submerged fill operations, and tank degassing requirements - eventual compliance with NSPS Subpart Kb or MACT Subpart CC. Secondary seal installation on Tank 321 required.	(0075-18) II.B.9	H.11.g.vi & H.12.m.vi	Installation of secondary seal on Tank 321 by May 1, 2026. Required by SIP Section IX, Part H.32.j. All other current operations meet RACT, no further action warranted.
9.0	Wastewater System	VOCs	API separator unit with fixed cover; installation of closed vent system to carbon adsorption required.	(0075-18) I.5	H.12.m.vi	Installation of a closed vent system to carbon adsorption by December 31, 2025 in compliance with NSPS Subpart QQQ. Required by SIP Section IX, Part H.32.j.

11.0 & 12.0	Refinery Flares	NO_x VOCs	Evaluated through control of flare gases, not through individual pollutants, requirement to meet Subpart Ja for flares.	(0075-18) II.B.1.f	H.11.g.v & H.12.m.vi	Current operations meet RACT, no further action warranted.
19.0	Standby Emergency Engines	VOCs NO_x	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0075-18) I.5	H.12.m.vi	Current operations meet RACT, no further action warranted.
15.0	K1 Compressors (natural gas engines)	VOCs NO_x	Catalytic converters, proper maintenance and operation, & refinery-wide NO_x limit	(0075-18) I.5 (0075-18) II.B.4.a, II.B.7.a, & II.B.7.c	H.12.m.ii	Current operations meet RACT, no further action warranted.
N/A	Refinery General Approach	NO_x	Refinery-wide NO_x limit.	(0075-18) II.B.1.g & II.B.7.a	H.12.m.ii	Current operations meet RACT, no further action warranted.

4.12.5 Conclusion of RACT Implementation

The RACT analysis determined that all emission units/activities currently meet all RACT requirements, and all other existing controls and emissions limitations are considered RACT for the Marathon Refinery. The evaluations showed that the following control options are technically feasible:

- Installation of selective catalytic reduction (SCR) that meets a NO_x emission rate of [~~2~~]5 ppm on the Cogeneration Turbines
- Installation of a secondary seal on Tank 321
- Installation of a closed vent system controlled by carbon adsorption on the Wastewater System

The UDAQ has determined that these controls are necessary for the NWF NAA to demonstrate attainment of the 2015 8-hour ozone NAAQS as expeditiously as practicable. While the financial feasibility of the identified controls may be beyond previously established RACT thresholds, the CAA provides states with "discretion to require beyond-RACT reductions from any source" if those reductions are necessary to "demonstrate attainment as expeditiously as practicable". [67]

No other additional add-on controls or limitations are technically or economically feasible options at this time. The installation of SCR on the Cogeneration Turbines will control total emissions from these two turbines by approximately [~~87~~]68.7%. The installation of SCR will result in an annual emission reduction of [~~87.53~~]68.78 tpy of NO_x. The SCR shall be installed and operational by October 1, 2028[~~ by May 1, 2026~~]. The installation of a secondary seal on Tank 321 will result in 2.30 TPY of VOC emission reductions. The secondary seal shall be installed and operational by May 1, 2026. The installation of a closed vent system with carbon adsorption on the Wastewater System is a planned refinery modification that shall be installed and operational by December 31, 2025, and result in approximately 10 TPY of VOC emission reductions.

All requirements for the Cogeneration Turbines, Tank 321, and the Wastewater System are incorporated into SIP Section IX, Part H.32.j. No additional RACT measures were identified, and all other identified RACT determinations are already being implemented.

4.13 Utah Municipal Power Agency West Valley Power Plant

4.13.1 Introduction

This section specifically serves as an evaluation of Utah Municipal Power Agency (UMPA) West Valley Power Plant (WVPP). In addition to past BACT reports, UMPA submitted an additional RACT analysis for evaluation January 31, 2023, with supporting information submitted March 1, 2023. Specific conditions for this SIP revision for UMPA WVPP can be found in Section IX, Part H.32.l.

4.13.2 Facility Process Summary

UMPA operates the WVPP in West Valley City. The WVPP is a natural gas-fired electric generating plant consisting of 5 natural gas simple cycle turbines. Each turbine has a power output rated at 43.4 MW and is equipped with water injection, evaporative spray mist inlet air cooling, selective catalytic reduction catalyst, and CO oxidation catalyst. The primary purpose of the plant is to produce electricity for sale via the utility power distribution system to meet the demands of the Salt Lake Valley service area.

4.13.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the WVPP processes and equipment are summarized in Table 42. The 2017 actual emissions were used as the baseline emissions. The current PTE values for the WVPP were established by the most recent active AOs issued to the source.

- AO DAQE-282-02 issued April 18, 2002 (282-02)

[67] 80 FR 12279 & 83 FR 62998

Table 42: West Valley Power Plant Facility-Wide Emissions

UMPA West Valley Power Plant Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**10.09**	**162.06**
VOC	**1.47**	**18.33**

4.13.4 RACT Analysis

The RACT evaluations were performed using data from UMPA WVPP, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 43.

Table 43: Utah Municipal Power Agency West Valley Power Plant

Utah Municipal Power Agency West Valley Power Plant						
RACT Section #[68]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
4.1 & 4.2	Combustion Turbines	NO_x	SCR, water/steam injection and maintenance of NO_x emissions at or below 5 ppmv for each turbine.	(282-02) #10, #17	H.12.o.i, ii, iii, iv	Current operations meet RACT, no further action warranted.
4.2		VOCs	Good combustion practices and oxidation catalysts.	(282-02) #14, #19	No	
$PM_{2.5}$ BACT TSD 5.0[69]	Startup/Shutdown at Combustion Turbines	NO_x	BACT determination: limitation of hours of operation for	(282-02) #19	No	No additional RACT submitted.

[68] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-002084.pdf

[69] https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-006862.pdf

			startup/shutdown to limit NO_x, alternative operating scenarios included.			Current operations meet RACT, no further action warranted.

4.13.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for the UMPA WVPP. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for the UMPA WVPP as required by this SIP revision.

4.14 University of Utah

4.14.1 Introduction

This section specifically serves as an evaluation of the University of Utah (U of U). In addition to past BACT reports, the U of U submitted an additional RACT analysis for evaluation January 31, 2023. Specific conditions for this SIP revision for the U of U can be found in Section IX, Part H.32.m.

4.14.2 Facility Process Summary

The U of U is a higher education institution in Salt Lake City. The U of U campus consists of several different types of buildings and facilities, including classroom buildings, hospitals and clinics, research facilities, and housing. The emission sources at the U of U are primarily boilers, comfort heating equipment, emergency generator engines, and miscellaneous small VOC sources. Industrial high temperature boilers that provide hot water for distribution heating systems are located in the two main heating plants on campus: the Upper Campus High Temperature Water Plant (UCHTWP) and the Lower Campus High Temperature Water Plant (LCHTWP). A cogeneration turbine with waste heat recovery unit is also located at the LCHTWP.

4.14.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the U of U processes and equipment are summarized in Table 44. The 2017 actual emissions were used as the baseline emissions. The current PTE values for the U of U were established by the most recent active AOs issued to the source.

- AO DAQE-AN103540030-22 issued December 22, 2022 (0030-22)

Table 44: University of Utah Facility-Wide Emissions

University of Utah Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**41.65**	**126.50**
VOC	**8.13**	**13.53**

4.14.4 RACT Analysis

The RACT evaluations were performed using data from the U of U, AOs and supporting documentation, and Utah SIP Section IX, Parts H.11 and H.12. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 45.

Table 45: University of Utah

University of Utah						
RACT Section #[70]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**Enforceability**		**Comments**
				AO Conditions	**$PM_{2.5}$ SIP Conditions**	
4.0	Building 302 UCHWTP Boilers	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0030-22) I.5	H.12.p.iv.	Current operations meet RACT, no further action warranted.
		NO_x	Boilers limited to back-up/peaking boilers with natural gas limitations and FGR.	(0030-22) II.B.1.b		
5.0	Building 303 LCHWTP Boilers	NO_x	Boiler 4 required to be decommissioned and replaced by Boiler 9, use of ULNB (9ppmvd) on Boiler 9, & use of LNBs and	(0030-22) II.b.2.a	H.12.p.i., H.12.p.ii., & H.12.p.iii.	Current operations meet RACT, no further action warranted.

[70] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001487.pdf

			FGR (9 ppmvd) for boilers 6 and 7.			
		VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0030-22) I.5	No	Current operations meet RACT, no further action warranted.
6.0	Building 303 LCHWTP Cogeneration Plant	NO_x	SoLoNO_x burners and compliance with NSPS Subpart KKKK.	(0030-22) II.B.2.a	No	Current operations meet RACT, no further action warranted.
		VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0030-22) I.5		
7.0	Dual Fuel Boilers	NO_x	LNBs on various boilers; the use of specialized mixing heads and mixing assemblies.	(0030-22) I.5 & II.B.3.a	H.12.p.v.	Current operations meet RACT, no further action warranted.
		VOCs	Use of pipeline quality natural gas with diesel fuel as backup, good combustion practices, good design, & proper operation.	(0030-22) I.5	No	
8.0	Backup Diesel Boiler	NO_x	Meet a NO_x emission rate of 30 ppm.	(0030-22) I.5 & II.B.3.a	No	Current operations meet RACT, no further action warranted.
		VOCs	Use of diesel fuel, good combustion practices, good design, & proper operation.	(0030-22) I.5	No	

9.0	Small Boilers	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0030-22) II.B.1.b & II.B.3.a	No	Current operations meet RACT, no further action warranted.
		NO_x	LNBs on various boilers.	(0030-22) II.B.3.c	H.12.p.v	
10.0	Diesel Emergency Generator Engines	VOCs NO_x	Proper maintenance and operation, and compliance with applicable NSPS or MACT requirements.	(0030-22) I.5	No	Current operations meet RACT, no further action warranted.
11.0	Natural Gas Emergency Generator Engines	VOCs NO_x	Use of pipeline quality natural gas, good combustion practices, good design, proper operation, and compliance with applicable NSPS or MACT requirements.	(0030-22) I.5	No	Current operations meet RACT, no further action warranted.
12.0	Paint Booth and Parts Washer	VOCs	Good housekeeping practices, routine inspections, & compliance with R307-351.	(0030-22) I.5	No	Current operations meet RACT, no further action warranted.
12.0	Fuel Storage Tanks	VOCs	Good operating and maintenance practices.	(0030-22) I.5	No	Current operations meet RACT, no further action warranted.
N/A	Ethylene Oxide Sterilizer	VOCs	Preparing to decommission.	(0030-22) I.5	No	Current operations meet RACT, no further action warranted.

4.14.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for the U of U. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for the U of U as required by this SIP revision.

4.15 US Magnesium LLC

4.15.1 Introduction

This section specifically serves as an evaluation of US Magnesium LLC (US Magnesium) RACT. UDAQ identified US Magnesium as a major stationary source with the potential to impact the ozone formation in the NWF NAA. The UDAQ required US Magnesium to submit a RACT analysis under CAA 172(c)(6) Other Measures for all major stationary sources located outside a NAA but impacting the NAA, which applied to one source. US Magnesium submitted a NO_x-specific RACT analysis for evaluation May 17, 2021, with a supporting VOC-specific RACT analysis submitted May 20, 2022, and an updated VOC-specific RACT analysis submitted January 31, 2023. Specific conditions for this SIP revision for US Magnesium can be found in Section IX, Part H.32.k. While US Magnesium was included in the RACT process, the emissions from this facility were not included in the point source inventories found in section 3 of this SIP revision as the facility was located outside of the NAA.

4.15.2 Facility Process Summary

US Magnesium operates a primary magnesium production facility at its Rowley plant located in Tooele County. US Magnesium produces magnesium metal from the waters of the Great Salt Lake, using a system of solar evaporation ponds to create a brine solution. This brine solution is purified and dried to a powder in spray dryers. The powder is melted and further purified in the melt reactor before going through an electrolytic process to separate magnesium metal from chlorine. The magnesium is then refined and/or alloyed and cast into molds. The separated chlorine is combusted in the chlorine reduction burner and converted into hydrochloric acid, which is removed through a scrubber train. The chlorine generated at the electrolytic cells is collected and piped to the chlorine plant. The on-site lithium carbonate plant recovers lithium from cell salt created through the magnesium plant production.

4.15.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the US Magnesium processes and equipment are summarized in Table 46. The 2017 actual emissions were used as the baseline emissions. The current PTE values for US Magnesium were established by the most recent active AOs issued to the source.

- AO DAQE-AN107160050-20 issued April 20, 2020 (0050-20)

Table 46: US Magnesium LLC Facility-Wide Emissions

US Magnesium LLC Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**1,061.59**	**1,260.99**
VOC	**660.26**	**894.25**

4.15.4 RACT Analysis

The RACT evaluations were performed using data from US Magnesium, AOs, and supporting documentation. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; other state SIPS; and UDAQ's Appendix A – $PM_{2.5}$ serious SIP BACT for Small Sources. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 47.

Table 47: US Magnesium RACT Determination

US Magnesium LLC					
RACT Section #[71]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**AO Conditions**	**Comments**
5.1	Turbines and Duct Burners	VOCs	Use of pipeline quality natural gas with fuel oil as backup, good combustion practices, good design, & proper operation.	(0050-20) I.4	Current operations meet RACT, no further action warranted.
		NO_x	Compliance with a plant-wide natural gas consumption limit.	(0050-20) II.B.1.b	
5.2	Chlorine Reduction Burner	NO_x	Compliance with a plant-wide natural gas consumption limit.	(0050-20) II.B.1.b	Current operations meet RACT, no further action warranted.

[71] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001863.pdf

		VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0050-20) I.4	
5.3	Riley Boiler	NO_x	Compliance with a plant-wide natural gas consumption limit. Installation of flue gas recirculation required by January 1, 2028 under SIP Section IX, Part H.23.g.	(0050-20) II.B.1.b	Current operations meet RACT, no further action warranted.
		VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0050-20) I.4	
5.5	Hydrochloric Acid Plant Burner	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0050-20) I.4	Current operations meet RACT, no further action warranted.
		NO_x	Compliance with a plant-wide natural gas consumption limit.	(0050-20) II.B.1.b	

5.4	Diesel Engines	VOCs	Proper maintenance and operation, compliance with applicable MACT requirements, and compliance with a horsepower-hour operational limitation.	(0050-20) I.4 & II.B.4.b	Current operations meet RACT, no further action warranted.
		NO_x			
5.6	Casting House	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0050-20) I.4	Current operations meet RACT, no further action warranted.
		NO_x	Compliance with a plant-wide natural gas consumption limit.	(0050-20) II.B.1.b	
5.7	Lithium Carbonate Plant Boilers & Burners	VOCs	Use of pipeline quality natural gas, good combustion practices, good design, & proper operation.	(0050-20) I.4	Current operations meet RACT, no further action warranted.
		NO_x	ULNBs on boilers and LNBs on burners; compliance with a plant-wide natural gas	(0050-20) II.B.1.b & II.B.12.d	

			consumption limit.		
VOC RACT[72]	Boron Plant	VOCs	Installation of a steam stripper and RTO system that will achieve 98% control efficiency by October 1, 2024.	N/A	Installation of a steam stripper and RTO system by October 1, 2024, required by SIP Section IX, Part H.32.k.
Small Source BACT[73]	Fuel Storage Tanks	VOCs	Proper maintenance and operation.	(0050-20) I.4	Current operations meet RACT, no further action warranted.
Small Source BACT	Paint Booths	VOCs	Good operating practices and compliance with consumption and VOC limitations.	(0050-20) I.4, II.B.11.a, & II.B.11.d	Current operations meet RACT, no further action warranted.

4.15.5 Conclusion of RACT Implementation

The UDAQ determined that the emission units/activities currently meet all RACT requirements, and all other existing controls and emissions limitations are considered RACT for US Magnesium. However, RACT evaluations showed that the installation of a steam stripper in series with a regenerative thermal oxidizer (RTO) to control VOC emissions from the Boron Plant Process Wastewater Ponds is technically feasible.

The UDAQ has determined that these controls are necessary for the NWF NAA to demonstrate attainment of the 2015 8-hour ozone NAAQS as expeditiously as practicable. While the financial feasibility of the identified controls may be beyond previously established RACT thresholds, the CAA provides states with "discretion to require beyond-RACT reductions from any source" if those reductions are necessary to "demonstrate attainment as expeditiously as practicable". [74]

[72] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001495.pdf

[73] https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-007161.pdf

[74] 80 FR 12279 & 83 FR 62998

The installation of a steam stripper with RTO on the Boron Plant Process Wastewater Ponds will control emissions from this process by approximately 98% resulting in 161.70 tpy of VOC emissions reductions. The steam stripper with RTO shall be installed and operational by October 1, 2024. All requirements for the Boron Plant are incorporated into SIP Section IX, Part H.32.k. No other additional RACT measures were identified, and all other RACT determinations are already being implemented.

4.16 Chevron Salt Lake Marketing Terminal

4.16.1 Introduction

This section specifically serves as an evaluation of Chevron Salt Lake Marketing Terminal (Chevron Terminal). The emissions units at the Chevron Terminal were not included in the $PM_{2.5}$ serious SIP. At that time, UDAQ considered the Chevron Terminal as a separate source from the Chevron Refinery. However, recent permitting actions have since established that the Chevron Terminal and Chevron Refinery are considered one stationary source. Therefore, UDAQ requested a RACT analysis for the emission units at the Chevron Terminal. Chevron Terminal submitted a RACT analysis for evaluation March 30, 2021, with supporting information submitted January 4, 2023. Specific conditions applicable for this SIP revision for Chevron Terminal can be found in Section IX, Part H.32.b.

4.16.2 Facility Process Summary

The Chevron Terminal is a bulk gasoline terminal, which receives product by pipeline from the Chevron Refinery, as well as ethanol and additives from outside vendors by truck and railcar. Products are dispensed through the primary truck loading rack to cargo tank trucks where the product is delivered to gasoline dispensing facilities. Storage tanks at the site store gasoline, ethanol, Transmix, diesel fuel, water, additives, hydraulic fluid, motor oil, and jet fuel. Ethanol and other additives are blended in line with refined products at the truck loading rack.

4.16.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from Chevron Terminal processes and equipment are summarized in Table 48. The 2017 actual emissions were used as the baseline emissions. The current PTE values for Chevron Terminal were established by the most recent active AOs issued to the source.

- AO DAQE-AN105560017-15 issued May 18, 2015 (0017-15)

Table 48: Chevron Salt Lake Marketing Terminal Facility-Wide Emissions

Chevron Salt Lake Marketing Terminal Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**N/A**	**N/A**
VOC	**13.64**	**33.60**

4.16.4 RACT Analysis

The RACT evaluations were performed using data from Chevron Terminal, AOs, and supporting documentation. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other

applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 49.

Table 49: Chevron Salt Lake Marketing Terminal

Chevron Salt Lake Marketing Terminal					
RACT Section #[75]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**AO Conditions**	**Comments**
2.2.1	Transport Loading Rack	VOCs	Vapor recovery unit with carbon adsorption in compliance with MACT Subpart R.	(0017-15) II.B.1.b & II.B.1.c	Current operations meet RACT, no further action warranted.
2.2.3	Fugitive Emissions	VOCs	LDAR in accordance with MACT Subpart R and NSPS Subparts XX and Kb.	(0017-15) I.5	
2.2.1	Specialty Rack	VOCs	Bottom loading with good work practice standards.	(0017-15) I.5 & II.B.1.c	Current operations meet RACT, no further action warranted.
2.2.2	Storage Tanks	VOCs	Top-submerged or bottom loading of tanks; good design methods and operating procedures; and compliance with applicable NSPS Subpart Kb requirements.	(0017-15) II.B.1.c	Current operations meet RACT, no further action warranted.

4.16.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for the Chevron Terminal. RACT evaluations showed that

[75] https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2022-011292.pdf

additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for the Chevron Terminal as required by this SIP revision.

4.17 Holly Energy Partners Woods Cross Terminal

4.17.1 Introduction

This section specifically serves as an evaluation of Holly Energy Partners Terminal (Holly Terminal). The emissions units at the Holly Terminal were not included in the $PM_{2.5}$ serious SIP. At that time, UDAQ considered the Holly Terminal as a separate source from the main refinery. However, recent permitting actions have since established that the Holly Terminal and Woods Cross Refinery are considered one stationary source. Therefore, UDAQ requested a RACT analysis for the emission units at the Holly Terminal. Holly Terminal submitted a RACT analysis for evaluation February 12, 2021. Specific conditions applicable to this SIP revision for Holly Terminal can be found in Section IX, Part H.32.e.

4.17.2 Facility Process Summary

The Holly Terminal is a petroleum products loading facility located in Woods Cross. The terminal consists of a loading rack and a soil remediation system. The bulk terminal is used by the Holly Terminal to load gasoline and diesel products into tanker trucks. The Holly Terminal receives gasoline, diesel, and jet fuel via pipeline from the HF Sinclair Woods Cross Refinery. The petroleum products are loaded into tanker trucks for offsite transportation. The Holly Terminal doesn't have aboveground storage tanks.

4.17.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the Holly Terminal processes and equipment are summarized in Table 50. The 2017 actual emissions were used as the baseline emissions. The current PTE values for the Holly Terminal were established by the most recent active AOs issued to the source.

- AO DAQE-AN101230023B-07 issued October 17, 2007 (0023B-07)
- AO DAQE-AN101230034-10 issued November 18, 2010 (0034-10)

Table 50: Holly Energy Partners Woods Cross Terminal Facility-Wide Emissions

Holly Energy Partners Woods Cross Terminal Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**0.32**	**2.53**
VOC	**2.14**	**9.13**

4.17.4 RACT Analysis

The RACT evaluations were performed using data from Holly Terminal, AOs, and supporting documentation. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other

applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 51.

Table 51: Holly Energy Partners Woods Cross Terminal

Holly Energy Partners Woods Cross Terminal					
RACT Section #[76]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**AO Conditions**	**Comments**
5.1	Transport Loading Rack	VOCs	Vapor recovery unit with carbon adsorption in compliance with MACT Subpart CC; vapor combustion unit backup.	(0023B-07) #7, #9, & #16	Current operations meet RACT, no further action warranted.
5.2	Fugitive Emissions	VOCs	LDAR required by NSPS Subpart VVa.	(0023B-07) #12	Current operations meet RACT, no further action warranted.
5.3	Soil Remediation System	VOCs	Thermal/catalytic oxidizer.	(0034-10) I.5; II.B.1.b	Current operations meet RACT, no further action warranted.

4.17.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for the Holly Terminal. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being

[76] https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2022-011295.pdf

implemented. Therefore, there are no additional implementation schedules or requirements for the Holly Terminal as required by this SIP revision.

4.18 Tesoro Logistics Operations LLC Truck Loading Rack and Remote Tank Farm

4.18.1 Introduction

This section specifically serves as an evaluation of Tesoro Logistics Operations LLC Truck Loading Rack and Remote Tank Farm (Tesoro TLR). The emissions units at the Tesoro TLR were not included in the $PM_{2.5}$ serious SIP. At that time, UDAQ considered the Tesoro TLR as a separate source from the main refinery. However, recent permitting actions have since established that the Tesoro TLR and Marathon Refinery are considered one stationary source. Therefore, UDAQ requested a RACT analysis for the emission units at the Tesoro TLR. Tesoro TLR submitted a RACT analysis for evaluation March 31, 2021, with an updated RACT analysis submitted January 31, 2023. Specific conditions applicable to this SIP revision for Tesoro TLR can be found in Section IX, Part H.32.j.

4.18.2 Facility Process Summary

The Tesoro TLR is a bulk gasoline terminal, which receives products from the Marathon Refinery. Products are dispensed through the primary truck loading rack to cargo tank trucks where the product is delivered to gasoline dispensing facilities. Storage tanks at the site store gasoline, diesel fuel, kerosene, heavy oils, and fuel additives.

4.18.3 Facility Baseline Actual Emissions and Current PTE

The baseline and current PTE from the Tesoro TLR processes and equipment are summarized in Table 52. The 2017 actual emissions were used as the baseline emissions. The current PTE values for the Tesoro TLR were established by the most recent active AOs issued to the source.

- AO DAQE-AN156590008-18 issued March 12, 2018 (0008-18)

Table 52: Tesoro Logistics Operations LLC TLR and RTF Facility-Wide Emissions

Tesoro Logistics Operations LLC TLR and RTF Facility Emissions		
Pollutant	**Baseline Emissions (TPY)**	**PTE (TPY)**
NO_x	**N/A**	**N/A**
VOC	**18.24**	**107.92**

4.18.4 RACT Analysis

The RACT evaluations were performed using data from Tesoro TLR, AOs, and supporting documentation. Various resources were evaluated to identify all existing and potential controls and emission rates, including EPA's RBLC; technical documents, EPA fact sheets, applicable CTGs, and other applicable literature; state and federal regulations; and other state SIPS. The RACT determinations for each emission unit or activity emitting NO_x and VOCs are provided in Table 53.

Table 53: Tesoro Logistics Operations LLC TLR and RTF

Tesoro Logistics Operations LLC Truck Loading Rack and Remote Tank Farm					
RACT Section #[77]	**Emission Unit/Activity**	**Pollutant**	**RACT Determination**	**AO Conditions**	**Comments**
5.1	Transport Loading Rack	VOCs	Vapor recovery unit with carbon adsorption in compliance with MACT Subpart CC.	(0008-18) II.B.1.l	Current operations meet RACT, no further action warranted.
4.1	Fugitive Emissions	VOCs	Enhanced LDAR required by NSPS Subpart GGGa and maintenance vent monitoring.	(0008-18) I.7	Current operations meet RACT, no further action warranted.
6.1	Fixed Roof Tanks	VOCs	Good design methods and operating procedures; closed vent system to a carbon adsorber on OWS Tank.	(0008-18) I.7; II.B.1.c - II.B.1.k	Current operations meet RACT, no further action warranted.

[77] https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001507.pdf

7.1	Internal Floating Roof Tanks	VOCs	Good design methods and operating procedures; compliance with applicable NSPS Subpart Kb requirements; and tank degassing requirements.	(0008-18) I.7; II.B.1.c - II.B.1.k	Current operations meet RACT, no further action warranted.

4.18.5 Conclusion of RACT Implementation

The emission units/activities currently meet all RACT requirements, and the existing controls and emissions limitations are considered RACT for the Tesoro TLR. RACT evaluations showed that additional add-on controls or limitations are not technically or economically feasible options at this time. No additional RACT measures were identified, and all RACT determinations are already being implemented. Therefore, there are no additional implementation schedules or requirements for the Tesoro TLR as required by this SIP revision.

4.19 CTG and ACT [~~Negative Declaration~~]

For all sources located within the NWF NAA examined as part of this RACT analysis, any applicable CTGs or ACTs were found to have been implemented to the relevant source through existing AOs or SIP conditions. Any published CTG or ACT not enacted within the NAA boundary results from the fact that the NWF does not have sources in which those CTGs are applicable. Details regarding this analysis and additional information about source specific CTG and ACT applicability can be found in the CTG VOC Source Categories Analysis TSD.[78]

Thus, the UDAQ conducted no further RACT analysis for CTG source categories not included in AOs or SIP conditions as there are not sources subject to those CTGs within the NWF NAA. Therefore, this SIP revision has met the CTG requirements as required under CAA Section 182(b)(2).

4.20 RACT Conclusions

Upon completion of RACT analysis for each of the major industrial sources located within the NWF NAA, or nearby in the case of US Magnesium, the UDAQ has concluded that the controls identified in Table 54[**4**], with the corresponding emission limitations included in Utah SIP Section IX, Part H.31 and

[78] TSD PLACEHOLDER FOR CTG

H.32, are necessary for the NWF NAA to demonstrate attainment of the 2015 8-hour ozone NAAQS as expeditiously as practicable. While the financial feasibility of some of these controls may be beyond previously established RACT thresholds, the CAA provides states with "discretion to require beyond-RACT reductions from any source" if those reductions are necessary to "demonstrate attainment as expeditiously as practicable". [79] The precedent for the requirement of "beyond-RACT" controls for an ozone NAA demonstrating attainment at the earliest achievable date has been previously established in 2001,[80] and further upheld in 2009.[81]

The implementation timeline of controls identified in Table 54 are beyond the implementation deadline of January 1, 2023[82] and therefore will not count towards RFP under this SIP revision. However, the state of Utah has ongoing obligations under Section 182 of the CAA to demonstrate attainment of the NAAQS. The timing of compliance for states meeting statutory deadlines established in the CAA does not impact or nullify those obligations for future SIP revisions. Thus, a state submitting a SIP revision late, or meeting 182(b)(2) requirements late, does not negate the obligations imposed by the CAA. As a result, the UDAQ has determined that the implementation of the controls identified in Table 54 are required to be implemented on the most expeditiously practicable timelines to comply with these ongoing CAA obligations.

While the controls identified in Table 54 have been determined to be beyond-RACT, the UDAQ has concluded that these controls meet the definition of reasonable when considering their cost effectiveness for controls considered beyond-RACT. This determination was made when examining three variables that impact what constitutes reasonable including: 1) the regulatory landscape of the NWF NAA (i.e. availability of control options), 2) other NAA determination of cost thresholds, 3) appropriate adjustments for inflationary and other price pressures.

First, as noted in sections 5 and 7 of this SIP revision, Utah has previously implemented an extensive array of emission reduction strategies at the BACT threshold while the state worked to address wintertime $PM_{2.5}$ pollution. These emission reductions target the same precursor emissions for ozone, i.e. NO_x and VOCs. As a result, there are exceedingly few control options available for the State to implement at this time in the regulatory landscape of the NWF. In essence, the supply of available controls is exceptionally low, while the demand to implement controls to comply with CAA requirements is high. This same economic reality—what is considered a reasonable cost in one area will be different than another area based on supply and demand— is seen in a wide array of economic activities, such as housing. Therefore, it is reasonable to conclude that an appropriate cost threshold for controls in the NWF NAA would be higher than that seen in an area with greater control options available to it. This same reasoning follows that a reasonable cost threshold would be more similar to a cost threshold seen in an NAA with fewer control options available. Further, a recent analysis conducted by the UDAQ examining the cost effectiveness of emissions reduced from incentive programs identified a similar scenario, with the cost to reduce emissions increasing as a result of previously implemented incentive programs. In short, as programs (incentive or regulatory) reduce emissions from older, dirtier equipment, the remaining pool of emissions sources are relatively cleaner, and thus the emission reductions are more expensive per ton of pollutant removed.

[79] 80 FR 12279 & 83 FR 62998

[80] 66 FR 26914

[81] 74 FR 1927

[82] 87 Fed. Reg. 60,897.

Second, the UDAQ compared and contrasted the RACT cost thresholds with a number of other NAAs, and compared cost thresholds for both RACT and BACT implemented controls. While many contrasting NAAs that have recently implemented RACT determined an appropriate cost thresholds between $5,000 - $10,000 per ton of pollutant removed,[83] these areas are doing so with a wider array of emission reduction strategies available to them. In contrast, the UDAQ examined BACT cost thresholds in areas with more similar regulatory frameworks in place to see what the higher end of cost effectiveness could be considered reasonable. The Division found instances of BACT cost thresholds near $43,000 per ton of VOC and $41,000 per ton of NOx emission reductions.[84] While these higher end estimates are considered BACT, and thus represent a more stringent standard, the Division has concluded that, given the existing regulatory framework in place in the NWF and the similarities between these higher cost threshold NAAs, that a RACT cost threshold of approximately $10,000 per ton of pollutant removed below that reported on the high end is reasonable for the NWF. The controls outlined in Table 54 all fall near or below this threshold. Additionally, the UDAQ identified instances in which a cost threshold of $10,000 was determined reasonable for Regional Haze SIPs.[85] It's worth noting that Regional Haze SIPs are developed to meet visibility standards, not health-based standards as in this moderate ozone SIP. The Division believes that a reasonable threshold for a control used to protect human health should be considerably higher than that determined reasonable for protecting visibility.

Lastly, the UDAQ also considered inflationary forces when determining a reasonable cost-effectiveness threshold. Since 2000, the United States has seen a cumulative price increase associated with inflationary pressures of 77.18%.[86] Similar upward price pressures have been observed in other parts of the economy that impact the price of pollution controls. For example, the building cost index for construction for nonresidential buildings over the same period cited for inflation above (2000 – 2023) has risen from ~50 to just over 130—a 160% increase.[87] If inflationary pressures are not taken into consideration over time when determining reasonable cost-effectiveness thresholds, the ever-increasing costs associated with building and installing controls would result in a diminished ability for responsible air agencies to identify and require effective controls. These same inflationary economic forces have been realized elsewhere in the regulatory world, resulting in an increase in the statutory civil monetary penalties for violations as enforced by the EPA for the CAA violations rising from $25,000 in 1991 to $55,808 in 2023 for each day of continued noncompliance.

When all three of these factors (existing regulatory framework, similar NAA thresholds, and inflationary pressures) are taken together, the UDAQ has determined that the controls outlined in Table 54 are reasonable for an area in which beyond-RACT controls are necessary to attain the standard.[88] A SIP is intended to be a plan that matches the unique characteristics of each NAA, which is why the responsible air agency has primacy to develop and implement the plan it determines best meets the unique challenges of its air shed. When considering appropriate cost thresholds for a NAA, it is important to recognize that the cost effectiveness for controls for that air shed will also be unique to the NAA in question.

[83] Approval and Promulgation of Air Quality Implementation Plans; Pennsylvania; Reasonably Available Control Technology Determinations for Case-by-Case Sources Under the 1997 and 2008 8-Hour Ozone National Ambient Air Quality Standards, 85 Fed. Reg. 66,484, 66,486 (Oct. 20, 2020) (examples of benchmarks from several other states examined by Pennsylvania).

[84] 2022 South Coast Air Quality Management District BACT Maximum Cost Effectiveness Values.

[85] Oregon Regional Haze State Implementation Plan, for the period 2018 – 2028, available at https://www.oregon.gov/deq/rulemaking/Pages/rhsip2028.aspx.

[86] Bureau of Labor Statistics Consumer Price Index (CPI), available at https://www.bls.gov/cpi/.

[87] Construction Analytics, Construction Inflation 2023, available at https://edzarenski.com/2022/12/20/construction-inflation-2023/.

[88] 42 U.S.C § 7545(d)(1); 40 CFR § 19.4.

Table 54: Controls identified by RACT analysis for the NWF NAA.

Source	Control	Part H Reference	Implementation Timeline	Emission Reductions
[~~Chevron Products Company Salt Lake Refinery~~]	[~~Low NO_x burners equipped on crude heaters F21001 and F21002.~~]	[~~XI.H.32.b.b.~~]	[~~May 1, 2026~~]	[~~8.9 tpy NO_x~~]
Tesoro Refining & Marketing Company LLC Marathon Refinery	NO_x emission limits on cogeneration turbines with heat recovery steam generation CG1 and CG2	XI.H.32.j.b	[~~May 1, 2026~~]October 1, 2028	68.78[~~87.53~~]tpy NO_x
Tesoro Refining & Marketing Company LLC Marathon Refinery	Replacement of wastewater API separator and DAF unit with a closed vent to carbon adsorption controls	XI.H.32.j. d	December 31, 2025	10.0 tpy VOCs
Tesoro Refining & Marketing Company LLC Marathon Refinery	Secondary seal installation on Tank 321	XI.H.32.j.c	May 1, 2026	2.30 tpy VOCs
US Magnesium LLC	Steam stripper in series with RTO	XI.H.32.k	October 1, 2024	161.70 tpy VOCs

Based on all available data including the examination of past submitted BACT reports, newly submitted RACT analyses, and by requiring the implementation of "beyond-RACT" controls as identified in Table 54, the NWF NAA has met all RACT criteria as required under CAA Section 182(b)(2) for this SIP revision. Furthermore, the implementation of technologically feasible "beyond-RACT" controls demonstrates not only completion of RACT requirements, but that the area will demonstrate attainment as expeditiously as practicable.

4.21 Nonattainment New Source Review (NNSR)

NNSR is a CAA permitting program which requires industrial facilities to install modern pollution control equipment when they are built, or when making a change that increases emissions significantly. The purpose of an NNSR program is to protect public health and the environment, even as new industrial facilities are built, by ensuring that air quality does not worsen in the NAA and air quality is not significantly degraded. This is accomplished through preconstruction permitting.

Utah Administrative Rule R307-403; Permits: New and Modified Sources in Nonattainment and Maintenance Areas,[89] implements federal NAA permitting programs for major sources as required by 40 CFR § 51.165 and contains new source review provisions for some non-major sources in the ozone NAAs. Rule R307-403 is applicable any new major stationary source or major modification that is major for the pollutant or precursor pollutant for which the area is designated nonattainment if the stationary source or modification is located anywhere in the designated NAA. This includes requirements that a major stationary source in the NWF NAA obtain a ratio of total actual emission reductions of VOCs compared to the emission increase of VOCs of at least 1.15:1 prior to commencement of operations and permitting by the UDAQ. EPA determined that rule R307-403 meets the requirement for nonattainment new source review under 40 CFR § 51.1314[90] on February 02, 2022[91] Therefore, this SIP revision adequately addresses the CAA NAA requirements for NO_x and VOC emission offsets.

[89] Utah Admin. Code r. R307-403.

[90] 40 CFR § 51.1314 New source review requirements.

[91] Approval and Promulgation of Implementation Plans; Utah; Emissions Statement Rule and Nonattainment New Source Review Requirements for the 2015 8-Hour Ozone National Ambient Air Quality Standard for the Uinta Basin, Northern Wasatch Front and Southern Wasatch Front NAAs, 87 Fed. Reg. 5,435 (Feb. 1, 2022).

Chapter 5 - Reasonably Available Control Measures (RACM) Analysis

5.1 Overview

CAA section 172(c)(1) requires states to implement all RACM as expeditiously as practicable, including RACT, to meet both RFP requirements and to demonstrate attainment of the NAAQS. The CAA requires RACM to be implemented for point, area, non-road, and on-road sources categories to meet the attainment standard.

The general approach to the RACM analysis is to evaluate control measures that have been implemented at the federal level, in other states and other local air districts and, if reasonable and practicable, to implement the controls to help the area attain the ozone standard. A RACM analysis determines potential control measures for each source category by considering the following requirements:

- technological feasibility of the control measure,
- economic feasibility of the control measure,
- if the control measure would cause substantial widespread and long-term adverse impacts,
- if the control measure is absurd, unenforceable, or impracticable, and
- if the control measure can advance the attainment date by at least one year.

UDAQ conducted a RACM analysis by analyzing the following materials:

- EPA guidance documents and regulations including:
    - CTG,
    - ACT,
    - Ozone Transport Commission model rules.
- A comparison of existing Utah administrative rules to other EPA SIP-approved rules of the three western air districts that were moderate nonattainment for the 2008 ozone standard. The rationale for this comparison is that the selected air districts have already implemented ozone controls approved by EPA. The three air districts are Imperial County, CA, Mariposa County, CA, and Phoenix-Mesa (Maricopa County), AZ. These NAAs were selected for comparison since they have comparable climatic conditions to those experienced in the NWF NAA during summer and similar industrial activities [~~activates~~]present in the NWF NAA. Each area has served as a basis for RACT and RACM comparisons for other ozone NAAs, hence emission reduction strategies adopted in these areas serve as a base for many other current ozone NAAs.
- Lastly, an evaluation of newly identified technological and economically feasible controls, or if enhancement of existing controls were available.

The RACM analysis for the NWF NAA examined control measures for all potential VOC and NO_x emission sources. As part of this analysis, UDAQ reviewed existing Utah administrative rules, many of which were implemented as part of the Salt Lake $PM_{2.5}$ serious SIP and were developed under the regulatory guidelines of best available control measures (BACM) which allow for more stringent measures to be implemented than those conforming to RACM. The rules adopted under the BACM approach for state efforts to address $PM_{2.5}$ pollution include 24 VOC-related administrative rules, which are identified in Table 55. Furthermore, as the implementation rules under $PM_{2.5}$ allow for the implementation of emission reduction strategies beyond the attainment dates, the VOC emission

reduction rules implemented during the $PM_{2.5}$ SIP were not constrained by timelines and further contribute to the exhaustive list of existing regulations in the NWF NAA. As the requirements for BACM are significantly more stringent than for RACM, the majority of this analyses concluded that current control measures are as, or more stringent than, the requirements for the moderate ozone SIP.

Table 55: Existing area source VOC rules in the NWF NAA[92]

Rule	Name
R307-211	Emission Standards: Emission Controls for Existing Municipal Solid Waste Landfills
R307-230	NO_x Emission Limits for Natural Gas-Fired Water Heaters
R307-303	Commercial Cooking
R307-304	Industrial Solvent Use
R307-328	Gasoline Transfer and Storage
R307-335	Degreasing
R307-341	Cutback Asphalt
R307-342	Adhesive and Sealants
R307-343	Emission Standards for Wood Furniture Manufacturing Operations
R307-344	Paper, Film & Foil Coating
R307-345	Fabric & Vinyl Coating
R307-346	Metal Furniture Surface Coating
R307-347	Large Appliance Surface Coating
R307-348	Magnet Wire Coating
R307-349	Flat Wood Panel Coating
R307-350	Miscellaneous Metal Parts & Products Coating
R307-351	Graphic Arts
R307-352	Metal Containers, Closure & Coil Coating
R307-353	Plastic Parts Coating
R307-354	Auto Body Refinishing
R307-355	Control of Emissions from Aerospace Manufacturing & Rework Facilities
R307-356	Appliance Pilot Light
R307-357	Consumer Products
R307-361	Architectural Coatings

5.2 RACM Analysis

To evaluate the VOC and NO_X sources in the NWF NAA, UDAQ first evaluated the 2017 baseline emission inventory described in section 3, examining emission categories with the highest emissions contributions first, then proceeding to examine smaller emission categories, in an attempt to identify the most impactful strategies first. Thus, Tables 56 and 57, which overview the results of UDAQ's RACM analysis, are presented in descending order of the magnitude of emission category, as is the corresponding TSD for this analysis.[93] Next, the UDAQ identified control techniques currently in place for

[92] All these rules are found in the Utah Administrative Code.

[93] Northern Wasatch Front Area Source Reasonable Available Control Measures (RACM) Analysis for Ozone Control. Technical Supporting Document (TSD). https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001246.pdf

source categories and determine if existing controls and rules are up to date with federal guidance and other states moderate ozone NAA rules.

Table 56: VOC RACM Assessment Summary

Source Category	Utah Existing Rules/Statute and Federal Rules	Comments
Solvent, Consumer/commercial Use Products	R307-357 Consumer Products	R307-357 is the most current OTC model rule, no further action warranted
Solvent, Graphic Arts	R307-351 Graphic Arts	UDAQ worked closely with the national printing trade association to derive a BACM rule that would be in line with printing rules found in the most stringent California air districts. No further analysis warranted.
Surface Coating, Industrial Maintenance*	Surface coating rules R307-343,344, 345,346, 347,348,349,350,352,353,354 and 355. Surface Coatings, Traffic Markings – R307-361 Architectural Coatings	Most current control strategies for surface coating and deemed to be BACM by UDAQ. R307-361 is the most current OTC model rule and deemed to be BACM by UDAQ.
Chemical Stripper	R307-304 Solvent Cleaning R307-335 Degreasing	UDAQ created the new rule R307-304 by removing sections of R307-335, in which the applicability was dramatically lowered, and a low vapor pressure solvent option was added. UDAQ determined that R307-304 was BACM. No further analysis warranted.
Surface Coatings, Architectural	R307-361 Architectural Coatings	R307-361 is the most current OTC model rule, no further action warranted
Gas Pipelines	40 CFR 49 Subtitle B	U.S. Dept. of Transportation is responsible for pipeline safety and spill prevention. No further action warranted.
Asphalt	R307-341 Cutback Asphalt	Imperial and Maricopa counties require lower VOC limits which were not considered in this evaluation for safety reasons. Reducing the VOC content requires the asphalt to be heated at a higher temperature leading to possible flashing and increase fuel usage negating any VOC reductions.
Industrial Bakery		UDAQ issued a proposed rule for public comment in 2016. Commenters submitted documentation that the estimated cost would be at least $19,000/ton, requiring double-walled stainless-steel stack plus catalytic

		oxidation of ethanol. High capital cost would require a rule with high applicability threshold that would preclude regulating most bakeries that comprise these emissions. No further action warranted.
Residential & Commercial Portable Gas Cans Evaporation/Spillage etc.	40 CFR Part 59, Subpart F, Control of Evap. Emission from New & In-use Portable Fuel Containers	No further action warranted
Gas Under Ground Storage Tank		DAQ enforces Federal UST regulation. No further action warranted.
Waste Disposal, Treatment, and Recovery; Composting;100% Green Waste	R315-312 Recycling and Composting Facility Standards	Composting operations are managed by the Utah Solid Waste Division. R315-312 includes facility and material management requirements to reduce air, soil and groundwater impairment. The 3 comparative air districts do not have air quality rules for compost operations. No further action warranted.
Leaking Underground Storage Tanks	Title 19 Chapter 6 Part 4, Underground Storage Tank Act	UDEQ enforces the EPA UST regulation, no further action warranted
Pesticide Application, Commercial/Consumer (FIFRA)	R307-357 Consumer Products	R307-357 is the most current OTC model rule, no further action warranted
Fuel Gas/Gasohol Bulk Plants	R307-328 Gasoline Transfer and Storage	Maricopa County has additional EPA SIP rules for gasoline transfer and storage based upon federal stage 1 vapor recovery guidance. An evaluation of Maricopa County's rules with Utah's determined that no additional control technique would be beneficial, and our current rules associated with these processes were determined to be BACM.
Landfills	R307-221 Emission Standards: Emission Controls for Existing Municipal Solid Waste Landfills	No further action warranted.
Combustion, Natural Gas, Residential	R307-356 Appliance Pilot Light	R307-356 prohibits appliance from utilizing a pilot light thereby reducing VOC's. No further action warranted.

Gas Stage 1	R307-328 Gasoline Transfer and Storage	Refer to discussion in section 5.2.1
Commercial Cooking		Researchers in California have been unable to identify cost effective technology for this emission source. Known control measures have a high capitol cost (>$50k) and demanding maintenance such that the removal cost would likely exceed $20K/ton. Prohibitive cost would shutter most sources. No further action warranted.
Livestock Production		According to local USDA representatives, most Utah producers use National Resource Service best management practices to protect soil, water and air. No further action warranted.
Sewer Treatment in Publicly Owned Treatment Works (POTW)	Clean Water Act: all POTW's have to report to EPA VOC concentrations in discharges.	All major POTW's meet Best Available Technology, no further action warranted.
Consumer and Commercial, Miscellaneous Products	R307-357 Consumer Products	R307-357 is the most current OTC model rule, no further action warranted
Fuel, Jet, Stage 1 (Storage)	Regulated under 40 CFR Subpart Kb	Not technically feasible for jet fuel due to low vapor pressure (0.125 psi). No further action warranted.
Fires, Structural		Uncontrollable, no further action warranted.
Backyard BBQ		Statutory Exemption, no further action warranted.
Dairy and Beef Cattle Composite		According to local USDA representative, most Utah producers use national conservation best management practices.
Gas Tank Truck Transport	R307-328 Gasoline Transfer and Storage	Refer to discussion in section 5.2.1
Solvent, Dry Cleaning		Solvent dry cleaners use no transfer machines that eliminate vapor loss during transfer from washing to drying. Additional built-in controls include refrigerated condensers. Some units also include built-in stills

		to further recover vapors. No further controls would be feasible. No further analysis warranted.
Poultry		According to the Utah Farm Bureau, operations apply best management practices to maintain healthy stock.
Fuel, Jet, Stage 2 (Dispensing)	Regulated under 40 CFR Subpart CC or Subpart R	Not technically feasible for jet fuel due to low vapor pressure (0.125 psi). No further action warranted.
Commercial Cooking - Conveyorized Charbroiling	R307-303 Commercial Cooking	R307-303 requires all units to utilize catalytic oxidizers. UDAQ and a nonprofit environmental group worked together to fund and install catalysts in all units in the Wasatch Front. No further action warranted.
Industrial Boiler Liquid Propane Gas (LPG)		No known control measures. Source may require permit with conditions under R307-401.
LPG Fuel		No known control measures exist, no further action warranted.
Fires, Vehicle		Uncontrollable, no further action warranted.
Combustion, Natural Gas, Industrial Boilers and IC Engines		No known control measures exist. Source may require permit conditions under air quality permitting R307-401-4(3) requiring low-NO_x burners.
Commercial/institutional wood Fuels		There are no reasonably cost-effective control strategies for this de minimis emission. No further action warranted.
Residential Oil Fuel		No known control exists, no further action warranted.
Cremation, Human and animal		Catalytic oxidizer control cost would readily exceed $15k/ton, an unreasonable cost for a de minimis emission. No further action warranted.
Commercial/institutional Kerosene Combustion		No known control, no further action warranted.
Aircraft/Rocket Engine Firing and Testing		Uncontrollable event for aircraft maintenance/testing (no rocket engine). No further action warranted.

Solvents; Hot Mix Asphalt	**NEW Administrative Rule: R307-313; VOC and Blue Smoke Controls for Hot Mix Asphalt Plants**	The UDAQ has identified blue smoke controls reducing VOC emissions associated with blue smoke from Hot Mix Asphalt plants being RACM. As a result, the Utah Air Quality Board has adopted Utah Administrative Rule R307-313 to fulfill this requirement.

*Surface Coating, Industrial Maintenance: EPA has aggregated coatings of the following surfaces: wood furniture, paper, film, foil, fabric, vinyl, metal furniture, large appliances, magnet wire, wood panel, metal parts, metal containers, plastic parts, autobody and aerospace parts.

Table 57: NO_X RACM Assessment Summary

Source Category	Utah Existing Rules/Statute and Federal Rules	Comments
Combustion, Natural Gas	R307-356 Appliance Pilot Light.	Prohibits the sale of appliance pilot lights (with the exception of water heaters) after January 1, 2014. A Canadian study determined that a gas fireplace pilot light accounts for 48% of the annualized gas usage for the appliance. Reduced gas consumption translates to a reduction in $PM_{2.5}$, VOC, NO_x, SO_x and NH_3. We are not aware of other comparable rules.
	R307-230 NO_x Emission Limits for Natural Gas-Fired Water Heaters	Ultra-low NO_x water heaters reduce emissions to 10 ng/Joule for residential units and slightly higher limits for commercial units. R307-230 is consistent with the most stringent California rules. No further action warranted.
	PROPOSED: R307-315 & R307-316	The UDAQ has identified ultra-low NO_x burners (9 ppmv) as being RACM in most instances when applied to replacement of end-of-life equipment or replacement burners. Some instances, particularly for high MMBtu units, may exceed RACM requirements and require regulatory flexibility. UDAQ is proposing the adoption of administrative rules R307-315 and R307-316 to fulfill this RACM requirement.
Combustion, Natural Gas, Commercial & Institutional Boilers and IC Engines		May be subject to air quality permitting. R307-401-4(3) may apply requiring low-NO_x burners.

Industrial Boiler LPG		May be subject to air quality permitting depending on size of emission sources.
Combustion, Industrial, Distillate Oil, All IC Engines		May be subject to air quality permitting depending on size of emission sources.
Combustion, Commercial, Institutional LPG		No known control.
Combustion, Industrial, Distillate Oil, All Boilers		May be subject to air quality permitting. R307-401-4(3) may apply requiring low-NO_x burners depending on the size of emission source.
Residential LPG Fuel		No known control.
Combustion, Natural Gas, Industrial Boilers and IC Engines		May be subject to air quality permitting. R307-401-4(3) may apply requiring low-NO_x burners.
Commercial, institutional wood Fuels		There are no reasonably cost-effective control strategies for this de minimis emission. No further action warranted.
Backyard BBQ		Statutory Exemption, no further action warranted.
Structural fires		Uncontrollable
Residential Oil Fuel		No known control, no further action warranted.
Waste Disposal, Open Burning, Yard Waste and Household Waste	R307-202, General Burning regulates yard waste burning by permit and prohibits household waste burning by homeowners.	No further action warranted.
Cremation, Human and animal		Catalytic oxidizer control cost would readily exceed $15k/ton, an unreasonable cost for a de minimis emission. No further action warranted.
Combustion, Kerosene		No known control, no further action warranted.
Aircraft/Rocket Engine Firing and Testing		Uncontrolled event for aircraft maintenance/testing (no rocket engine). No further action warranted.
Motor vehicle fires		Uncontrollable.

Table 58: RACM Identified Control Strategies

Source Category	New or Proposed Administrative Rules	Comments
Combustion, Natural Gas	**Proposed:** **R307-315; NO_x Emission Controls for Natural Gas-Fired Boilers 2.0-5.0 MMBtu** **R307-316; NO_x Emission Controls for Natural Gas-fired Boiler greater than 5.0 MMBtu**	The UDAQ has identified ultra-low NO_x burners (9 ppmv) as being RACM in most instances when applied to replacement of end-of-life equipment or replacement burners. Some instances, particularly for high MMBtu units, may exceed previously established RACM thresholds and require regulatory flexibility. UDAQ is proposing the adoption of administrative rules R307-315 and R307-316 to fulfill this RACM requirement.
Solvents; Hot Mix Asphalt	**Utah Administrative: R307-313; VOC and Blue Smoke Controls for Hot Mix Asphalt Plants**	The UDAQ has identified blue smoke controls reducing VOC emissions associated with blue smoke from Hot Mix Asphalt plants being RACM. As a result, the Utah Air Quality Board has adopted Utah Administrative Rule R307-313 to fulfill this requirement.

5.3 RACM Analysis Conclusion

The evaluation of existing Utah administrative rules, EPA issued CTGs, ACTs, and OTC rules, as well as similar western counties with moderate ozone NAAs determined that the NWF NAA has adopted an expansive list of both VOC and NO_x emission reduction rules for area sources. Through this process, and in parallel with UDAQ working groups, two additional control techniques were identified as RACM that will result in the reduction of NO_x emissions from natural gas boiler as well as VOC emission reduction from hot mix asphalt facilities (Table 58). These controls were determined to be reasonable and will help the NAA reach attainment as expeditiously as practicable. As a result, the UDAQ has adopted administrative rule R307-313; VOC and Blue Smoke Controls for Hot Mix Asphalt Plants as a RACM strategy to reduce VOC emissions. Additionally, the UDAQ has [~~proposed for adoption~~]adopted administrative rules R307-315; NO_x Emission Controls for Natural Gas-Fired Boilers 2.0-5.0 MMBtu and R307-316: NO_x Emission Controls for Natural Gas-fired Boiler greater than 5.0 MMBtu. These reduction strategies, and their implementation timelines, are discussed further in section 7. The UDAQ has determined that the NWF NAA has met RACM requirements with the RACM analysis and the implementation of the two new control strategies.

Beyond the RACM controls identified for natural gas-fired boilers and hot mix asphalt facilities, the UDAQ has identified that the application of in-use limitations for small non-road engines, particularly those used in lawn and garden operations, are likely to be reasonable in scope and could result in significant emission reductions of both VOCs and NO_x. Section 209 of the CAA prohibits states from regulating mobile sources in certain ways,[94] with section 209(e) specifically preempting states from regulating emissions from non-road sources. While section 209 does prohibit a state from regulating

[94] 42 U.S.C. § 7543

mobile source emissions, the prohibition is not absolute. In particular, section 209(d) allows states to impose restrictions on when or where these engines can be operated (i.e., “in use“ restrictions), including for source covered under 209(e). Thus, the UDAQ has identified that states are not preempted from implementing meaningful emission reduction strategies covering non-road mobile sources through in-use requirements. The UDAQ plans to develop and implement policies that address emissions from these sources as the NAA works towards demonstrating attainment as expeditiously as possible. However, the scope of implementing a policy that covers such a large amount of small and distributed sources like non-road engines requires more time than allotted for in this SIP revision. The UDAQ intends to develop and implement a policy aimed at reducing VOC emissions from these sources in subsequent SIP revisions.

Chapter 6 – Inspection and Maintenance (I/M) Program

6.1 Overview of I/M Programs

The transportation sector is a major source of both NO_x and VOCs in and around the NWF NAA. Although modern vehicles (1996 and newer) emit far less pollution than older vehicles due to improved emission reduction technologies, these reductions depend on the on-board emission control systems being adequately maintained and operating. If not properly maintained, vehicles will not perform as originally designed, resulting in increased emissions. Malfunctions in emission control technologies can cause emissions to increase substantially beyond federal vehicle standards, with even minor malfunctions resulting in increased emissions. Therefore, identifying and repairing malfunctioning vehicles is imperative to reducing vehicle-related emissions in NAAs.

Vehicle I/M programs require mandatory and periodic testing of on-road motor vehicles for compliance with emission standards, and the repair of vehicles that do not meet standards. These tests are designed to determine whether a vehicle's emission controls are functioning properly, and whether emissions levels are acceptable. The goal of an I/M program is to identify and repair high-emitting vehicles to improve air quality in areas not attaining the NAAQS. EPA sets vehicle emission standards to protect public health, however, these regulations do not guarantee proper operation and maintenance of a vehicle's emission controls over its lifetime. State and local governments implement I/M programs to identify high-emitting vehicles and notify owners and operators to have these vehicles repaired. Once repaired, vehicles must be retested to verify their emissions are within the standards. The 1990 amendments to the CAA mandated I/M programs for ozone and CO NAAs based on criteria such as air quality status, population, and/or geographic location.

In parallel with CAA requirements, Utah Code requires that, if identified as necessary to attain or maintain any NAAQS, a county must create an I/M program as authorized by the Utah Air Quality Board to formally establish those requirements for county I/M programs after obtaining agreement from the affected counties.[95] Similarly, Utah Code also allows any county with an established I/M program to subject individual motor vehicles to I/M testing at times other than the annual inspection.[96]

As a result of the NWF NAA's previous designation as marginal nonattainment, as well as a CO NAA that overlaps portions of the NWF NAA, under CAA Section 182(a) and Section 187, Utah was previously required to implement and maintain an I/M program in the most populated counties in the NWF NAA including: Davis, Salt Lake, and Weber Counties. Beyond the NWF NAA, Utah was also required to implement an I/M program in the SWF NAA, which includes Utah County, to the south of the NWF NAA (figure 1). These programs are required to be at least as effective as the EPA's Basic Performance Standard.[97]

6.2 Federal Requirements

I/M programs are mandatory under CAA Section 182 for ozone NAAs. These programs may be removed if the state can demonstrate that the program is no longer needed. However, the I/M program would still be retained in the SIP as a contingency control measure, which would be triggered if the area

[95] Utah Code Section 41-6a-1642 & Utah Code Ann. § 19-2-104(1)(g).

[96] Utah Code Section 41-6a-1642

[97] 40 CFR § 51.352

ever exceeds the applicable NAAQS.[98] Additionally, states have the flexibility to develop their own I/M programs based on local conditions, if the state can show that impacted areas will continue to meet air quality standards.

There are two performance levels of any I/M program—basic or enhanced. Basic I/M programs are a requirement for moderate ozone NAAs[99] which requires testing for light-duty cars for any urbanized population over 200,000 residents.[100] An enhanced I/M program is required for serious, severe, and extreme ozone NAAs[101] with urbanized populations over 200,000. An enhanced I/M program requires inspection of both light duty cars and light duty trucks.[102] As a moderate NAA, the NWF is only required to demonstrate that its existing I/M programs meet the basic I/M criteria. Since all counties in the NWF NAA with populations over 200,000 have existing programs, no new I/M programs are required as part of this SIP revision.

6.3 I/M Testing

There are three types of I/M testing that can be performed on vehicles:

- Visual Inspections: These inspections discourage tampering by checking for the presence of certain required emission control parts such as catalytic converters.
- Tailpipe Testing: This inspection consists of measuring the exhaust emissions when a vehicle is idle or under certain engine loads. This inspection is typically for models made in 1995 and older.
- On-Board Diagnostics (OBD): Vehicles made in 1996 or later have been equipped with OBD computerized systems. These systems continuously monitor emission control systems and will activate the "check engine" light if a diagnostic trouble code is detected concerning the vehicle's emission controls.

6.4 Utah I/M Program History and General Authority

I/M programs were adopted in the early 1980's in Utah as a required strategy to attain both the[~~the both~~] ozone and CO NAAQS.[103] These programs have played a critical role in reducing emissions that contribute to ozone and CO and have been highly effective in improving air quality in urbanized parts of the state. Utah's I/M programs are initially authorized in Utah Code Section 41-6-163.61, which was enacted during the First Special Session of the Utah legislature in 1983. [104] I/M programs were initially implemented in Davis and Salt Lake counties in 1984, by Utah County in 1986, and by Weber County in 1990. In 1994, Utah Code was amended to authorize the implementation of I/M programs stricter than minimum federal requirements in counties where it is necessary to attain or maintain a NAAQS. [105]

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[98] 40 CFR § 51.905 (A)(4)(i).

[99] CAA Section 182(b)(4), 42 U.S.C. § 7511a(b)(4).

[100] 40 CFR § 51.350(a)(4).

[101] CAA Section 182(c)(3), 42 U.S.C. § 7511a(c)(3).

[102] 40 CFR § 51.350(7) and (8).

[103] Davis, Salt Lake, Utah, and Weber counties are required to have I/M programs under Section 182(b)(4) and/or Section 187(a)(4) of the CAA.

[104] This section has been renumbered as section 41-6a-1642 by Laws 2005, c. 2, § 216, eff. Feb. 2, 2005.

[105] 1994 Utah Code.

This section of the Utah Code required preference be given to a decentralized program to the extent that a decentralized program would attain and maintain ambient air quality standards and would meet federal requirements. Thus, I/M programs in Utah are implemented at the county level, and not directly by the state of Utah. Utah Code also required affected counties and the Utah Air Quality Board to give preference to the most cost-effective means to achieve and maintain the maximum benefit regarding air quality standards, and to meet federal air quality requirements related to motor vehicles. The Utah legislature indicated preference for a reasonable phase-out period for replacement of air pollution test equipment made obsolete by program in accordance with applicable federal requirements, and if such a phase-out does not otherwise interfere with attainment of ambient air quality standards.

By January 1, 2002, OBD inspections and OBD-related repairs were required as a routine component of Utah I/M programs on model year 1996 and newer light-duty vehicles and light-duty trucks equipped with certified OBD systems. The federal performance standard requires repair of malfunctions or system deterioration identified by or affecting OBD systems. In addition, in 2002, the Utah State Legislature amended the Utah Code to allow for biannual inspection of cars six years old or newer.[106] This provision is applicable to the extent allowed under the current SIP for each county within the NAA. Meaning the state would need to determine if the I/M programs in counties within the NAA would need to have their testing frequency modified to comply with NAAQS standards. The state would then work with local health departments to alter their requirements.

Most recently, in 2005 the Utah State Legislature renumbered and amended Utah Code to allow counties with an I/M program to require college students and employees who park a motor vehicle on college or university campus that is not registered in a county subject to I/M provisions to provide proof of compliance with an emission inspection.[107]

6.5 UDAQ Evaluation of Current I/M Program

I/M programs in Utah are currently using OBD and tailpipe testing. However, I/M programs rely mostly on OBD testing because most of the fleet is equipped with OBD systems, but there are still some tailpipe tests being performed. Details on Utah existing I/M programs, relevant county ordinances and regulations, network types and enforceability can be found in the applicable I/M TSD.[108]

In an effort to evaluate if existing I/M programs in the NWF NAA meet the requirements of a moderate NAA, the UDAQ conducted basic performance standard modeling to show how the existing I/M programs of Davis, Salt Lake, and Weber counties meet the applicable performance standard for a basic I/M Program for the summer of 2023. 2023 was chosen as the analysis year to be consistent with the year used for this modeling demonstration. This evaluation used the same MOVES modeling assumptions used to develop the on-road mobile source 2023 projection inventory for the NWF NAA covering Davis, Salt Lake, Weber, and Utah counties.[109] [~~Utah County is not required to perform a basic test. However,~~]Utah County provides reciprocity testing and, given the proximity of Utah County to the NWF, its I/M program was included in the analysis. Tooele County was not included in this analysis since

[106] Utah Code Section 41-6-163.6

[107] Utah Code Section 41-6a-1642

[108] NWF Inspection and Maintenance (I/M) Program; 2015 Ozone NAAQS Moderate Ozone SIP, TSD

[109] 2023 EXISTING BASIC INSPECTION AND MAINTENANCE PERFROMANCE STANDARD MODELING TECHNICAL SUPPORT DOCUMENT: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001726.pdf

the area does not meet the population threshold of 200,000 or more residents in which an I/M program is required.[110]

The performance standard compares the modeling results of the existing program and performance standard benchmark for a basic program for 2023. For a basic I/M program, if the proposed/existing program achieves the same or lower emissions levels for VOC and NO_x as the performance standard benchmark program, then the proposed/existing program is considered to have met the basic performance standard. Areas required to operate an I/M program as the result of being classified (or reclassified) as moderate for an 8-hour ozone NAAQS must use the basic performance standard, using the program design elements at 40 CFR § 51.352(e). Emission estimates are confined to the EPA approved MOVES 3.0.3. This model produces emissions daily estimates for on-road vehicles by providing emissions profiles for starts, exhaust, evaporative and hot soak conditions. Inputs include speeds, vehicle fuel profiles and specifications, VMT, I/M profiles, VMT mix, vehicle age distributions, and meteorological conditions. These inputs were chosen to meet EPA and Department of Transportation guidance on updating local planning assumptions every 5 years.[111]

Compliance factors were compiled utilizing local 2017 I/M EPA data covering: Total Vehicles tested, Total Failures, Waivers, and Failure Rate for the following testing procedures: Two Speed Idle, OBD, and Gas Cap. The compliance data is from EPA prepared compliance data dated 2/21/2019. Since this modeling exercise had been completed, 2020 I/M testing compliance factors have become available (EPA prepared compliance data dated 8/12/2021)[112]. The only difference between the 2017 I/M and 2020 I/M compliance factors is in Weber County for light duty trucks model years 1996-2007 creating a difference of 1%. Results of this analysis including county specific I/M program details utilized within MOVES 3.0.3 are included in the Table 59 to Table 62.[113]

Table 59: 2023 Davis County Summer Basic Performance Modeling

2023 Davis County Summer Basic Performance Modeling (Tons Per Day)		
	NO_x	VOC
Davis I/M	7.42	2.77
Basic I/M	7.55	2.91
Difference	0.14	0.13

Table 60: 2023 Salt Lake Summer Basic Performance Modeling

2023 Salt Lake County Summer Basic Performance Modeling (Tons Per Day)		
	NO_x	VOC
Salt Lake I/M	20.98	8.51
Basic I/M	21.42	8.94
Difference	0.44	0.43

[110] 40 CFR § 51.350(a)(2) and (a)(3).

[111] EPA420-B-08-901 Dec 2008

[112] https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-vehicles-engines-and-equipment

[113] Utah's 2023 Existing Basic Inspection and Maintenance Performance Standard Modeling Technical Support Document can be found on the NWF Moderate Ozone SIP TSD web page at https://deq.utah.gov/air-quality/northern-wasatch-front-moderate-ozone-sip-technical-support-documentation#supporting-tsd.

Table 61: 2023 Utah County Summer Basic Performance Modeling

2023 Utah County Summer Basic Performance Modeling (Tons Per Day)		
	NO_x	VOC
Utah I/M	10.39	3.37
Basic I/M	10.56	3.48
Difference	0.16	0.12

Table 62: 2023 Weber County Summer Basic Performance Modeling

2023 Weber County Summer Basic Performance Modeling (Tons Per Day)		
	NO_x	VOC
Weber I/M	5.87	2.12
Basic I/M	5.97	2.22
Difference	0.11	0.10

The analysis provided in this section, with the results highlighted in tables 59 – 62, indicates that the existing I/M programs currently in place in the NWF meet the CAA requirements for moderate ozone NAAs.

6.6 Implementation of I/M Program in Tooele County

To determine if the implementation of an I/M program in Tooele County would provide significant benefit for the NWF NAA to demonstrate attainment of the NAAQS, UDAQ conducted an analysis of the effects of implementing an I/M program in Tooele County using MOVES parameters similar to those described in section 6.5. Tooele county has a relatively small population of approximately 76,000 residents, and only a portion of the total county is included within the boundary of the NWF NAA (Figure 1). Tooele county has not previously been required to implement an I/M program since they are below the population threshold of 200,000 residents.

The results of this analysis are shown in Table 63. Based on these results, the UDAQ has concluded that the emission reductions associated with implementing a Basic I/M program in Tooele County would yield minimal emission reductions. Thus, the UDAQ has decided not to implement an I/M program in Tooele County especially in light of the fact that the county does not meet the population requirements found in 40 CFR § 51.350(a)(3), and the associated emission reductions would be small. This determination does not exclude the possibility of an I/M program implemented in Tooele County at a later date.

Table 63: I/M Program Implementation Evaluation for Tooele County in 2023

	NO_x	VOC	VOC Refuel	NH3	$PM_{2.5}$	Vehicle Miles Traveled
No I/M Program	3.783	0.875	0.13	0.097	0.081	3,476,298
OBD I/M Program	3.74	0.833	0.13	0.097	0.081	3,476,298
Percentage Emission Reduction	-1.14%	-4.80%	0.00%	0.00%	0.00%	0.00%
TPD Emission Reduction	-0.043	-0.042	0	0	0	0

Chapter 7 – Reasonable Further Progress (RFP)

7.1 Reasonable Further Progress

CAA section 172(c)(2) requires emission reductions referred to as RFP. Section 182(b)(1)(A) of the CAA further details RFP requirements for moderate NAAs, which is a demonstrated 15% reduction specifically for VOC emissions, known as Rate of Progress (ROP). Since the NWF does not have a previously approved ROP plan related to ozone, the state must meet the 182(b)(1)(A) requirements for this moderate SIP.

The RFP requirement for this SIP is to reduce VOC emissions by 15% within six years of the established 2017 baseline year. The state must identify and implement emission reduction strategies equal to or greater than 15% of the 2017 baseline inventory described in Section 3.2 (Table 7) by January 1, 2023. In order for reductions to count towards RFP, they must occur at sources located within the boundary of the NAA, and "have actually occurred"[114], meaning they are quantifiable with strategies developed to reduce emissions being enforceable.

7.2 Methodology

The methodology for determining compliance with CAA Section 182(b)(1)(A) RFP requirements are as follows:

1) Develop an anthropogenic VOC baseline inventory (2017) for the NAA.
2) Develop an anthropogenic VOC projected inventory (2023) for the NAA that incorporates anticipated emission reductions.
3) Demonstrate that VOC emissions in the projected year inventory (2023) are at least 15% lower than the baseline (2017) (i.e., 2023 emissions – 2017 emissions >= 15% of 2017 emissions) and meet the criteria described in Section 7.1.

7.3 RFP and Anthropogenic VOC Emission Reductions

Table 64 shows anthropogenic VOC emission for the NWF NAA for the baseline year of 2017 and the projected year of 2023, as well as the change in emissions from 2017 compared to 2023 (i.e., 2017 – 2023 VOC emissions). The total anthropogenic VOC emissions for the NWF NAA in 2017 account for 93.7 tpd. As a result, the RFP requirement for the NWF NAA is 14.0 tpd reduction to achieve the 15% reduction.

[114] 42 USC 7511a(b)(1)(C)

Table 64: Anthropogenic VOC Emission Reductions from 2017 to 2023 for the NWF

Source Sector	2017 Baseline Anthropogenic VOC Emissions (tpd)	2023 Projected Anthropogenic VOC Emissions (tpd)	Δ Anthropogenic VOC Emissions (tpd)	% Δ Anthropogenic VOC Emissions
Airports	1.3	1.4	0.2	15.4
Livestock	0.7	0.7	----	----
Area	8.5	8.3	-0.2	-2.4
Non-Road Mobile	12.5	12.6	0.1	0.8
On-Road Mobile	20.5	15.3	-5.2	-25.4
Point	5.9	6	0.1	1.7
Point-Electric Generating Units	0	0	----	----
Rail	0.5	0.4	-0.1	-20
Solvents	43.2	44.5	1.3	3.0
ERC Bank	0.7	0.7	----	----
Total	93.7	90	-3.7	-3.9

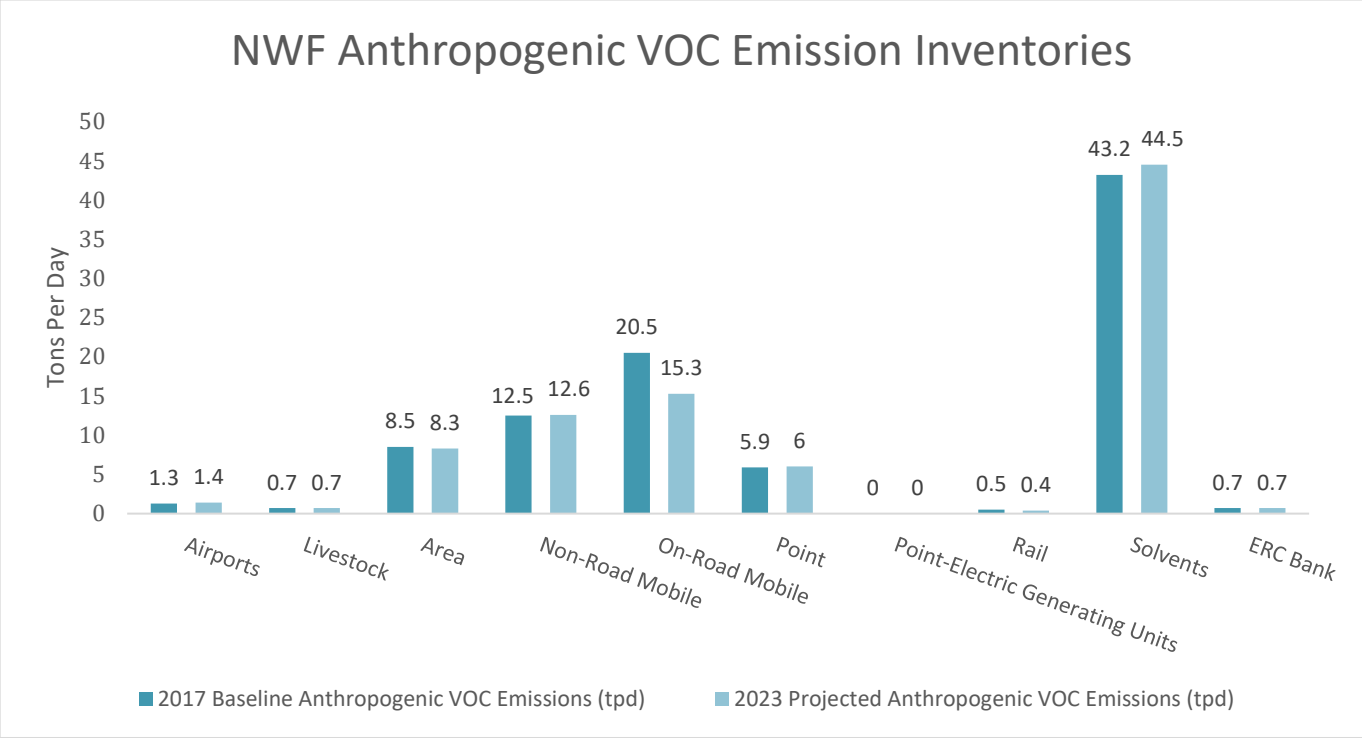

Figure 4: NWF Anthropogenic VOC Emission Inventories

As shown in Table 64 and Figure 4, there have been substantial VOC reductions in the on-road mobile sector, resulting in 5.2 tpd of VOC reductions. These reductions are overwhelmingly due to improvements in vehicle emission reduction technologies for personal automobiles and the introduction of cleaner, tier 3 fuels, into the NAA. Other source sectors such as rail and area sources show small emission reductions of 0.2 and 0.1 tpd, respectively.

While the area has experienced emission reductions across multiple sectors, the area is also experiencing rapid population growth, with Utah being the fastest growing state in the nation in 2022 and projected to add 2.2 million more residents by 2060.[115] As a result of this rapid population growth, the NWF NAA has had emission increases in certain source sectors, including the non-road and solvents sectors accounting for an added 0.2 tpd and 1.3 tpd, respectively.

The increased emissions in some source sectors that closely track population growth offset the emission reductions in other sectors. As a result, the net total reductions of anthropogenic VOC emissions in the NWF NAA are 3.7 tpd, accounting for a decrease of 3.9% of the baseline 2017 emissions. This means that the State of Utah still has 11.1% of its RFP requirements to fulfill, or 10.3 tpd of additional emission reductions required to fulfill the CAA sections 172(c)(2) and 182(b)(1)(A) requirements.

7.4 Anthropogenic NO_x Emissions

Table 65 shows anthropogenic NO_x emissions for the NWF NAA for the baseline year of 2017 and the projected year of 2023, as well as the change in emissions from 2017 compared to 2023 (i.e., 2017 – 2023 NO_x emissions). NO_x emissions are not part of the ROP requirement for this moderate SIP; however, the area has experienced significant NO_x reductions despite the substantial population growth. While NO_x reductions do not count towards the CAA sections 172(c)(2) and 182(b)(1)(A) requirements, these reductions have played an important role in the area progressing towards attaining the standard as expeditiously as possible, which is further discussed in section 7.4.1.

[115] Kem C. Gardner Policy Institute research and data, available at https://gardner.utah.edu/utah-population-to-increase-by-2-2-million-people-through-2060/

Table 65: Anthropogenic NO_x Emission Reductions from 2017 to 2023 for the NWF

Source Sector	2017 Baseline Anthropogenic NO_x Emissions (tpd)	2023 Projected Anthropogenic NO_x Emissions (tpd)	Δ Anthropogenic NO_x Emissions (tpd)	% Δ Anthropogenic NO_x Emissions
Airports	3.1	3.7	+0.6	19.4
Livestock	0	0.0	----	----
Area	5.4	4.9	-0.5	-9.3
Non-Road Mobile	10.5	8.0	-2.5	-23.8
On-Road Mobile	55.5	35.4	-20.1	-36.2
Point	20.4	22.0	+1.6	7.8
Point-Electric Generating Units	0.4	0.4	----	----
Rail	9.2	8.8	-0.5	-5.4
Solvents	0.6	0.7	+0.1	16.7
ERC Bank	3.1	3.1	----	----
Total	108.3	87.0	-21.3	-19.7

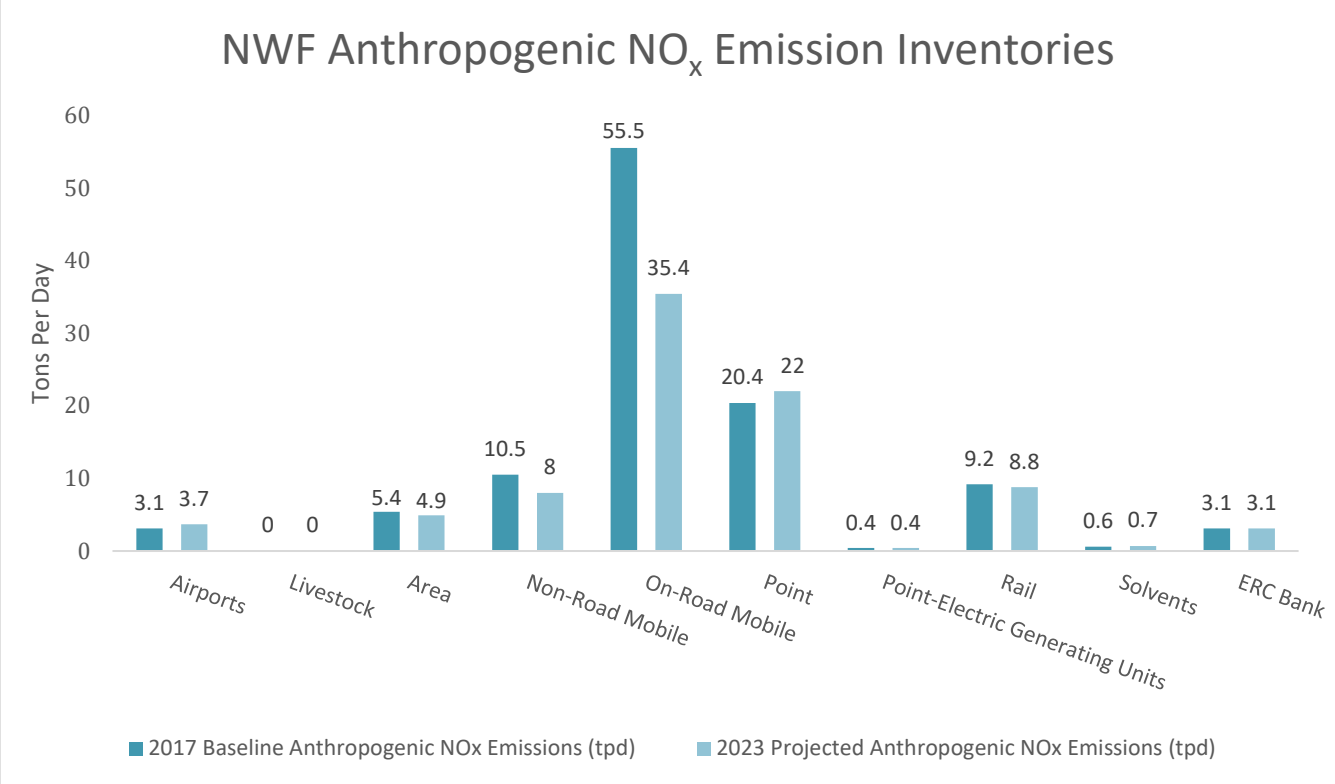

Figure 5: NWF Anthropogenic NO_x Emission Inventories

As shown in both Table 65 and Figure 5, the total anthropogenic NO_x emissions for the NWF NAA in 2017 account for 108.3 tpd, decreasing to 87.0 tpd in 2023, accounting for a 21.3 tpd reduction in daily NO_x emissions in this time period from 2017 to 2023. A substantial portion of these emission reductions, much like those observed in VOC emission reductions (Section 7.3), come from the on-road mobile sector because of continued improvements to vehicle engine standards and the introduction of cleaner burning fuels, resulting in 20.1 tpd of emission reductions relative to the baseline year. The NAA has also experienced NO_x reductions in other sectors including non-road mobile, rail and area sources, accounting for an additional 2.5, 0.5, and 0.5 tpd respectively. While some sectors have had small amounts of emission growth, such as airports, the majority of emission source sectors are showing reductions of anthropogenic NO_x emissions.

7.4.1 Effectiveness of NO_x emission reductions in the NWF NAA

Reductions in NO_x have been identified as an effective strategy in reducing ozone formation in the NWF NAA. A source apportionment modeling analysis conducted by the UDAQ using CAMx (Comprehensive Air Quality Model with Extensions) OSAT (Ozone Source Apportionment) (section 9.2) at the Hawthorne and Bountiful monitoring stations found that a little more than half of the modeled ozone at both monitoring sites is attributable to NO_x sources (Figure 6). Specifically, on average, 54% of the ozone is attributable to NO_x sources and 46% is attributable to VOC sources at the Hawthorne station. Similarly, 53% of the ozone is attributable to NO_x and 47% is attributable to VOCs at the Bountiful station. These results indicate that ozone at the controlling monitors in the NWF NAA is formed under both NO_x- and VOC-limited conditions, with a little more than half of the ozone formed under NO_x-limited conditions.

While the modeling results have some uncertainty, the findings are consistent with those from a VOC/NO_x ratio analysis conducted by the UDAQ which utilized VOC measurements collected at the Hawthorne monitoring site during the summer of 2021[116]. 8-hr time-integrated carbonyls measurements and hourly Gas Chromatograph (GC) data with VOC concentrations weighted by their Maximum Incremental Reactivity (MIR) (i.e. reactivity respective to ozone production/per unit VOC), collected from June-August 2021, were used in this ratio analysis. Results showed that the area is in a transitional regime, with controls on both VOCs and NO_x emissions as potentially effective strategies to reduce ozone formation. These findings are consistent with the CAMX results reported in this section.

[116] https://harbor.weber.edu/Airqualityscience/docs/conferences/AQSfS-2022/AQSfS2022Posters/sghiatti_sci_4_sol_poster_2022.pdf

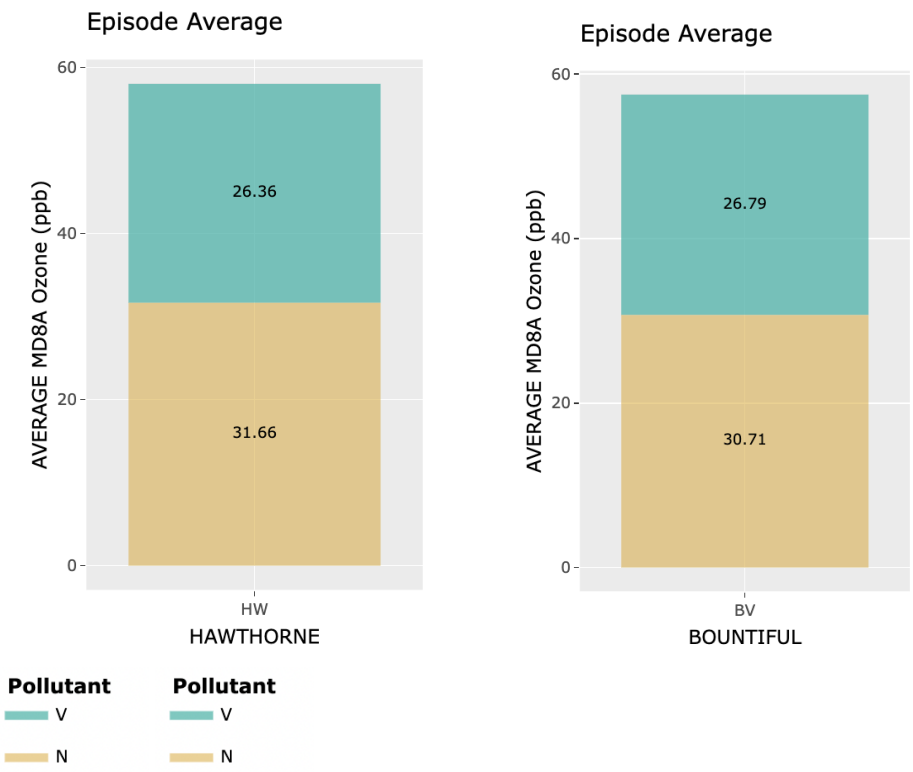

Figure 6: NOx-attributable (brown) and VOC-attributable (green) ozone at Hawthorne (left panel) and Bountiful (right) monitoring stations on average over all days of the modeling episode.

These findings support the UDAQ's conclusion that the implementation of NO_x reduction controls as identified in section 4 (Table 54) as part of this SIP revision are necessary for the NWF NAA to demonstrate attainment of the NAAQS as expeditiously as practicable.

7.5 Future SIP Emission Reductions

The UDAQ has identified several emission reduction strategies that, once fully implemented, will result in the reduction of both VOC and NO_x emissions within the NWF NAA and count towards RFP requirements. However, due to the short implementation timeframe afforded to states under this SIP revision, paired with the added difficulty of finding viable VOC reduction strategies after the extensive emission reductions associated with Utah's $PM_{2.5}$ planning efforts, these strategies will not be fully implemented by the implementation deadline of January 1, 2023[117] and thus, will not count towards RFP under the moderate SIP. Utah is working to have these strategies fully implemented prior to the summer of 2026 in an effort to count these reductions towards RFP requirements during the state's submission of a potential serious SIP for the same NAA. The UDAQ is simultaneously implementing NO_x emission reductions both in anticipation of future SIP creditability as well as in an effort to demonstrate attainment of the standard at the earliest achievable date.

[117] 87 Fed. Reg. 60,897.

7.5.1 Hot Mix Asphalt; Utah Administrative Code Rule R307-313

The UDAQ has identified reducing VOC emissions associated with hot mix asphalt manufacturing as a technologically viable and economically feasible control strategy. UDAQ has proposed R307-313 requiring hot mix asphalt (HMA) plants in the NAA to install emission capture and control devices to reduce VOC and blue Smoke emissions associated with the production and loading of HMA and oil storage tanks. Blue smoke is a visible emission generated during the production of HMA plants that results from the process of mixing hot oil with aggregate which consists of oils heated to the point of volatilization resulting in aerosols containing VOCs. Blue Smoke controls work to control both the visible emissions and VOC emissions from HMA plants by capturing the emissions at various points of the production process and routing these emissions through ducting to a destruction point, either using filters and activated carbon, or through post-capture combustion. Emissions from the associated oil tanks can be captured and reduced using similar technologies.

The UDAQ identified 15 HMA plants operating in the NWF NAA as well as 48 oil tanks associated with asphalt manufacturing at these plants. UDAQ estimates that the aggregated PTE emissions from these activities result in a combined 0.34 tpd (125.32 tpy) of VOC emissions in the NAA, of which 0.26 tpd (95.63 tpy) would be reduced with the implementation of controls as required by R307-313. It is important to note that these numbers are represented as PTE, and when applied to actual emissions from the sources based on annual production the emission reductions will be lower. This difference explains why associated inventoried emissions described in section 3 do not match those reported here, and thus it is expected that the actual emission reductions will be lower as many facilities are permitted to produce more asphalt per year than what is actually produced annually.

Administrative rule R307-313 was adopted by the Utah Air Quality Board on February 1, 2023. However, the lead time for the engineering and installation of these controls, as well as the additional testing and emission destruction verification required for the implementation of a novel emission reduction strategy, mean that the emission reductions associated with this rule will not be creditable under the moderate SIP timeline. As impacted facilities have until May 1, 2025 to install controls, these emissions reductions are expected to be creditable for future SIP reductions.

7.5.2 Boilers; Utah Administrative Code Rules R307-315 and R307-316

In an effort to reduce NO_x emissions in and around the NWF NAA, UDAQ has proposed the adoption of R307-315; NO_x Emissions Controls for Natural Gas-Fired Boilers 2.0-5.0 MMBtu and R307-316; NO_x Emission Controls for Natural Gas-Fired Boilers greater than 5.0 MMBtu. These rules both implement an emission standard of 9ppmv for natural gas-fired boilers in the NAA in the effected MMBtu ranges. In aggregate, these rules will apply to an estimated 2,136 boilers in the NAA which combine to emit an estimated 8.55 tpd (3,122 tpy) of NO_x emissions. It is important to note that these emission estimates are independent bottom-up estimates of the total potential emissions from boilers, and were determined using different datasets and methods than those used in the development of the inventories described in section 3. The UDAQ believes that these numbers are a more accurate representation of actual emissions from boilers within the NAA. However, these numbers may be different than those reported in section 3, and any future SIP credited emission reductions associated with the implementation of these rules would rely instead on the numbers reported in the inventory. The implementation of R307-315 and R307-316 has the potential to reduce 6.9 tpd (2,522 tpy) of these combined emissions. However, R307-315 and R307-316 do not require the retrofit or replacement of any boiler currently operating in the NAA, and instead require new boilers or burner replacements to meet the 9ppmv standard. Thus, the implementation of this rule will take place over a long period of time as the average lifespan of this equipment can be greater than 20 years.

Since the emission reductions from the implementation of R307-315 and R307-316 are targeted at the reduction of NO_x emissions, the reductions associated with these rules will not count towards RFP requirements for this SIP revision but are anticipated to be creditable for future SIP reductions.

7.5.3 US Magnesium LLC

The UDAQ also examined major industrial point sources that contribute to the degradation of the NWF NAA's airshed but are located outside of the existing boundary. This examination identified one source that met this criteria, US Magnesium LLC, located in Tooele County on the southwestern edge of the Great Salt Lake. This facility produces significant amounts of highly reactive precursor emissions that contribute to both ozone and $PM_{2.5}$ formation along the Wasatch Front.

US Magnesium LLC is the largest producer of primary magnesium in the US and operates the Rowley Plant production facility on the western edge of the Great Salt Lake in Tooele County near the NAA boundary. Here, water from the Great Salt Lake is evaporated to produce a brine solution that is then purified and dried before going through a melt reactor and electrolytic process which separates magnesium metal from chlorine. Byproducts of this industrial process include VOCs and NO_x, as well as chlorine which is converted into hydrochloric acid. All of these byproducts contribute to ozone and secondary particulate matter formation in the NWF NAA. In 2021, US Magnesium's permitted potential to emit was 894 tpy of VOCs, 1,261 tpy of NO_x and 8,522 tpy of Hazardous Air Pollutants (HAPs). These emissions make US Magnesium's Rowley plant one of the largest point sources of VOCs and NO_x in the greater Wasatch Front and the largest point source of HAPs in Utah.

As a result of the magnitude of emissions and proximity to the NWF NAA boundary, UDAQ required US Magnesium to perform a RACT analysis for VOC and NO_x emissions. As described in detail in section 4.15, the RACT analysis submitted by US Magnesium identified that the installation of a steam stripper and regenerative thermal oxidizer on the wastewater ponds at the boron plant would be feasible. Once installed, this control will result in the reduction of 0.44 tpd (161.7 tpy) of VOC. However, since the source is located outside of the current NAA (see section 1.4.2), and the timeline for the installation of these controls are beyond what is statutorily required, these emission reductions are not creditable towards RFP requirements but will be included as a contingency measure as discussed in section 11.2.2.

[~~7.5.4 Chevron Products Company Salt Lake Refinery~~

~~As described in section 4.16, a RACT analysis submitted by Chevron Products Company Salt Lake Refinery identified that the installation of ultra-low NO_x burners on crude heaters F21001 and F21002 is technologically feasible. As a result, these controls will be required to be installed contingent upon date of next plant shutdown[by May 1, 2026], in order for the NAA to demonstrate attainment of the standard as expeditiously as practicable. The installation of these two controls will result in a combined emission reduction of approximately 0.024 tpd (8.9 tpy) of NO_x. Since the timeline for the installation of these controls are beyond the implementation timeline required for this SIP revision, and the controls will result in the reduction of NO_x emissions and not VOC emissions, these emission reductions are not creditable towards RFP requirements but are anticipated to be accounted for in subsequent SIP revisions.~~]

7.5.[~~5~~]4 Tesoro Refining & Marketing Company LLC Marathon Refinery

As described in section 4.12, a RACT analysis submitted by Tesoro Refining & Marketing Company LLC Marathon Refinery identified that the installation of selective catalytic reduction for

reducing NO_x emissions from the cogeneration turbines with heat recovery steam generation CG1 and CG2 would be technologically feasible. As a result, these controls will be required to be installed by October 1, 2028[~~ by May 1, 2026~~], in order for the NAA to demonstrate attainment of the standard as expeditiously as practicable. The installation of these controls will result in an emission reduction of approximately 0.18 [~~0.23~~] tpd (68.78[~~87.53~~]tpy) of NO_x once installed. Since the timeline for the installation of these controls is beyond the implementation timeline for this SIP revision, and the controls will result in the reduction of NO_x emissions and not VOC emissions, these emission reductions are not creditable towards RFP requirements but are anticipated to be accounted for in subsequent SIP revisions.

In addition to the NO_x reductions associated with controls on CG1 and CG2, Tesoro Refining & Marketing Company LLC Marathon Refinery will be required to install a secondary seal on Tank 321 and replace the wastewater system API Separator and DAF unit with a closed vent to a carbon adsorption control system. These controls, once installed, will result in reductions of VOC emissions by 0.006 tpd (2.30 tpy) and 0.027 tpd (10.0 tpy) respectively. Thus, the combined VOC reductions associated with these controls is expected to be .033 tpd (12.3 tpy).

7.5.[~~6~~]5 Lawn and Garden Small Non-Road Engines

As noted in section 5.3, the UDAQ has identified emission reduction policies aimed at reducing VOCs and NO_x emissions from small non-road engines used in lawn and garden operations as being reasonable. While there are some substantial limitations on the state in how emissions from these sources can be regulated due to CAA Section 209 preemption, the implementation of in-use restrictions for this class of equipment on ozone exceedance days, colloquially known as “mandatory action days,” complies with Section 209 preemption while simultaneously allowing for significant VOC emission reductions on days in which reductions are the most critical. The state has identified that the implementation of a rule based on these criteria could net a VOC emission reduction of approximately 2.84 tpd throughout the NWF NAA, which would account for a significant portion of the state’s remaining RFP requirement. It is the intent of the UDAQ to introduce an administrative rule during subsequent ozone state implementation planning efforts that aligns with reducing emissions from these sources through mandatory action days restrictions.

Chapter 8 - Attainment Demonstration and Weight of Evidence

8.1 Background

CAA Section 182(b)(1)(I) requires SIP revisions for moderate ozone NAAs to contain an attainment demonstration, with the ozone implementation rule[118] further specifying that an approvable demonstration rely on a photochemical model, or another equivalent analytical method determined to be at least as effective as that required for a serious NAA. For this SIP revision, the UDAQ has developed a photochemical model following EPA guidance, with supplemental analyses to perform the attainment demonstration modeling. In the previous sections of this SIP revision, ozone concentrations have been reported using the unit ppm to be consistent with CAA and CFR (Code of Federal Regulations) language. In this all subsequent sections (sections 8 – 12), the UDAQ will be reporting ozone concentrations in the unit of parts per billion (ppb), in order to be consistent with literature and EPA technical guidance.

The photochemical model developed for this SIP serves as a useful tool for projecting future ozone concentrations, determining source regions that contribute to local ozone levels, and estimating the impacts of emission source categories. This model also represents a significant step forward in understanding the transport and formation of ozone throughout the NWF and the broader state of Utah. Though the predictive ability of this model is scientifically sound and meets established performance criteria, all models have inherent limitations since they are a simplified approximation of complex real-world systems. Therefore, results presented from this modeling analysis should not be considered the sole source of information relied upon when determining if a region will attain the 2015 ozone standard by the attainment date.

EPA's modeling guidance[119] overviews supplemental analyses, termed "weight of evidence" (WOE), that can be used to further support an attainment determination if the maximum MDA8 ozone DV is close to the 70-ppb (0.070 ppm) standard at one or more monitoring sites. A WOE analysis is "a totality of the circumstances approach, one that considers all available data to evaluate the reasonableness of the modeled result which supplements those results."[120] EPA's modeling guidance outlines the basic types of analysis that could be included a part of a WOE analysis including:

- Additional modeling analyses,
- Analysis of trends in ambient air quality and/or emissions, and
- Additional unaccounted emission controls or reactions

The results of the UDAQ's photochemical modeling and WOE are presented in section 8.2.

8.2 Photochemical Modeling Platform

The UDAQ conducted an air quality modeling analysis in support of the NWF NAA attainment demonstration. Modeling was performed following EPA's modeling guidance[121]. This modeling platform

[118] 83 FR 62998

[119] Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze: https://www.epa.gov/sites/default/files/2020-10/documents/o3-pm-rh-modeling_guidance-2018.pdf

[120] Environmental Defense Fund v. Unites States EPA, 369 F.3d 193, 198 (2d Cir. 204).

121 Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze: https://www.epa.gov/sites/default/files/2020-10/documents/o3-pm-rh-modeling_guidance-2018.pdf

includes emissions modeling, meteorological modeling, and photochemical modeling. Photochemical modeling was conducted using the CAMxv7.1 model. Emissions inventories were collected and processed through the Sparse Matrix Operating Kernel Emissions Model (SMOKE) version 4.8.1. With the exception of lightning NO_x and oceanic emissions, modeling was based on scripts and data from EPA's 2016v2 modeling platform.[122] Sea salt and lightning NO_x emissions were calculated in CAMx by running the corresponding CAMx tools (oceanic_v4.2 and lnox_v1.1, respectively). Meteorological fields for input into CAMx were produced using the Weather Research and Forecasting (WRFv4.2) model. A detailed description of each of these models, their configuration, settings, and performance are provided in their respective TSDs.[123]

For this attainment demonstration, the period of June 15 - August 1, 2017, was selected as the modeling episode, where June 15 - 25 corresponds to spin-up days. 2017 was also selected as the base year for modeling and 2023 was selected as the future year with local emissions projected from the 2017 inventory as described in section 3. The modeling domain consisted of three nested grid domains at 12/4/1.33 km. The 12 km domain covers the Western United States and is aligned with EPA's 12US1 domain, with the north-south extent of this domain matching the EPA's domain. The 4 km domain is nested within the 12 km domain and covers the state of Utah as well as parts of neighboring states. The 1.33 km domain is nested within the 12/4 km domains and extends over the northern Wasatch Front non-attainment area to provide higher resolution modeling within this area. The 12/4/1.33 km nested grid modeling domain configuration is shown in Figure 7.

122 EPA 2016v2 Emissions Modeling Platform TSD https://www.epa.gov/system/files/documents/2021-09/2016v2_emismod_tsd_september2021.pdf

123 SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf & Meteorological Modeling for Wasatch Front O3 SIP Technical Support Documentation and Model Performance Evaluation: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001605.pdf

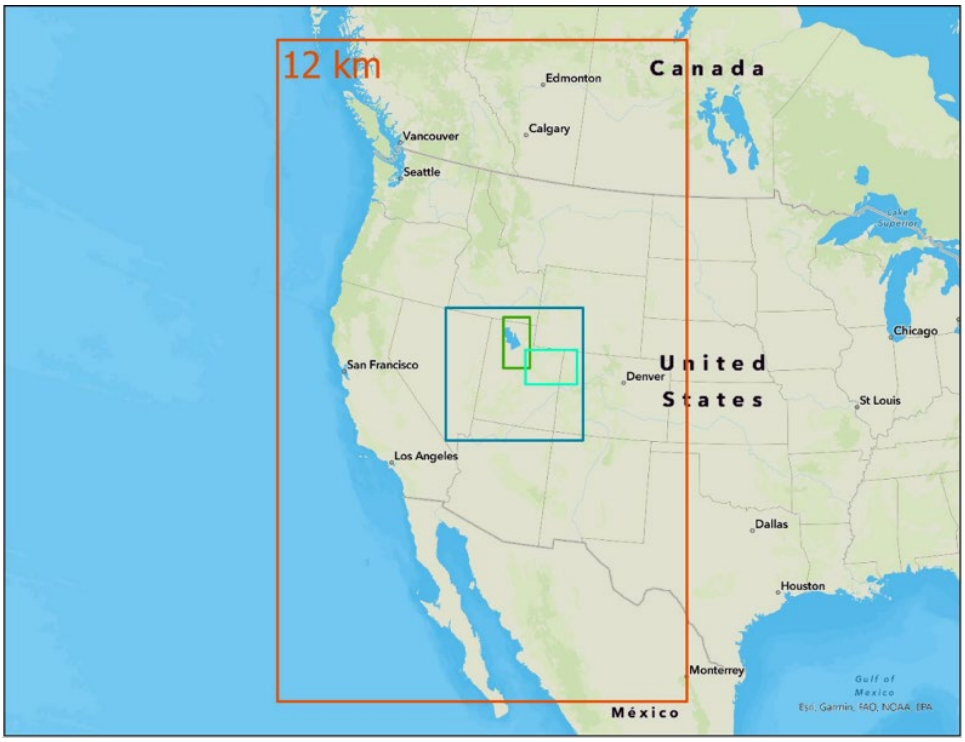

Figure 7: 12/4/1.33 km CAMx Modeling Domains

Time- and space-variable initial and boundary conditions (ICs and BCs, respectively) for the outermost domain (i.e., 12 km domain) were derived from GEOS-Chem global chemistry model outputs for 2017, with the modeling performed by Ramboll under contract with WESTAR.[124] Following EPA guidance, the same GEOS-Chem-derived ICs and BCs for the 2017 base case were used for the 2023 future case. BCs and ICs for the 4 km domain, which was run in a two-way nested configuration with the 1.33 km domain, were extracted from the 3-D CAMx output concentration files for the 12 km domain. Concentrations were extracted along the lateral boundaries of the 4 km domain.

CB6r5h (version 6, revision 5 with halogens) gas-phase chemical mechanism, which includes halogens chemistry, was used for all simulations. At the request of the UDAQ, this mechanism was specifically developed and implemented by Ramboll, developer of CAMx, in a special version of CAMx v7.1 as a replacement for CB6r5 (version 6, revision 5). CB6r5h was developed to account for interactions between inorganic halogen species, ozone, VOCs, and NO_x, where reactions involving chlorine (Cl) and bromine (Br) were added to CB6r5. Halogens emissions are significant in the valley and play a significant role in PM and ozone formation in the NWF. An aircraft monitoring campaign conducted by the National Oceanic and Atmospheric Administration (NOAA) in winter 2017 indicated that US Magnesium, an industrial plant located on the southwest edge of the Great Salt Lake, emits large quantities of HCl and dihalogens (Cl_2, Br_2, BrCl), with the facility being the single largest halogen emission source in the US.[125] Using a photochemical box model and a 3D chemical transport model, the investigators also showed that, while these halogens induce ozone depletion near the plant, they lead to

124 [1] https://views.cira.colostate.edu/docs/IWDW/Modeling/WRAP/2017/Ramboll_WESTAR_GEOS-Chem_Report_8Apr_2021.pdf

125 C. C. Womack, W. S. Chace, S. Wang, M. Baasandorj, D. L. Fibiger, A. Franchin, L. Goldberger, C. Harkins, . S. Jo, B. H. Lee, J. C. Lin, B. C. McDonald, E. E. McDuffie, A. M. Middlebrook, A. Moravek, J. G. Murphy, J. A. Neuman, J. A. Thornton, P. R. Veres, S. Brown. Midlatitude Ozone Depletion and Air Quality Impacts from Industrial Halogen Emissions in the Great Salt Lake Basin. Environ. Sci. Technol. 2023, 57, 5, 1870–1881.

significant increases in the formation of particulate ammonium nitrate, $PM_{2.5}$, ozone, and other oxidants in populated regions of the Salt Lake Valley located downwind of the plant. Regional $PM_{2.5}$ increases of 10%-25% were attributed to this single industrial halogen source. Given that the chemical cycles leading to ozone and ammonium nitrate are linked[126] implementing CB6r5h in our summertime ozone modeling is increasingly important.

8.2.1 Model Performance Evaluation (MPE)

Model performance was evaluated by comparing the 2017 modeled ozone concentrations to measured concentrations of ozone and ozone precursors, including NO_x, NO_2 and VOCs. The evaluation was focused on results for the 1.33 km modeling domain and results for spin-up days are excluded from this analysis. Results showed that the CAMx model performs well at simulating ozone at all sites within the NWF NAA. While the model generally underestimates MDA8 ozone concentrations at the local monitors, site-specific performance statistics are within established performance criteria. For all days of the modeling episode, modeled MDA8 ozone concentrations are within established performance criteria for Normalized Mean Bias (NMB), Normalized Mean Error (NME) and correlation coefficient (R). NMB values for all sites are within the performance criteria of ±15% (Table 66). Similarly, NME and R values for all sites are within their respective performance criteria of < 25% and > 0.5 (Table 67). These performance statistics suggest that the model performs well at simulating MDA8 ozone concentrations. On days with elevated ozone (observed MDA8 > 60 ppb), model performance was overall acceptable with NME values falling within their performance thresholds at all sites (< 25%) and NMB performance threshold being slightly exceeded at one of the sampling sites (NMB of -15.86%) (Table 67). At some sites, the correlation coefficient R displayed some values below 0.5, which is likely related to the model switching from an underprediction to an overestimation of MDA8 ozone on a few days (< 8% of high ozone modeling days), which impacted the modeled ozone temporal trend. These days were characterized by a variable cloud cover, which WRF did not simulate completely. More details on this are provided in the CAMx MPE TSD.

Table 66: Performance statistics for MDA8 ozone on all days of the modeling episode. Results are shown for monitors in the 1.33 km modeling domain.

AQS Site ID	Site Name	NMB (%)	NME (%)	R
49-011-0004	Bountiful	-11.36	13.32	0.735
49-035-3006	Hawthorne	-9.75	12.48	0.653
49-035-3013	Herriman	-13.73	14.46	0.61
49-045-0004	Erda	-14.66	16.04	0.663
49-057-0002	Ogden	-10.51	12.8	0.652
49-057-1003	Harrisville	-14.12	14.56	0.763

[126] C.C. Womack, E.E. McDuffie, P.M. Edwards, R. Bares, J.A. de Gouw, K.S. Docherty, W.P. Dubé, D.L. Fibiger, A. Franchin, J.B. Gilman, L. Goldberger, B.H. Lee, J.C. Lin, R. Long, A.M. Middlebrook, D.B. Millet, A. Moravek, J.G. Murphy, P.K. Quinn, T.P. Riedel, J.M. Roberts, J.A. Thornton, L.C. Valin, P.R. Veres, A.R. Whitehill, R.J. Wild, C. Warneke, B. Yuan, M. Baasandorj, S.S. Brown, An Odd Oxygen Framework for Wintertime Ammonium Nitrate Aerosol Pollution in Urban Areas: NO x and VOC Control as Mitigation Strategies. Geophys. Res. Lett., 46, 4971-4979 (2019).

Table 67: Performance statistics for MDA8 ozone on high O3 days (observed MDA8 > 60 ppb). Results are shown for monitors in the 1.33 km modeling domain.

AQS Site ID	Site Name	NMB (%)	NME (%)	R
49-011-0004	Bountiful	-11.49	13.22	0.56
49-035-3006	Hawthorne	-9.12	12.22	0.276
49-035-3013	Herriman	-13.86	13.9	0.294
49-045-0004	Erda	-15.86	16.78	0.565
49-057-0002	Ogden	-10.16	12.46	0.318
49-057-1003	Harrisville	-14.02	14.57	0.586

Moreover, the model generally captures well the temporal variability of MDA8 ozone concentrations, with the timing of peak and low ozone values being well represented (Figure 8 to Figure 13). The underestimation in modeled MDA8 ozone concentrations is likely primarily related to an underestimation in local emissions, rather than background emissions. Background ozone is well-replicated as indicated by the overall good agreement between modeled and observed MDA8 ozone concentrations at Gothic Colorado, a high-altitude (10,000 ft) monitoring site in the Colorado Rockies that serves as a good indicator of mid-tropospheric air (Figure 14).

Overall, the model exhibited a level of agreement with measurements that has typically been achieved for US regulatory modeling for this region.[127] These results provide confidence in the ability of the modeling platform to provide a reasonable projection of future year ozone concentrations and source contributions in the NWF NAA.

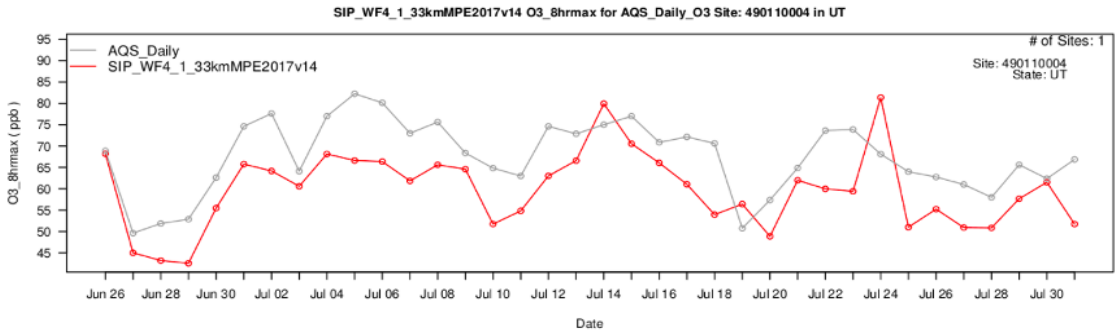

Figure 8: Time series of observed (grey line) and modeled (red line) maximum daily 8-hr average ozone concentration (O3_8hrmax) at the Bountiful monitoring station.

127 https://www.epa.gov/system/files/documents/2022-03/aq-modeling-tsd_proposed-fip.pdf & Denver Metro/North Front Range 2017 8-Hour Ozone State Implementation Plan: 2011 Base Case Modeling and Model Performance Evaluation. https://views.cira.colostate.edu/wiki/Attachments/Source%20Apportionment/Denver/Denver_2017SIP_MPE_Finalv1.pdf

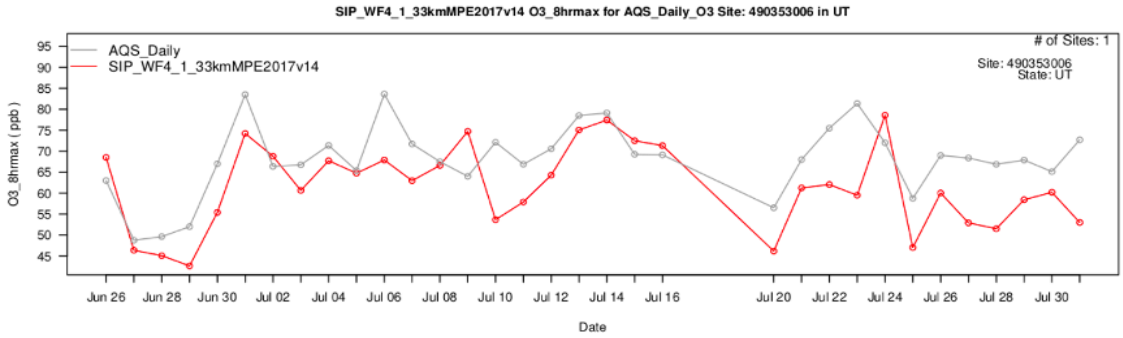

Figure 9: Time series of observed (grey line) and modeled (red line) maximum daily 8-hr average ozone concentration (O3_8hrmax) at the Hawthorne monitoring station.

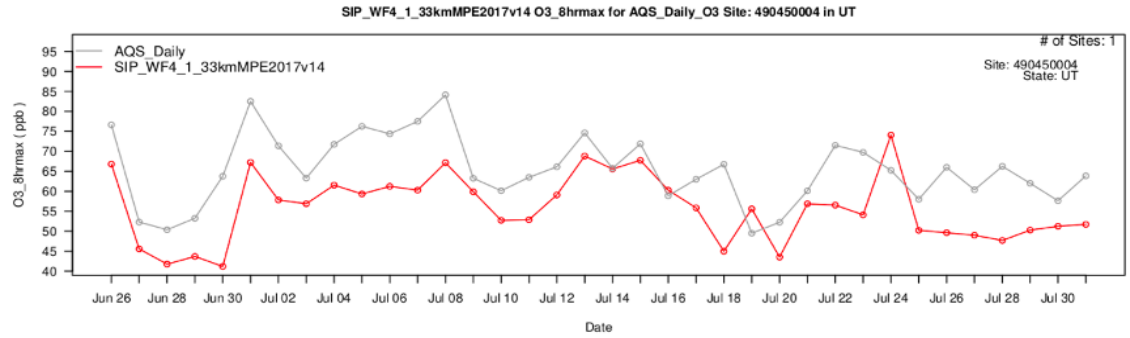

Figure 10: Time series of observed (grey line) and modeled (red line) maximum daily 8-hr average ozone concentration (O3_8hrmax) at the Erda monitoring station.

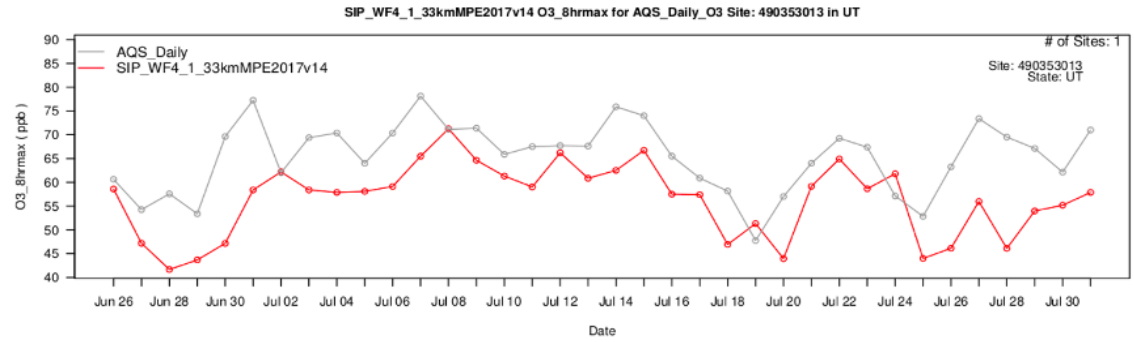

Figure 11: Time series of observed (grey line) and modeled (red line) maximum daily 8-hr average ozone concentration (O3_8hrmax) at the Herriman monitoring station.

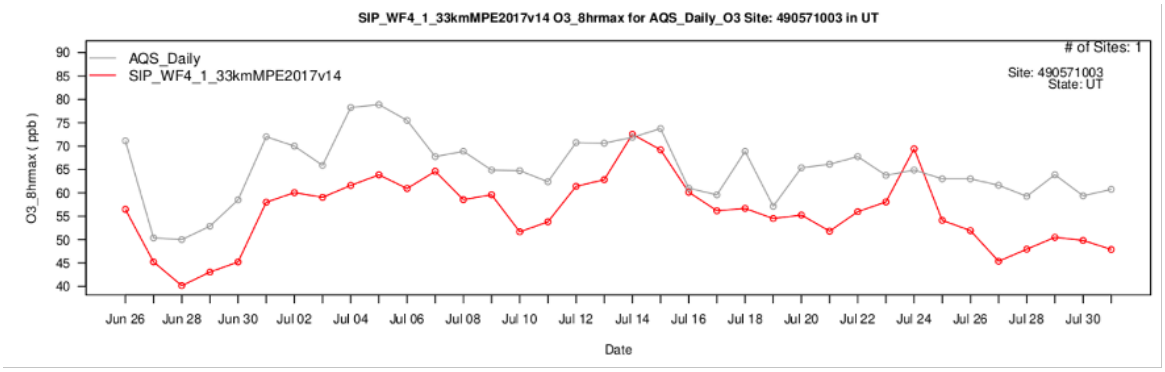

Figure 12: Time series of observed (grey line) and modeled (red line) maximum daily 8-hr average ozone concentration (O3_8hrmax) at the Harrisville monitoring station.

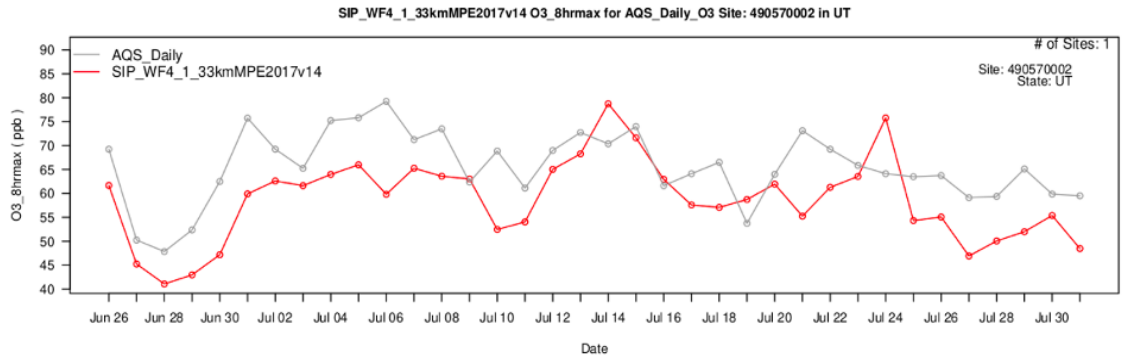

Figure 13: Time series of observed (grey line) and modeled (red line) maximum daily 8-hr average ozone concentration (O3_8hrmax) at the Ogden monitoring station.

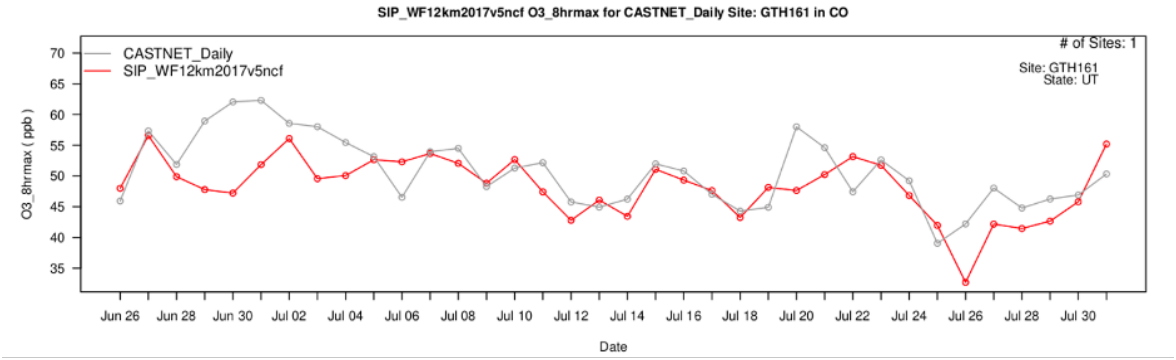

Figure 14: Time series of observed (grey line) and modeled (red line) maximum daily 8-hr average ozone concentration (O3_8hrmax) at Gothic Colorado monitoring station.

8.2.2 Determination of Future Year (2023) Design Values

The ozone predictions from the CAMx model simulations were used to project ambient ozone DVs for the year 2023 following EPA's ozone modeling guidance for SIP demonstrations[128]. Five-year weighted average DVs centered on the base modeling year of 2017 were first calculated by averaging ambient 8-hour ozone DVs for 2015-2017, 2016-2018, and 2017- 2019. The 5-year weighted average

[128] https://www.epa.gov/sites/default/files/2020-10/documents/o3-pm-rh-modeling_guidance-2018.pdf

DVs at each site were then projected to 2023 using the Software for Model Attainment Test Software – Community Edition (SMAT-CE version 1.6).[129] This program predicts future year ozone DVs (FDV_i) for each monitoring site within the NWF NAA by calculating site-specific relative response factors (RRF_i) and scaling the 5-year weighted average base year ozone DV (BDV_i) at each site (i) using its corresponding RRF_i.

Equation 2

$$\boldsymbol{FDV_i = RRF_i \times BDV_i}$$

The RRF_i for each monitoring site corresponds to the fractional change in MDA8 ozone between the base and future year. It is based on the average ozone on model-predicted "high" ozone days in a 3x3 grid cell array centered on the grid cell containing the monitor. Following EPA modeling guidance, RRFs were calculated based on the highest 10 modeled ozone days in the base year simulation at each monitoring site. Specifically, the RRF for an individual monitoring site is the ratio of the average MDA8 ozone concentration in the future year to the average MDA8 concentration in the 2017 base year. The average values are calculated using MDA8 model predictions in the future year and in 2017 for the 10 highest days in the 2017 base year modeling. High ozone days correspond to days when modeled ozone MD8A concentration exceeds, or is or equal, to 60 ppb. For cases in which the base year model simulation does not include 10 days with MDA8 ozone values >= 60 ppb at a site, all days with ozone >= 60 ppb are used in the calculation, as long as there were at least 5 days that meet this criterion. At monitor locations with less than 5 days with modeled 2017 base year ozone >= 60 ppb, no RRF or FDV is calculated for the site and the monitor in question is not included in the analysis. A detailed description of SMAT configuration is provided in the SMAT TSD.[130]

Following this approach, FDVs and RRFs were calculated for each monitoring site within the NWF NAA, where FDV for Bountiful, Hawthorne and Herriman were based on an adjusted BDV (Table 68). BDV for Bountiful, Hawthorne and Herriman, which correspond to the three highest monitors in the NAA, were adjusted to reflect DVs after exclusion of wildfire smoke-impacted ozone exceedance values. In a separate technical document ("Analysis in Support of Exceptional Event Flagging and Exclusion from Modeling for the Weight of Evidence Analysis"), the UDAQ determined that ozone concentrations exceeding the 2015 ozone NAAQS on August 4, 2016, and September 2, 5 and 6 2017 qualify as wildfire smoke-impacted ozone exceedances. These events were excluded from the 2017 BDV calculations for Hawthorne, Bountiful and Herriman. Excluding these events results in a decrease of 1.7 - 2.0 ppb in the BDV and 2.0 ppb in the FDV for these sites (Table 68). Note that consistent with the truncation and rounding procedures for the 8-hour ozone NAAQS, the projected DVs are truncated to the first decimal place in units of ppb.

[129] https://www.epa.gov/scram/photochemical-modeling-tools & UDAQ Ozone SIP SMAT-CE Configuration Utah Division of Air Quality TSD: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001838.pdf

[130] UDAQ Ozone SIP SMAT-CE Configuration Utah Division of Air Quality: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001838.pdf

Table 68: Baseline design values (BDV), relative response factors (RRF), future design values (FDV) at Bountiful, Hawthorne and Herriman monitoring locations. DVs before and after exclusion of days impacted by wildfire smoke are shown. indicates DV after removal of wildfire smoke-impacted ozone exceedance values.*

			Flagged Data Not Excluded 3x3 grid-cell array Max Paired in Space				Flagged Data Excluded 3x3 grid-cell array Max Paired in Space			
Site	**Site ID**	**County**	**BDV**	**RRF**	**FDV**	**Final FDV**	**BDV**	**RRF**	**FDV**	**Final FDV**
Bountiful	490110004	Davis	76.7	0.9593	73.5	73	75*	0.9593	71.9*	71
Hawthorne	490353006	Salt Lake	76.7	0.9698	74.3	74	75*	0.9698	72.7*	72
Herriman	490353013	Salt Lake	76	0.9686	73.6	73	75[~~74~~]*	0.9686	[~~71.7~~]72.6*	72[~~71~~]
Erda	490450004	Tooele	73	0.9673	70.6	70	73	0.9673	70.6	70
Harrisville	490571003	Weber	72.7	0.9676	70.3	70	72.7	0.9676	70.3	70

8.2.3 Model Attainment Test

Table 69 summarizes the finalized BDV, FDV and RRF at each monitoring site within the NWF NAA, where the BDV for Bountiful, Hawthorne and Herriman, are adjusted to reflect BDV after removal of ozone exceedance values impacted by wildfire smoke. Only sites that had an ozone monitor operating in the 5-year period (2015-2019) were used to calculate the 5-year weighted average ambient BDV and are currently still part of UDAQ air monitoring network were included in this analysis.

Results show that the FDV are projected to reach between 70 - 72 ppb by the attainment date across all sites in the non-attainment area, with the Hawthorne monitoring site projected to be the controlling monitor at 72 ppb. It is important to note the way in which ozone DVs are truncated to the lowest whole number when being calculated, a FDV of 70.9 ppb is needed to demonstrate attainment. Therefore, considering the range of projected FDV, monitoring sites that show nonattainment are all demonstrating FDV very near attaining the standard.

Table 69: Baseline design values (BDV), relative response factors (RRF), future design values (FDV) at monitors within the northern Wasatch Front ozone non-attainment area.

			3x3 grid-cell array Max Paired in Space			
Site	**Site ID**	**County**	**BDV**	**RRF**	**FDV**	**Final FDV**
Bountiful	490110004	Davis	75	0.9593	71.9	71
Hawthorne	490353006	Salt Lake	75	0.9698	72.7	72
Herriman	490353013	Salt Lake	[~~74~~]75	0.9686	[~~71.7~~] 72.6	[~~71~~]72
Erda	490450004	Tooele	73	0.9673	70.6	70
Harrisville	490571003	Weber	72.7	0.9676	70.3	70

8.3 Weight of Evidence (WOE)

8.3.1 Overview

While the modeled attainment demonstration described in section 8.1 (Table 69) indicates that the MDA8 at the Hawthorne monitor will reduce to 72 ppb by the attainment date, slightly above the 70.9 ppb required to demonstrate attainment, the UDAQ has implemented substantial additional efforts to combat summertime ozone not accounted for during this modeling effort should be taken into consideration when determining if the area is demonstrating attainment. In this section, as part of a WOE approach[131], the UDAQ will present an overview of additional efforts and analysis to provide further insights into to be considered when determining if the area is demonstrating attainment.

8.3.2 Uncertainties in Modeling and Inventory

While the photochemical modeling results presented in section 8.1 meet EPA performance metrics and represent a significant improvement in past efforts to model ozone in the NWF, there are uncertainties in any modeling effort that may result in an overestimation in future predicted ozone concentrations.

These uncertainties can result from a wide array of parameters involved in complex modeling efforts, including the process of compiling the emission inventories modeling efforts rely on. For instance, the mobile on-road sector of the inventory is estimated using models developed by the EPA that have many versions EPA released over the years. Estimations of NO_x have differed significantly as one model replaced the next, and changes in the vehicle fleets over time such as the electrification of the mobile sector may be underrepresented (see section 8.3.4). Further, since SIPs are legally binding documents and will be enforced in the event certain conditions are not met, emission reductions associated with past SIP efforts have included conservative estimates of total reductions. Therefore, emission reductions accounted for in inventories may underrepresent the full extent of real-world reductions.

Additionally, for the development of the attainment demonstration included in this SIP revision, the UDAQ relied on VOC emissions estimates within the solvent sector from an EPA supplied product. This product, VCPy, has substantial benefits over past methods used in the quantification of emissions within this category. However, some uncertainties remain in the emission estimates produced by VCPy that could result in overestimations of VOC emissions within the NWF NAA. For instance, as described in section 3.2.2, this SIP revision sourced its VOC emissions for the solvents sector from EPA's 2016v2 platform. EPA has subsequently released an updated version (2016v3) of this platform[132] in which EPA revised its estimated for Utah statewide VOC emissions as adjusted to account for "indoor usage assumptions" as well as "control assumptions". These updates resulted in a statewide decrease of estimated VOC emissions by 1,699 tpy. As these emissions are generally allocated in modeling based on population metrics, and the NWF represents a significant proportion of Utah's population, it stands to reason that the majority of the decrease in VOC emission from 2016v2 to 2016v3 would be observed in the NWF NAA.

[131] Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze

[132] Technical Support Document (TSD): Preparation of Emissions Inventories for the 2016v3 North American Emissions Modeling Platform. U.S. EPA. January 2023

8.3.3 Background, Interstate, and International Transport

8.3.3.1 Background Ozone

The EPA identifies "background" ozone in the United States (USB) as ozone formed from sources or processes other than anthropogenic emissions of NO_x, VOCs, methane (CH_4) and CO originating from within the United States.[133] This definition does not include intra or inter-state transport of ozone impacting downwind areas, which are covered by other sections of the CAA including section 110(a)(2)(D). NAAs in the Intermountain West face significant and regionally specific challenges meeting ozone standards especially as it relates to the amount of USB present.[134] The region faces further challenges due to the increasing instances of wildfire,[135] significant regional and local biogenic contributions,[136] as well as the influence of internationally transported pollutants,[137] all of which contributing to a large proportion of ozone on any given day. These challenges are highlighted in multiple analysis identifying significantly elevated USB ozone concentrations throughout the region when compared to the eastern United States.[138]

The substantial contribution of USB ozone impacting Utah's total ozone concentrations and can be seen at the remote sites located throughout the state, such as the monitoring sites located in Escalante National Monument, or Bryce and Canyonlands National Parks. These sites are typically free of impacts from localized anthropogenic emissions, and they regularly report 8-hour summertime ozone concentrations above 0.050 ppm. Source apportionment modeling performed by the UDAQ (see section 9.2 for details) further found USB ozone concentrations (including interstate anthropogenic emissions) along the Wasatch Front account for up to 85.5% of the ozone comprising the [~~mean~~]daily 8-hour concentrations observed at the Hawthorne site (Figure 15 and Figure 16), with the remaining 14.5% attributable to Utah anthropogenic emissions.

[133] Implementation of the 2015 Primary Ozone NAAQS: Issues Associated with Background Ozone". USEPA, December 2015

[134] Scientific Assessment of background ozone over the U.S.: Implications for air quality management

[135] Buchholz, R.R., Park, M., Worden, H.M. et al. New seasonal pattern of pollution emerges from changing North American wildfires. Nature Communications 13, 2043 (2022). https://doi.org/10.1038/s41467-022-29623-8

[136] EPA Webinar; Description and preliminary evaluation of BELD 6 and BEIS 4. ORD. Jesse O. Bash and Jeff Vukovich

[137] Entrainment of stratospheric air and Asian pollution by the convective boundary layer in the southwestern U.S.; Langford, A.O. et al. (2017), J. Geophysics. Res. Atmos., 122, 1312-1337, doi:10.1002/2016JD025987

[138] Entrainment of stratospheric air and Asian pollution by the convective boundary layer in the southwestern U.S.; Langford, A.O. et al. (2017), J. Geophysics. Res. Atmos., 122, 1312-1337, doi:10.1002/2016JD025987 & Implementation of the 2015 Primary Ozone NAAQS: Issues Associated with Background Ozone; USEPA, December 2015

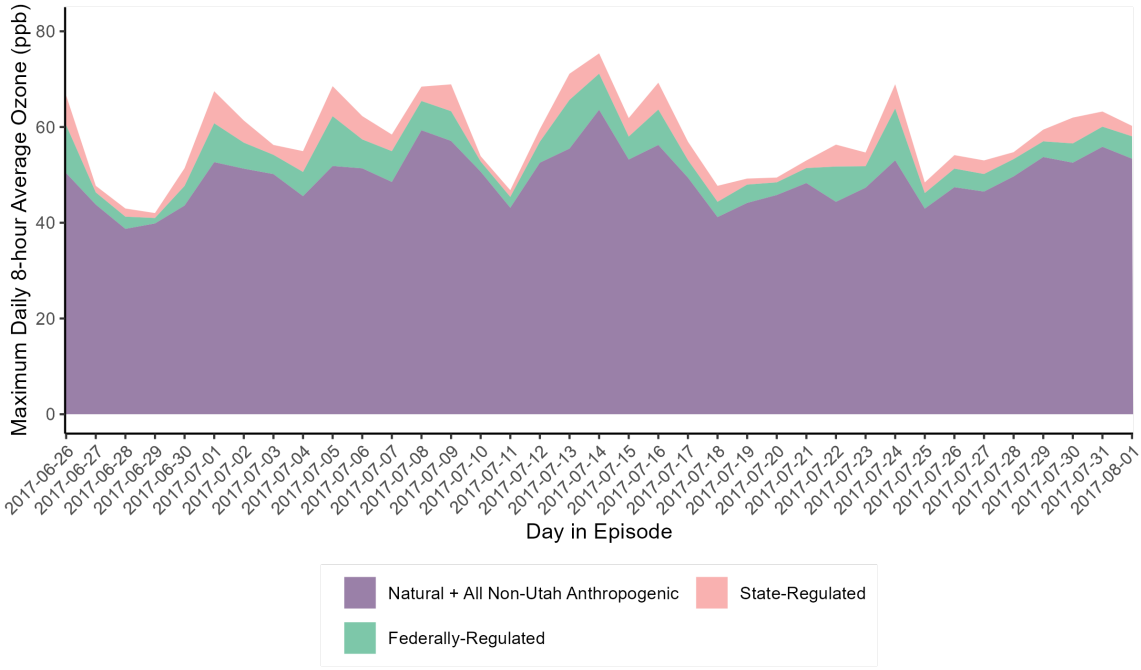

Figure 15: Ozone Attributed to Domain-Wide Sources at Hawthorne as simulated 8-hour [~~mean~~]daily ozone concentrations along the Wasatch Front.

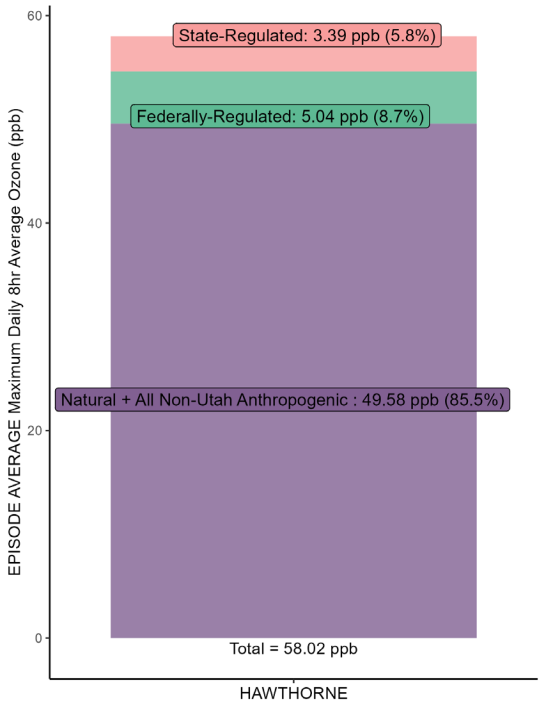

Figure 16: Episode average of simulated 8-hour [~~mean~~]daily ozone concentrations at Hawthorne along the Wasatch Front.

8.3.3.2 Interstate Transport

In 2022, as part of its ongoing efforts to model nationwide ozone and transport of precursor emissions, the EPA released results from its updated North American Emission Modeling Platform 2016v2. This analysis identified the contributions from multiple upwind states for the modeled year of 2023 to ozone concentrations along the NWF NAA (Table 70).[139] The states impacting the NWF NAA include California, Nevada, Arizona, Idaho, Oregon, and Washington. The combined contributions to counties in the NWF from these upwind states result in impacts ranging from 4.0 ppb to 4.91 ppb. Given that the attainment demonstration described in section 8.2 identified the FDV of 72 ppb for Salt Lake, and 71 ppb for Davis counties, the combined upwind contribution from western states accounts for 6 - 7% of the total predicted ozone concentrations in the NWF NAA.

Table 70: 2023 contributions from upwind states to NWF NAA (ppb) as identified by EPA 2016v2 modeling

	Salt Lake	Davis	Weber
California	2.46	2.25	2.24
Nevada	0.89	0.86	0.58
Arizona	0.22	0.22	0.13
Idaho	0.55	0.37	0.57
Oregon	0.58	0.44	0.41
Washington	0.21	0.16	0.13
Total	**4.91**	**4.30**	**4.06**

Section 110(a)(2)(D)(i)(I) of the CAA, known as the "Good Neighbor" provision, requires states with a contribution more than the EPA's determined significance threshold to develop a SIP revision with provisions to address contributions to downwind states. This threshold was set at 1% of the NAAQS, or 0.7 ppb for the 2015 ozone NAAQS. Of the six states listed in Table 70, both California and Nevada were identified by the EPA as contributing to Utah's ability to attain or maintain the NAAQS in a regulatorily significant way (>= 0.7 ppb). On April 4, 2022, the EPA proposed a Federal Implementation Plan (FIP) to address disapprovals or deficiencies in twenty-six states' Good Neighbor SIPs, including those of California and Nevada.[140] The proposed FIP will require emission reductions from an array of industrial activities including fossil fuel-fired power plants, natural gas pipeline transportation, cement production, glass, iron and steel manufacturing, as well as reductions from chemical, petroleum, and paper manufacturing processes. If the proposed FIP becomes final, emission reductions covered under this rule will begin taking effect the summer of 2023, with full implementation of emission reductions by summer 2026. Given that California and Nevada combine to generate upwind contributions of 3.35 ppb of ozone to the NWF NAA, as these proposed controls take effect, they may further aid in the NWF NAA's ability to attain the standard by the attainment date.

[139] Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard, 87 Fed. Reg. 20,036 (April 6, 2022).

[140] *Id.*

8.3.3.3 International Transport

The transport of ozone and its precursor emissions from international sources will be discussed in depth in section 9 of this SIP revision. However, international contributions to ozone along the Wasatch Front, much like interstate contributions described in section 8.3.3.2, plays an important role in the area's observed ozone concentrations and the NWF NAA's ability to meet ozone health-based standards. Thus, it is important to include a discussion of international contributions in a WOE analysis.

In short, emissions from international sources have long been shown to impact ozone concentrations throughout the Intermountain West.[141] These studies generally identified international contributions in the range of 3 – 4 ppb, predominantly observed as contributing to USB ozone conditions. International contributions tend to be relatively consistent throughout the spring and summer seasons. The range of international contributions reported in these studies are similar in scale to those seen from upwind states impacting the NWF NAA as described in section 8.3.3.2 and shown in Table 70.

To examine international contributions to the NWF NAA, the UDAQ conducted source apportionment modeling (see section 9.2 for details), in which international contributions were tagged. The results of this exercise (Figure 17 & Figure 18) identified a contribution of 6.2% of ozone along the Wasatch Front attributable to international transport on non-exceedance days, with a similar but slightly higher contribution identified during exceedance days of 6.7%. While the model underestimates absolute ozone concentrations when compared to monitored values, and thus absolute apportioned contributions should be considered with that limitation in mind, the reported concentrations of international contributions range from 3.74 ppb over the episode and average, up to 4.5 ppb on the top 10 modeled exceedance days. This range is well in line with those reported in the literature and is highly similar in scale when compared to inter-state transport contributions.

[141] Langford, A.O., Alvarez, R.J., Brioude, J., Fine, R., Gustin, M.S., Lin, M.Y., Marchbanks, R.D., Pierce, R.B., Sandberg, S.P., Senff, C.J., Weickmann, A.M., Williams, E.J., 2017. Entrainment of stratospheric air and Asian pollution by the convective boundary lauer in the southern U.S. J. Geophysical Res. Atmos., 122, 1312-1337, doi:10.1002/2016JD025987 & Jaffe, D.A., O.R. Cooper, A.M. Fiore, B.H. Henderson, G.S. Tonnesen, A.G. Russell, D.K. Henze, A.O. Langford, M. Lin, T. Moore, 2018. Scientific assessment of background ozone over the U.S.: Implications for air quality management. Elem. Sci. Anth., 6: 56. DOI: https://doi.org/10.1525/elementa.309.

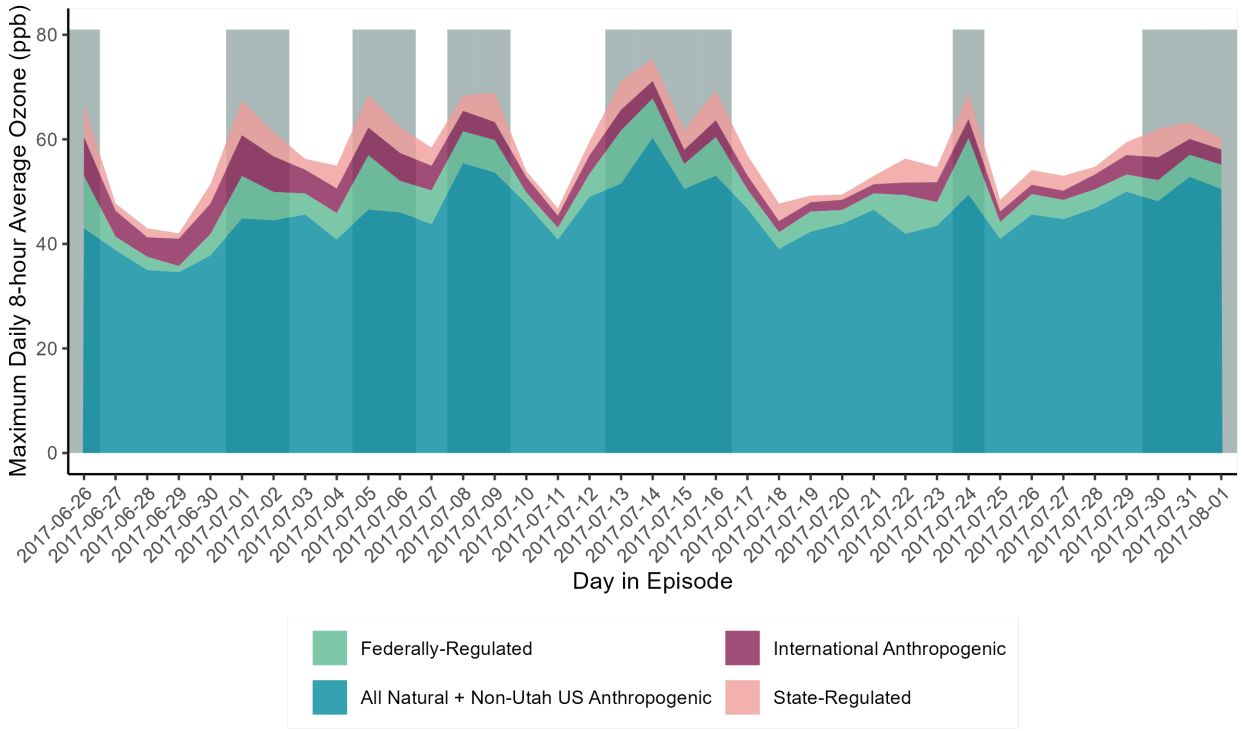

Figure 17: Ozone Attributed to Domain-Wide Sources

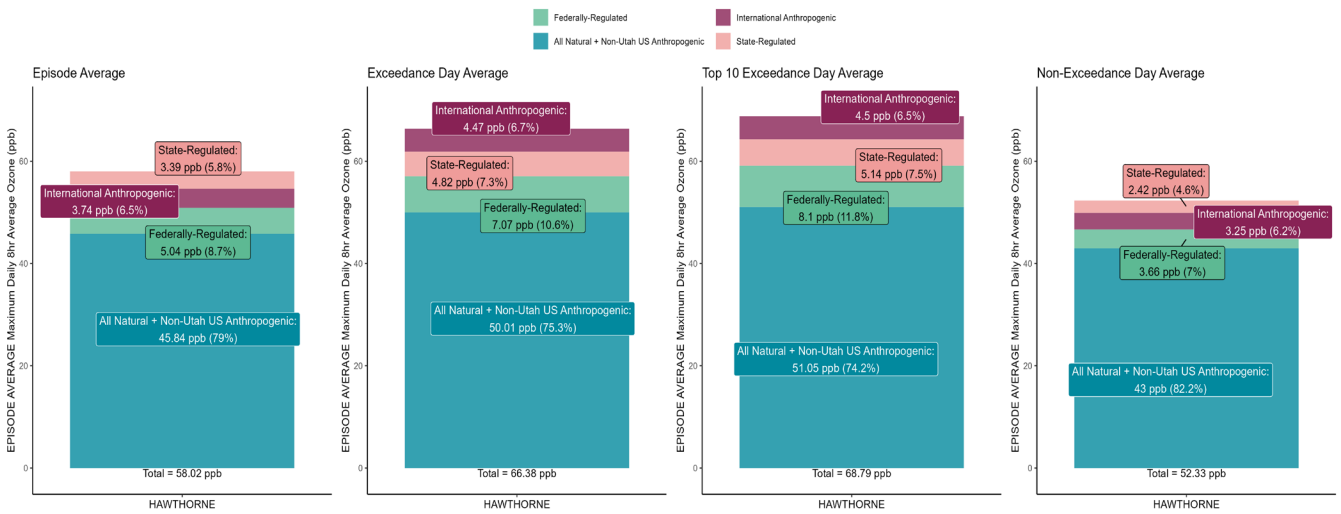

Figure 18: Domain-Wide [~~MDA8~~]OSAT exceedance vs. non-exceedance days

8.3.3.4 Federal vs. State Regulatory Authority

As noted in Utah's comments[142] submitted to EPA on EPA's proposed FIP for interstate transport,[143] "A significant portion of states' total contribution to downwind areas include emissions that states have limited regulatory authority and, in some cases, no regulatory authority at all, including emissions that are federally regulated." These federally regulated emission sources include the mobile sector, an area in which the state has significantly limited authority to regulate due to CAA section 209's preemption. This is particularly relevant for anthropogenic NO_x emissions, which are dominated by the mobile sector. For the NWF NAA, the emissions from federally regulated sources account for 55.96 tpd (64%) of the total NAA NO_x inventory, and 29.8 tpd (33%) of the VOC inventory (section 3).

The discrepancy between regulatory authority can be further seen in Figures 15 – 18, where federally regulated sources account for 59.7% of the ozone attributable to anthropogenic emissions, while emissions under state authority account for the remaining 40.3% of ozone formation. As the state of Utah strives to attain the NAAQS, it is doing so with limited authority to reduce a substantial portion of the emissions contributing to the formation of ozone within the NAA.

8.3.4 Trends in Emissions

Trends in emission reductions along the Wasatch Front are presented in Table 71, providing further evidence that the area is progressing towards attaining the standard by the attainment date. As described in detail in section 3 and section 7 of this SIP revision, the NWF NAA has experienced substantial emission reductions of both anthropogenic VOCs and NO_x during the corresponding years of this implementation timeframe—2017 to 2023. During this time, NO_x emissions decreased by 21.3 tpd and VOC emissions decreased by 3.7 tpd in large part due to improvements in the on-road mobile sector and as a result of past SIP efforts.

Table 71: NO_x and VOC reductions resulting from $PM_{2.5}$ SIPs.

State Implementation Plan	Years	NO_x Reduction (tpd)	VOC Reductions (tpd)
***Salt Lake City Moderate $PM_{2.5}$ SIP (2014)**[144]	2010 - 2015	24.86	27.57
***Salt Lake City Serious $PM_{2.5}$ SIP (2019)**[145]	2016 - 2020	15.75	8.27
Total		40.61	35.84
*** Includes portions of Box Elder County which is not included in NWF ozone NAA**			

As shown in Table 71, past SIP efforts have resulted in significant reductions of NO_x and VOC emissions along the Wasatch Front. Additionally, as described in detail in section 7.3 and section 7.4, the areas have experienced significant decreases in both precursor pollutants as a result of improvements to the mobile on-road sector associated with lower emissions from Tier 3 fuels and engines. Beyond the inventoried reductions, these reductions likely underestimate the full extent of emission reductions in this sector since they fail to capture Utah's high adoption rate of zero emission vehicles (ZEV),

[142] Docket ID No. EPA-HQ-OAR-2021-0668, Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Primary Ozone National Ambient Air Quality Standard. Comments Submitted by Utah Department of Environmental Quality (UDAQ). DAQP-055-22. June 21, 2022

[143] 87 Fed. Reg. 20,0036.

[144] Utah State Implementation Plan Section IX. Part A.21; Control Measures for Area and Point Sources, Fine Particulate Matter, $PM_{2.5}$ SIP for the Salt Lake City, UT NAA

[145] Utah State Implementation Plan Section XI. Part A.31; Control Measures for Area and Point Sources, Fine Particulate Matter, Serious Area $PM_{2.5}$ SIP for the Sal Lake City, UT NAA.

predominantly in the light duty sector. The growth of ZEV and electric-hybrid vehicles has grown 940.3% and 101.6% respectively from 2015 – 2021 in the state of Utah.[146] While the total proportion of ZEV and electric-hybrid vehicles in Utah's fleet was still relatively low, at ~2.4% in 2021[147], given the growth rate of electric vehicle (EV) adoption in the state, and the fact that Utah is ranked fifth in the nation for access to EV charging infrastructure per capita,[148] the percentage of Utah's on-road fleet is likely to continue to shift towards ZEV and low emission vehicles which will further advance emission reductions in this sector.

In addition to the potential underestimation in the electrification of the on-road mobile sector, further market penetration of Tier 3 fuels is expected to continue. In 1970, the EPA set the first light-duty vehicle emission standards. These standards have been updated over time with generations of the standard termed Tier 1, Tier 2, and most recently, Tier 3. The Tier 2 and Tier 3 standards also included sulfur standards for gasoline to help ensure that vehicle emissions control operates optimally. By 2025, NO_x emission standards for light-duty vehicles will represent a 98% improvement from 1975 levels, with sizable improvements for VOCs.

The UDAQ anticipates that the transition from Tier 2 and older vehicles to Tier 3 vehicles will yield dramatic reductions in ozone precursor emissions. While MOVES modeling attempts to capture these emissions reductions, and thus should be represented to some degree in emissions inventories used for this SIP revision, it is important to note that Utah has taken significant additional steps to ensure that the benefit of the Tier 3 vehicle and fuel standards is fully realized throughout the NWF NAA and thus some emission reductions may be underestimated in this modeling demonstration.

Unlike many other metropolitan areas throughout the U.S., the NWF is served by the relatively small number of refineries. Importantly, all but one of these refineries (Sinclair) are considered to be "small volume" under the Tier 3 regulations[149] – i.e., they produce less than 75,000 barrels per day. Because of this, and due to the older age of facilities in the NWF, it may be more cost-effective for operators to comply with Tier 3 regulations by upgrading their larger, or newer, refineries elsewhere and using credits generated at these facilities and the averaging, banking, and trading provisions of the Tier 3 rule to comply in Utah. This compliance structure would result in higher-sulfur gasoline being sold throughout the NWF NAA, which would erode the benefits of Tier 3 fuels.

Although states are restricted from directly establishing new fuel requirements by the Energy Policy Act of 2005, the State of Utah has used a combination of state-led pressure, public awareness initiatives, and incentives in the form of tax credits, to encourage refineries to produce Tier 3 fuel instead of using credits to comply, giving UDAQ greater confidence that the full benefits of the Tier 3 fuels will be realized locally. This is especially important in the early years of the Tier 3 program when most of the emissions reduction benefits stem from using Tier 3 fuels in Tier 2 and older vehicles. In particular, the WFRC found that the use of Tier 3 fuel in existing light-duty vehicles results in a NO_x reduction of 14.5% and in a VOC reduction of 3.9% as compared with the same vehicles using Tier 2 fuel (30 ppm sulfur).[150] These dramatic benefits begin to accrue almost immediately after the first few

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[146] Adoption of Electric and Alternative Fuel Vehicles. OFFICE OF LEGISLATIVE RESEARCH AND GENERAL COUNSEL; May 18, 2021: https://le.utah.gov/interim/2021/pdf/00002047.pdf

[147] Adoption of Electric and Alternative Fuel Vehicles. OFFICE OF LEGISLATIVE RESEARCH AND GENERAL COUNSEL; May 18, 2021: https://le.utah.gov/interim/2021/pdf/00002047.pdf

[148] https://www.governing.com/next/new-data-shows-states-ith-highest-and-lowest-number-of-ev-charging-stations?utm_campaign=Newsletter%20-%20GOV%20-%20Daily&utm_medium=email&_hsmi=235987835&_hsenc=p2ANqtz--VWjg_LxXqDi4qNgUMKfC7NQ8O47DG-58ltMXtUweN0QB986ZcszciRfLRxlBQmqBB1mJcfUdxlrvMrh7tWVVucfX1yw&utm_content=235987835&utm_source=hs_email

[149] 81 FR 23641: Amendments Related to: Tier 3 Motor Vehicle Emission and Fuel Standards

[150] "Improved air quality through the use of Tier 3 fuels in Utah", Utah Clean Air Caucus, June 14, 2016

refueling cycles once the lower-sulfur fuel is available, making the State's efforts to bring these cleaner burning fuels to the NWF NAA critical for reducing ozone precursor emissions and ultimately demonstrating attainment of the NAAQS.

There are seven refineries that provide the majority of the fuel consumed within the NWF NAA. Five of those refineries are located in the NWF NAA, while two additional facilities – the Sinclair refineries in Sinclair and Casper, WY – are connected to the NWF via a product pipeline. Utah has received public commitments from all but one of these refineries that the fuel provided along the Wasatch Front meets the Tier 3 10-ppm sulfur average requirements. The last remaining refinery is expected to make the full transition to Tier 3 fuels by 2024.[151] As the last of Utah's refineries makes the transition to refining and distributing the cleaner burning Tier 3 fuels, additional potentially underestimated reductions in estimated on-road mobile emissions are possible.

In addition to potential underestimations of on-road emission reductions, the state of Utah has taken steps to reduce emissions through improving the effectiveness of existing administrative rules. On February 1, 2023, the Utah Air Quality Board adopted amendments to Utah Administrative Rule R307-328; Gasoline Transfer and Storage. These amendments resulted in the addition of clarifying language to the rule which requires all gasoline service stations to install pressure relief valves to underground storage tanks. While the requirement for pressure relief valves was preexisting in R307-328, the language did not adequately explain the requirements. The UDAQ had identified 266 underground storage tanks located in the NWF NAA that either did not have, or could not be confirmed to have, the required pressure relief valve. The resulting emission reductions from these amendments are not represented in the inventory since the inventory assumed compliance with this requirement, however these amendments will result in additional reductions of VOC emissions within the NWF NAA.

8.3.5 Unaccounted Controls and Emission Reductions

As described in section 7, emissions reductions that are creditable towards RFP, and thus included in a subsequent attainment demonstration, emission reductions have strictly prescriptive requirements attached. While the attainment demonstration in this SIP revision utilized inventories that attempt to quantify emission reductions associated with past SIP work and improvements to the on-road sector, the inventory does not account for emission reductions associated with non-RFP creditable reductions. However, the state of Utah has multiple and extensive incentive and non-creditable emission reduction programs that result in substantial emission reductions. As a result, the attainment demonstration outlined in Section 8.2 does not fully account for ongoing emission reduction in, and around, the NWF NAA. This section highlights these programs and, where possible, reports emission reductions associated with these programs. Some of these programs include regions beyond the NWF NAA, however being the most densely populated region in the State, a substantial portion of the emission reductions highlighted in this section are targeted to areas within the NAA boundary.

8.3.5.1 Utah Clean Diesel Program (UCDP) and Diesel Emission Reduction Act (DERA)

Utah's Clean Diesel Program provides incentives to fleet owners to retire older vehicles and replace them with newer vehicles that meet more stringent emission standards. The program began in 2008 and will continue beyond this SIP revision and includes incentives available under the Diesel Emission Reduction Act (DERA)[152] and the National Clean Diesel (NCD) program. Table 72 indicates the

[151] "Four Utah refineries now produce cleaner Tier 3 fuels, and the fifth says it will soon." Salt Lake Tribune. January 22, 2023: https://www.sltrib.com/renewable-energy/2023/01/22/four-utah-refineries-now-produce/

[152] 42 U.S.C. §§ 16131 through 16137.

annual targeted number of vehicles included in the program and their estimated annual and lifetime emission reductions for both NO_x and VOCs for the years associated with this SIP revision.

8.3.5.2 Volkswagen Settlement Funds

In 2016, Volkswagen (VW) entered into a settlement[153] as a result of a lawsuit filed against the company for defeating emission testing programs and engine certifications for its light-duty diesel vehicles. The state of Utah was the beneficiary of this settlement and received $35,177,506. The Utah Department of Environmental Quality was designated as the lead agency to administer this funding, which has been used to replace older class 4 – 8 freight trucks, school buses, shuttle and transit buses, fund electrical vehicle supply equipment, and assist the Diesel Emissions Reduction Act (DERA) program described in section 8.2.6.1. The results of this program are highlighted in Table 72.

8.3.5.3 Vehicle Repair and Replacement Assistance Program (VRRAP)

In 2018 the EPA awarded the state of Utah with Targeted Air Shed Grant funding. Targeted Air Shed Grants provide funds to reduce air pollution in the nation's NAAs with the highest levels of ozone and $PM_{2.5}$. UDAQ application was for the development of a Vehicle Repair and Replacement Assistance Program (VRRAP) for the Salt Lake $PM_{2.5}$ NAA.

Through the VRRAP, low-income individuals with a vehicle that fails an emissions inspection are offered funding assistance to either repair the vehicle or replace it with a newer, cleaner vehicle. Qualifications for financial assistance are based on a matrix that considers the vehicle owner's household income as a percent of the national income poverty level, the value of the repairs being done on the vehicle, and the vehicle's mechanical life expectancy. The program is set up to augment and improve the overall effectiveness of counties' I/M programs.

Since starting in 2020 the VRRAP has repaired 163 and replaced 48 vehicles. UDAQ expects these activities to reduce [~~the~~]emission annually by 1.26 tons of Nonmethane Organic Gas (NMOG) and NO_x and reduce lifetime emissions of NMOG and NO_x by 11.17 tons (Table 72).

[153] VOLKSWAGEN "CLEAN DIESEL" MARKETING, SALES PRACTICES, AND PRODUCTS LIABILITY LITIGATION. Case Number: MDL No. 2672 CRB (JSC)

*Table 72: Emission reductions associated with incentive programs in and around the NWF NAA. * VOC emission reductions not available. ** Combined NO_x and NMOG emission reductions*

Year	Vehicles Replaced	NO_x Annual Reduction (tpy)	NO_x Lifetime Reduction (tpy)	VOC Annual Reduction (tpy)	VOC Lifetime Reduction (tpy)	Program
2017	95	35.77	144.19	8.68	12.77	DERA / NCD
2018	87	9.66	176.40	0.89	16.91	DERA / NCD
2019	60	20.91	62.73	1.04	3.12	DERA / NCD
2020	44	4.75	14.26	0.55	1.65	DERA / NCD
2021	59	7.2	26.34	0.66	2	DERA / NCD
2019 - Ongoing	78	23.49	10.34	*	*	VW Settlement
2020 - Ongoing	48	11.17**	1.26**	**	**	VRRAP
2022	13	1.54	4.62			NCD
Total	484	103.32	438.88	11.82	36.45	

8.3.5.4 Diesel I/M Programs

In 2018 the Utah State Legislature passed H.B. 101, which established a pilot program to require diesel vehicle emissions inspections in Utah County. This program was made permanent in 2021 when the Utah State Legislature passed S.B. 146. While diesel I/M programs have not historically been awarded SIP emissions reduction credit, UDAQ nevertheless anticipates additional NO_x and VOC emissions reductions from this program. Currently, all counties that are required to have an emission inspection program are required to have a diesel emissions program for vehicles model year 2007 or newer with a gross vehicle weight of 14,000 pounds or less (see 41-6a-1642(7)). Salt Lake and Davis Counties also require all diesel vehicles to go have an emission inspection.

8.3.5.5 Lawn & Garden Equipment Exchange Program

Beginning in 2015, as part of the Utah Clean Air Retrofit, Replacement, and Off-Road Technology (CARROT) program,[154] the UDAQ has administered a lawn and garden exchange program aimed at replacing gas powered lawn and garden equipment with zero emission alternatives. This equipment includes lawn mowers and string trimmers but is expected to be expanded in the coming years to include a wider array of 2-stroke lawn and garden equipment. Since 2017, this program has replaced an estimated 6,638 pieces of summertime operated lawn and garden equipment resulting in an estimated reduction of 0.13 tpy of NO_x and 2.26 tpy of VOCs.

[154] Utah Code Ann. §§ 19-2-201 through 19-2-204.

8.3.5.6 UCAIR Summer Education Program

The Utah Clean Air Partnership (UCAIR) is a statewide non-profit entity created to bring together individuals, business, and communities to help improve Utah's air. In 2022, UCAIR received a grant from the Utah Department of Environmental Quality to conduct an outreach and education campaign aimed at educating Utah's population about summertime ozone pollution. The campaign ran from July 5 through September 11, 2022. During this time the campaign measured over 45 million unique impressions through a combination of television (2.9 million), outdoor (27.68 million) and online (14.45 million) outlets. Post-campaign research identified that 92% of residents were concerned with the air quality where they live during summer ozone season, with 99% of respondents familiar with personal actions they can take to improve air quality.

8.3.5.7 UCAIR Personal Fuel Can Exchange Program

In addition to the education campaign discussed in section 8.3.5.6, UCAIR operates a Personal Fuel Canister (PFC) exchange program, in which UCAIR collects and recycles old PFCs and replaces them with EPA compliant canisters, which reduces VOC emissions associated with the evaporative loss of gasoline. The program began targeting PFCs for replacement in 2019, and since that time has successfully upgraded over 5,000 PFCs in Utah's NAAs.

8.3.5.8 UTA Free Fare Days

In 2019, Utah enacted H.B. 353: Reductions of Single Occupancy Vehicle Trip Pilot Program.[155] This bill designated the UDAQ as the lead agency in administering a program to make all public transit free on days associated with poor air quality in an attempt to reduce emissions associated with vehicle emissions. While much of this program was aimed at reducing emissions during Utah's wintertime $PM_{2.5}$ season, the program has been enacted during two separate periods of high summertime ozone. These "free fare days" were August 12 - 13 of 2021, and September 1 - 2 of 2022.

8.3.5.9 Surge Teleworking

During the 2021 legislative session, Utah adopted S.B. 15: Workforce Solutions for Air Quality. This bill encourages eligible State employees to telecommute on mandatory action days for air quality and on other special circumstances to help decrease on-road emissions. This law covers an estimated 10,185 eligible state employees and contributes to reductions of NO_x and VOC emissions on ozone exceedance days throughout the NAA.

8.3.5.10 Emission Reductions Beyond the NAA Boundary

On July 6, 2022, the Utah Air Quality Board adopted SIP revisions including Utah's Second Implementation Period for Regional Haze[156] and associated emission limits[157]. The emission reductions associated with these actions are broad and include the following measures: (1) requiring flue gas recovery on boilers at US Magnesium by summer of 2028; (2) mandating a shutdown of units 1 and 2 at the Intermountain Generation Station by December of 2027; (3) imposing new plantwide NO_x emission limits for the coal-fired Hunter and Huntington power plants that phase in between July of 2022 and January of 2028; and (4) making many existing permitted limits across the state federally enforceable[~~; and (5) highlighted permit modifications associated with the decommissioning of the Kennecott power~~

[155] *Id*. § 19-2a-104, repealed pursuant to § 63I-1-219, eff. July 1, 2022.

[156] Utah State Implementation Plan. Section XX.A, Regional Haze

[157] Utah State Implementation Plan, Emission Limits and Operating Practices. Section IX, Part H.21 and Part H.23

~~plant and lab tailings impoundment~~]. While much of the emission reductions highlighted here are beyond the temporal scope of this SIP revision, occur outside of the NWF NAA, or make permanent emission reductions that have already occurred, they serve to further demonstrate efforts by the state of Utah to reduce ozone forming precursor emissions.

8.3.5.11 Science for Solutions Applied Research Grants

In 2018, UDAQ received an ongoing annual $500,000 appropriation from the Utah State Legislature specifically intended to fund applied air quality research projects. In response, the UDAQ established the competitive Science for Solutions research grant program. Over the last five years, successful grant applicants have submitted proposals targeting UDAQ's goals and priorities. In recent years, UDAQ has placed a high emphasis on improving the understanding of summertime ozone pollution throughout the NWF NAA.

An abbreviated list of applied research projects funded by the UDAQ's Science for Solutions research grant are listed below. These projects focus on summertime ozone in the NWF NAA:

- **The Salt Lake Regional Smoke, Ozone and Aerosol Study (SAMOZA)**; University of Washington
- **Improving Smoke Detection and Quantifying the Wildfire Smoke Impacts on Local Air Quality Using Modeling and Machine Learning Techniques**; University of Utah
- **Improved Vegetation Data for the Biogenic Emission Inventory of Wasatch Front**; Ramboll US Consulting
- **Impacts of the Great Salt Lake on Summer Ozone Concentrations Along the Wasatch Front**; University of Utah
- **Development of a WRF-based Urban Canopy Model for the Greater Salt Lake City Area**; Brigham Young University
- **Quantitative Attribution of Wildfires on Summertime Ozone Concentrations along the Wasatch Front**; San Jose State University

These projects, along with others, were specifically funded to improve UDAQ's SIP model performance and better inform state policy and rulemaking. Science for Solutions projects have already made a difference in improving UDAQ's model performance. For example, these projects have improved shortwave albedo in the CAMx model to realistically reflect salt-crust and playa surfaces around the Great Salt Lake. UDAQ also learned more about the unique role of halogens in ozone formation in the Salt Lake Valley. Motivated by this information, UDAQ funded the development of an enhanced chemical mechanism (CB6r5h) that includes a broader range of halogen pathways to use in our air quality modeling. These enhancements have led to demonstrable improvements in model performance.

Future projects will help UDAQ determine critical factors in summertime ozone formation. Biogenic emissions are a large source of uncertainty in the region. Recent evaluations of BEIS/BELD have shown that isoprene, a key reactive biogenic VOC, is largely underpredicted in regional modeling. Through Science for Solutions, UDAQ is funding a comprehensive project to greatly improve inputs (e.g., leaf area index, tree species) to biogenic models using local information and high-resolution satellite imagery. In addition, UDAQ is funding projects to better understand wildfire impact on ozone pollution. These projects will not only enhance UDAQ's understanding of wildfire contributions to ozone concentrations throughout the NWF NAA but will also improve the UDAQ's understanding of local contributions.

8.4 Conclusion

Results of any modeled outcome will include some degree of uncertainties. As a result of these uncertainties, it is important to consider additional factors within the range of those uncertainties and consider factors beyond the scope of the analysis. The predicted FDV for ozone concentrations outlined in section 8.2, paired with the additional WOE analysis, results in a strong case that this attainment demonstration adequately demonstrates the NWF NAA attaining the 8-hour ozone NAAQS by the attainment date of August 3, 2024.

Chapter 9 - 179B(a) Prospective Demonstration

9.1 Overview

Section 179B(a) of the CAA states that a SIP revision shall be approved by the EPA if the state can demonstrate that the implementation plan is "adequate to attain and maintain the relevant national ambient air quality standards... but for emissions emanating from outside of the United States."[158] As noted in the preambles of both the 2008[159] and 2015[160] ozone implementation rules, section 179B of the CAA does not prohibit non-international border states from submitting a demonstration. However, as noted in EPA guidance,[161] demonstrations from states that do not directly share an international border will require additional technical rigor compared to international border areas.

Section 179B of the CAA has two mechanisms to demonstrate that international contributions impact a NAA's ability to attain or maintain a NAAQS. A state may demonstrate independent of a SIP revision that a NAA would have attained the standard at a past attainment date but for the presence of international emissions, known as a retrospective 179B(b) demonstration, and thus should not be advanced in nonattainment classifications.[162] Conversely, a state may demonstrate as part of a SIP revision that a NAA will attain the standard by a future attainment date, but for the presence of international emissions. This is known as a prospective 179B(a) demonstration.[163]

There are also substantial differences in the outcomes of approved prospective and retrospective 179B demonstrations. An approved retrospective 179B(b) acts to prevent a NAA from being further redesignated to a more stringent nonattainment status. A prospective 179B(a) however, acts as additional information used by the EPA in determining if a SIP modeling attainment demonstration adequately demonstrates attainment by the attainment date, but for the presence of international emissions. As a result, a NAA with an approved 179B(a) demonstration that subsequently fails to attain the standard by the attainment date would not be prevented from a further reclassification to a more stringent nonattainment status.

On May 28, 2021, the UDAQ submitted to the EPA for consideration a retrospective 179B(b) demonstration for the NWF NAA[164] for the marginal attainment date of August 3, 2021. In the demonstration, UDAQ provided three separate analyses examining international contributions including a synoptic weather analysis, Hybrid Single–Particle Lagrangian Integrated Trajectory (HYSPLIT) backward dispersion modeling, and photochemical modeling results performed by a third party showing that the area would have attained the standard by the marginal attainment date, but for the presence of international contributions.

Upon publication of the Determination of Attainment by the Attainment Date,[165] the EPA found Utah's demonstration was not approvable and subsequently reclassified the area as a moderate NAA.

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[158] 42 U.S.C. § 7509a(a)(2).

[159] Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements, 80 Fed. Reg. 12,264 (March 6, 2015).

[160] Implementation of the 2015 National Ambient Air Quality Standards for Ozone: NAA State Implementation Plan Requirements, 83 Fed. Reg. 62,998 (Dec. 6, 2018). s

[161] Guidance on the Preparation of Clean Air Act Section 179B Demonstrations for NAAs Affected by International Transport of Emissions (Dec. 2020) (179B Demonstrations Guidance).

[162] 42 U.S.C. § 7509a(b)-(d); *see also* 179B Demonstrations Guidance at 15-18.

[163] 42 U.S.C. § 7509a(a); *see also* 179B Demonstrations Guidance at 12-15.

[164] Retrospective 179B(b) Demonstration for Utah's Northern Wasatch Front Ozone NAA. May 28, 2021. DAQP-048-21

[165] 87 Fed. Reg. 60,897.

The EPA cited four primary reasons for its disapproval[166] including: (1) a lack of technical information; (2) a divergence in interpretation of section 179B including the importance of the proportion of local versus international contributions; (3) a failure to demonstrate sufficient implementation of feasible emission reduction measures; and (4) the presence of a nearby NAA that attained the standard despite the presence of international contributions.

In this section, the UDAQ will demonstrate attainment under Section 179B(a) prospectively, using an updated and improved photochemical modeling, that the NWF NAA would attain the 2015 8-hour ozone NAAQS by the attainment date of August 3, 2024, but for the presence of international emissions. Further, UDAQ will utilize and expand on the wealth of technical information included in this SIP revision to address each of EPA reasons for denying Utah's previous 179B(b) demonstration.

9.2 Ozone Source Apportionment (OSAT) Modeling

To determine the contribution of different source emission groups and regions to measured ozone concentrations at individual monitoring sites within the NAA, OSAT modeling was performed using emissions projected to 2023. Modeling was conducted using the OSAT tool in CAMx v7.1, which was used for this SIP demonstration modeling as described in section 8. At the request of the UDAQ, OSAT was integrated by Ramboll (developer of CAMx) with CB6r5h in a special version of CAMx v7.1. CB6r5h (version 6, revision 5 with halogens) gas-phase chemical mechanism, which includes halogens chemistry and was specifically developed by Ramboll for this SIP application, was used for all modeling simulations. Source apportionment was conducted for the 4 and 1.33 km domains, where the two domains were run in a two-way nested configuration. 2023 emission inputs were used for source apportionment modeling.[167] Meteorological fields, ozone column values and photolysis rates remained unchanged from those used for the attainment demonstration modeling.

Six geographic source regions were used in the source apportionment modeling (Figure 19), where each county within the NAA was considered as an individual region (Salt Lake, Davis, Weber, Tooele counties). Counties within Utah but outside the NAA were considered as a single region (Other Utah). Regions within the 4 km domain but outside the State of Utah were considered as a single region. 25 different source emission sectors were considered for this OSAT simulation and tracer species that track ozone formation from VOC and NO_x emissions from these source categories were tagged. Source groups that were considered in OSAT included emissions from consumer solvents, on-road heavy duty mobile source emissions, on-road light duty mobile source emissions, lawn and garden equipment emissions, point source emissions, biogenic emissions, in addition to several other source emission sectors. A complete list of these source emission groups is provided in Table 73.

To determine the contribution of international anthropogenic source emissions to local ozone concentrations, initial and boundary conditions (IC and BC) for the 4 km domain were also considered as their own separate source groups. The contribution of international anthropogenic source emissions was determined based on two CAMx simulations for the 12 km domain. These included a base (BASE) simulation and a sensitivity (ZROW) simulation. The BASE case simulation included 2023 emissions from all source emissions while the ZROW simulation included all 2023 emissions with the exception of non-US anthropogenic emissions, leaving only US and global natural emissions. This ZROW simulation was

[166] Technical Support Document (TSD): Northern Wasatch Front (NWF), Utah: Failure to Attain the 2015 Ozone National Ambient Air Quality Standard by the Attainment Date; Reclassification and Disapproval of International Emission Demonstration, Docket Id. No. EPA-HQ-OAR-2021-0742-0043 (Jan. 2022) (179B NWF TSD).

[167] SMOKE Technical Support Documentation for NWF SIP Attainment Demonstration; https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001603.pdf

based on 2017 ZROW GEOS-Chem global chemistry model outputs, where all anthropogenic emissions outside the US were set to zero[168].

Source-apportioned boundary and initial conditions for the 4 km domain were then derived using CAMx "saicbc" tool and model outputs from the base and ZROW 12 km simulations. Using IC and BC extracted from model outputs from the base and ZROW 12 km simulations, the tool was used to generate two source apportionment IC and BC groups for the 4 km domain, where one group represents international anthropogenic emissions, and one represents global natural and US emissions within the 12 km CAMx domain that are transported into the 4 km domain from the lateral boundaries.

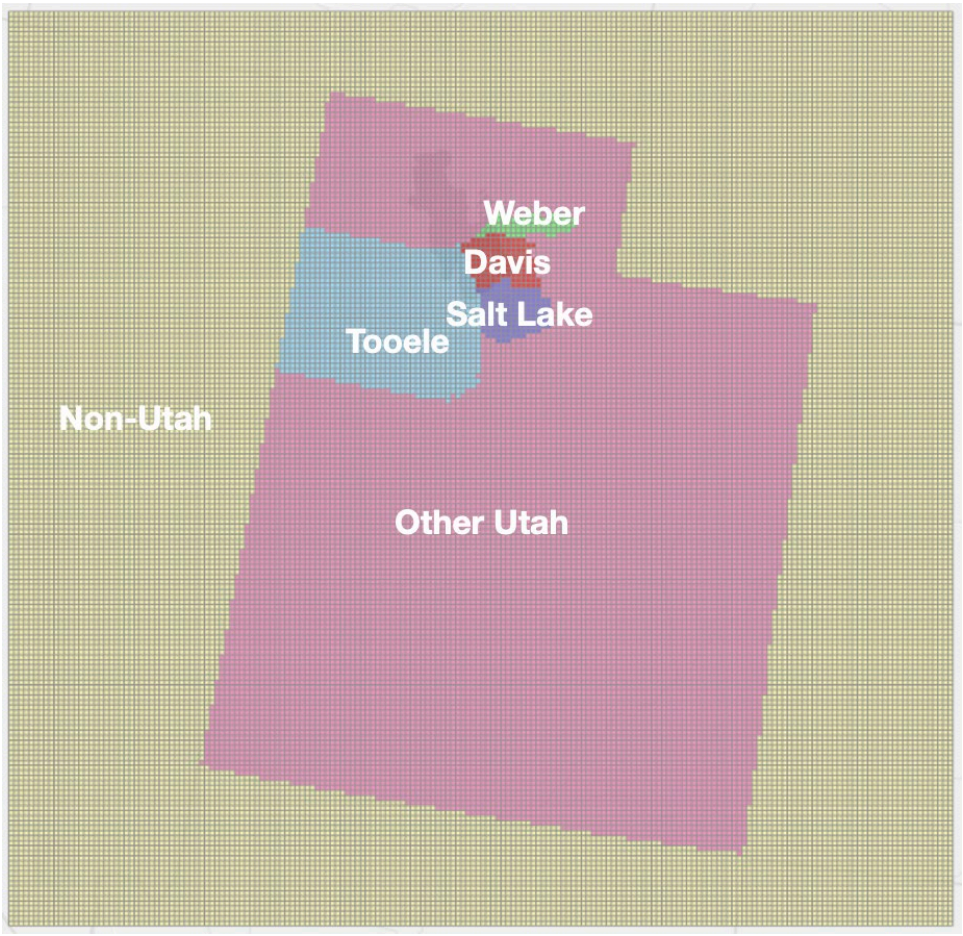

Figure 19: Map of source regions used in 2023 OSAT modeling for the 4 and 1.33 km domains. Each color represents a different source region.

[168] https://views.cira.colostate.edu/docs/IWDW/Modeling/WRAP/2017/Ramboll_WESTAR_GEOS-Chem_Report_8Apr_2021.pdf

*Table 73: Emission source categories considered in 2023 OSAT modeling. *Only VOCs and NO_x tracer species from US Magnesium are tagged.*

Source Group ID	Source Group	Description
1	Solvents: Consumer Products	All personal care and household cleaning products
2	Solvents: Other	Any non-personal care or household cleaning product solvents: Surface coatings, dry cleaning, asphalt paving, degreasing, etc.
3	Non-road: Lawn & Garden	All lawn & garden equipment: 2- & 4-stroke gasoline-powered mowers, trimmers, leaf blowers etc.
4	Non-road: Other	Any non-lawn & garden non-road equipment: construction equipment, aircraft ground support equipment
5, 7	On-road: Light Duty	Passenger vehicles
6, 8	On-road: Heavy Duty	Commercial trucks, haul trucks, buses, motor homes
9	Rail	
10	Biogenics	
11	EGUs	
12	Point Oil & Gas	
13	Nonpoint Oil & Gas	
14	Point: Other	All other point sources not specifically tagged
15	Point: US Magnesium*	all emissions associated with US Magnesium Rowley Plant (point source ID = 10716)
16	Point: Mine Trucks	Mobile Sources; Off-highway Vehicle Diesel; Construction and Mining Equipment; Off-highway Trucks
17	Wildfires, Prescribed Fires	
18	Agricultural Fires	
19	Lightning NO_x	
20	Airports	
21	ERC Bank	Emissions Reduction Credit bank
22	Fertilizer	
23	Livestock	
24	Nonpoint	
25	Area Fugitive Dust	

International Anthropogenic		Non-US anthropogenic emissions estimated based on 12 km base case and zero-out modeling simulations that use GEOS-Chem global model outputs
Global Natural + Non-Utah US Anthropogenic		Global natural emissions plus any US anthropogenic emissions that are transported into the 4km domain (California anthropogenic, etc.). These were estimated based on 12 km base case and zero-out modeling simulations that use GEOS-Chem global model outputs
Top Boundary Conditions		

Source group contributions to MDA8 ozone concentrations at each monitoring station and on each day of the modeling episode were determined using modeled hourly contributions from each source sector and region, where, for each group, contributions under "NO_x-limited" and "VOC-limited" chemical regimes were combined to obtain the net contribution from each group. For each day and monitoring station, hourly contributions were processed to calculate 8-hour average source group contributions at each individual monitoring site, where the contribution values were calculated using model predictions for the grid cell that includes the monitoring station. For each day and monitoring station, 8-hr average contributions were then summed to calculate total 8-hr average ozone concentrations for each source group and region. Maximum daily 8-hr average ozone concentrations and their contributions were then determined based on these total 8-hr values.[~~ The resulting~~]

9.3 Ozone Source Apportionment Modeling Results

Source apportionment modeling results showed that non-Utah natural and non-Utah US anthropogenic emissions contribute to most of the ozone measured at the Hawthorne monitoring station, which corresponds to the monitor with the highest predicted FDV, accounting for about 67% (39.07 ppb) of its modeled maximum daily 8-hour [~~average~~]ozone concentrations on average during the modeling episode (Figure 20). Local anthropogenic and biogenic sources had smaller contributions, accounting for nearly 14.5% (8.44 ppb) and 7.4% (4.28 ppb) of [~~MDA8~~]ozone at the same location, while international anthropogenic emissions source contribution averaged 6.5% (3.74 ppb). The contributions for background ozone (international anthropogenic emissions, global natural and US anthropogenic emissions) are consistent with contributions reported for the Western US in other modeling studies[169],[170],[171]. Contributions from other sources, such as wildfires, prescribed (Rx) fires, lightning NO_x, were more minor (<= 4% at 2.3 ppb). Figures in this section represent a low bound of 8-hour ozone source apportionment results and are subject to increase in future modeling.

169 Denver Metro/North Front Range 2017 Ozone Source Apportionment Modeling. HYPERLINK "https://views.cira.colostate.edu/wiki/wiki/9132/denver-metronorth-front-range-2017-ozone-source-apportionment-modeling"https://views.cira.colostate.edu/wiki/wiki/9132/denver-metronorth-front-range-2017-ozone-source-apportionment-modeling

170 2017 Denver Metro/North Front Range Moderate Area 8-Hour Ozone SIP. https://raqc.egnyte.com/dl/uJJfKleU67/FinalModerateOzoneSIP_2016-11-29.pdf_

171 Scientific assessment of background ozone over the U.S.: Implications for air quality management . https://online.ucpress.edu/elementa/article/doi/10.1525/elementa.309/112835/Scientific-assessment-of-background-ozone-over-the

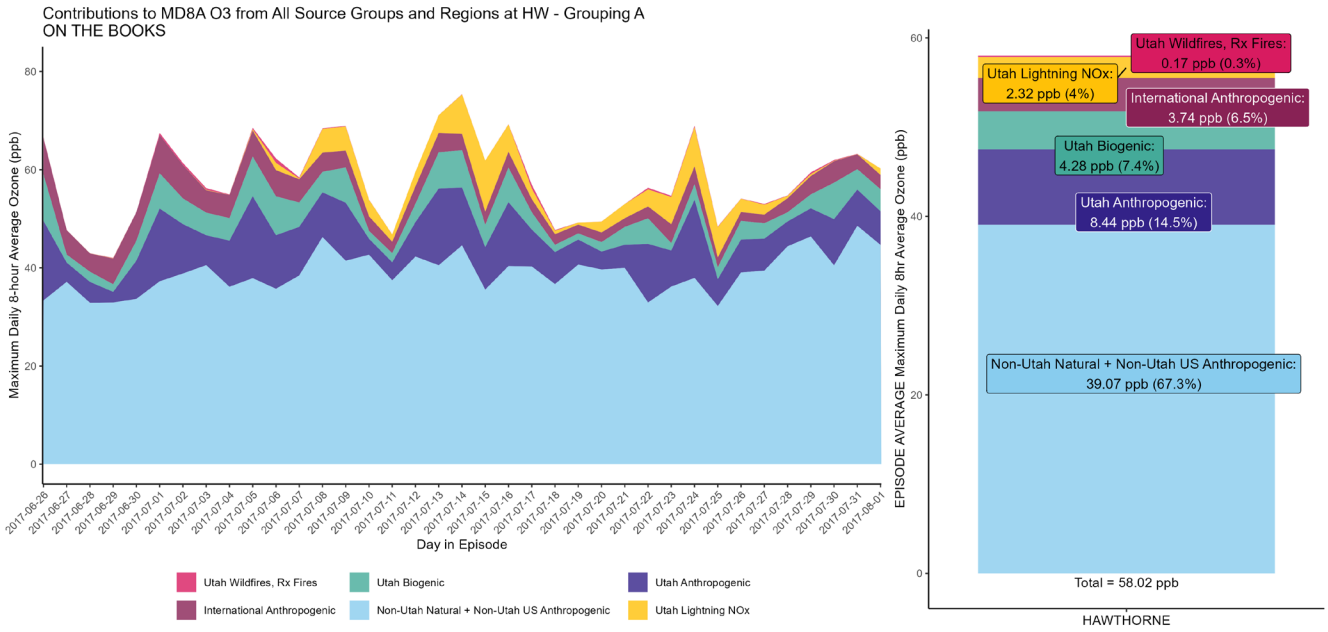

Figure 20: Source contributions by region and emission sector to [~~MDA8~~]8-hour ozone concentration (ppb) at the Hawthorne monitoring station for each day of the modeling episode (left panel) and on average over all days of the modeling episode (right panel). Results are based on 2023 OSAT model outputs for the 1.33 km modeling domain and spin-up days are excluded.

These source contributions displayed some differences across exceedance, top 10 exceedance and non-exceedance days (Figure 20). Compared to contributions on non-exceedance days, the contributions from local anthropogenic and biogenic source emissions are greater on exceedance (modeled MDA8 ozone >= 60 ppb) and top 10 exceedance days, on average, consistent with expectations (Table 21). Ozone exceedance days are characterized by an upper-level high pressure system that brings warm temperatures, lack of frontal passage, low surface winds and increased solar radiation; all of which are conducive to the build-up of ozone and its precursors. The contribution of international anthropogenic emissions to [~~MDA8~~]average ozone also increased on exceedance days compared to non-exceedance days, but the increase was not as significant as that determined for local anthropogenic and biogenic source emissions. Their contribution estimate increased from 3.25 ppb (6.2%) on non-exceedance days to 4.47 ppb (6.7%) on exceedance days. A similar increase is also noted for background natural and US anthropogenic emissions. The upper-level ridge on exceedance days can increase background concentrations within the ridge, where the complex topography of the region can enhance vertical transport and recapture of ozone from aloft.[172]

[172] Reddy, P. J., & Pfister, G. (2016). Meteorological factors contributing to the interannual variability of midsummer surface ozone in Colorado, Utah, and other western U.S. states. Journal Of Geophysical Research-Atmospheres, 121, 2434-2456. doi:10.1002/2015JD023840.

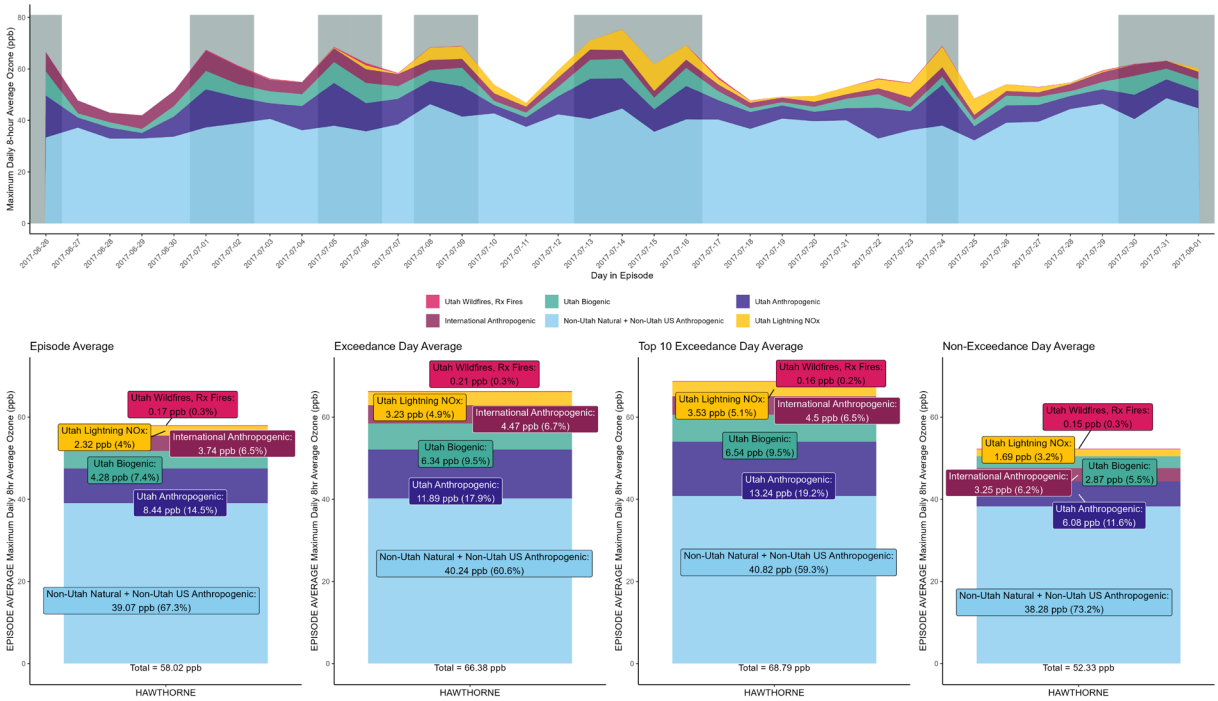

Figure 21: Source contributions by region and emission sector [~~MDA8~~]ozone concentration (ppb) at the Hawthorne monitoring station for each day of the modeling episode (upper panel) and on average over all days of the modeling episode, exceedance days, top 10 exceedance days and non-exceedance days (lower panel). Results are based on 2023 OSAT model outputs for the 1.33 km modeling domain and spin-up days are excluded.

9.4 Future Design Values after Removal of Contributions from International Anthropogenic Emissions

Overall, the source apportionment modeling results show that background ozone emission sources, contribute to the majority of the ozone measured along the Wasatch Front, accounting for about 66% of modeled [~~maximum daily 8-hour average~~]ozone concentrations, on average on modeled top 10 exceedance days. This includes 59.3% (40.82 ppb) contribution from natural and US anthropogenic emissions outside Utah and 6.5% (4.5 ppb) contribution from international anthropogenic emission sources. Using the source contribution estimate for international anthropogenic emissions, the projected FDV were adjusted to reflect what the FDV would be but for the presence of international emissions. For each site, FDV were adjusted by subtracting the OSAT source contribution estimate for international anthropogenic emissions (IAE) from the FDV calculated in the attainment demonstration (section 8).

Average source contribution estimate for international anthropogenic emissions on top 10 exceedance days were used for this calculation. For cases in which the model simulation does not include 10 days with MDA8 ozone values >= 60 ppb at a site, all days with MDA8 O3 values >= 60 ppb are used in the calculation. Given that the model does well at simulating background ozone (section 8.2, Table 69), subtracting the OSAT source contribution estimate for international anthropogenic emissions from the FDV calculated in the attainment demonstration is considered adequate. This approach is shown in equation 3. Moreover, since the model tended to be biased low for local ozone production, this approach is more adequate than a scaling technique where the FDV at each monitoring site is scaled by the relative

modeled change[~~d~~]s in ozone between a 2023 baseline and a 2023 sensitivity modeling scenario that includes emissions from all sources except for international anthropogenic emissions.

Equation 3

$$FDV_{i,\,adj} = FDV_i - IAE_i,$$

where "i" corresponds to a given monitoring site.

Resulting adjusted FDV are shown in Table 74. Consistent with the truncation and rounding procedures for the 8-hour ozone NAAQS, the projected DVs are truncated to integers in units of ppb[173]. All sites demonstrate attainment when the contribution of international anthropogenic emission sources is subtracted from the FDV calculated in the attainment demonstration modeling.

Table 74: Future design values (FDV), source contribution estimates for international anthropogenic emissions (IAE) and adjusted future design values (FDV adj) at monitoring locations within the northern Wasatch Front non-attainment area.

Site	Site ID	County	FDV (ppb)	IAE (ppb)	FDV_adj
Bountiful	490110004	Davis	71	4.54	66
Hawthorne	490353006	Salt Lake	72	4.50	67
Herriman	490353013	Salt Lake	72[~~1~~]	3.81	68[~~67~~]
Erda	490450004	Tooele	70	4.06	65
Harrisville	490571003	Weber	70	3.12	66

9.5 Conclusion

In its document overviewing the disapproval of Utah's retrospective[~~prospective~~]179B(b) demonstration, EPA cited a lack of "sufficient technical information"[174] to support the modeled conclusions including: a lack of emission data, observations, and meteorological analyses. Further, EPA noted that the model UDAQ relied on for its submission did not demonstrate adequate model performance to creditably determine the influence of international contributions in the NAAs ability to attain the standard.[175]

The 179B(a) demonstration provided as part of this SIP revision leverages the wealth of information included within the SIP and in the technical supporting documentation. This includes detailed information on the underlying emission inventories (section 3), modeled and observed concentrations (section 8), and meteorological modeling (section 8).[176] The improved modeling also conforms with EPA's modeling performance metrics (section 8). Thus, the analysis and conclusions provided in this 179B(a) demonstration and SIP revision fulfill the technical deficiencies EPA noted in Utah's retrospective submission, and conclusively identifies the role international emissions play in the NWF NAA's ability to attaining the standard by the attainment date.

[173] 40 CFR Part 50, Appendix P to Part 50 – Interpretation of the Primary and Secondary National Ambient Air Quality Standards for Ozone.

[174] 179B NWF TSD at 2.2

[175] *Id.*

[176] Meteorological Modeling for Wasatch Front O3 SIP. Technical Support Documentation and Model Performance Evaluation.

Beyond the lack of technical information cited by EPA in its disapproval of Utah's 179B(b) demonstration, EPA noted that the state's demonstration diverged from EPA's interpretation of criteria for a successful demonstration in several ways.[177] EPA noted that the states did not demonstrate that international transport is significantly different on ozone exceedance days compared to non-exceedance days and that international contributions appear to contribute less than local ozone production.[178]

As shown in Figure 22, the UDAQ has identified that international emissions contribute to ~6% of ozone in NWF NAA on non-exceedance days. That contribution increases to ~7% of the total modeled ozone across all exceedance days. The observed increase during exceedance days relative to non-exceedance days represents a significant additional contribution to the observed ozone concentrations when considering that only 18.5% of the overall ozone contributions are attributed to in-state anthropogenic emissions. Thus, the additional 1% observed international contributions on exceedance days represents excess international contributions relative to modeled non-exceedance day contributions.

Figure 22: International contributions at Hawthorne monitor site on exceedance and non-exceedance days.

As further demonstrated by Figure 22, international emissions represent a significant contribution to the NAA relative to ozone attributable to anthropogenic emissions within the NAA, and thus emissions which this SIP can regulate. For instance, on the top 10 exceedance day during the modeling episode, anthropogenic emissions represent just 19.3% of modeled ozone, with emissions from sources under federal jurisdiction accounting for 11.8% and emissions under state authority

[177] 179B NWF TSD at 2-3.

[178] *Id*. at 3.

accounting for the remaining 7.5%. However, contributions from international anthropogenic emissions account for 6.5% of the modeled ozone concentrations.

The EPA further notes in its disapproval of Utah's 179B(b) submission that the state failed to adequately demonstrate that all "feasible" emission reduction strategies had been implemented.[179] As noted in the ozone implementation rules,[180] emission reduction strategies implemented as part of ozone SIPs are to be reasonably available (i.e., RACT or RACM), and thus feasible controls in the context of ozone reductions strategies should be held to a comparable standard. While section 179B of the CAA makes no specific mention of the requirement for implementation of feasible controls, sections 4 and 5 of this SIP revision clearly demonstrate that the state of Utah has implemented an exhaustive list of VOC and NO_x emission reduction strategies throughout the NAA as a result of past SIPs targeting wintertime $PM_{2.5}$, many of which go beyond what would be considered reasonably available. Beyond the controls implemented to date, the UDAQ has identified additional emission reduction controls and strategies as outlined in Sections 4, 5 and 7 of this SIP revision, some of which have been determined to be "beyond-RACT". These emission reductions are planned to be implemented in the coming years and serve as further evidence that the state has implemented feasible controls, and thus the contributions of international emissions should be considered when determining attainment.

Lastly, in its disapproval of Utah's 179B(b) demonstration EPA argued that the presence of a nearby ozone NAA, the Southern Wasatch Front (SWF) (figure 1) which recently attained the standard by the marginal attainment date, is evidence that the NWF NAA can attain the current standard despite the presence of international emissions. However, in the same document, EPA demonstrates that the SWF has an order of magnitude lower anthropogenic NO_x emissions and almost a third of the anthropogenic VOC emissions when compared to the NWF[181]. To this point, the SWF has approximately 1.2 million fewer residents than the NWF and a substantially different industrial sector. While the SWF did attain the 2015 ozone NAAQS by the marginal attainment date of August 3, 2021, it did so by just 1.0 ppb, and has subsequently exceeded this standard. The fact that a bordering NAA, with fewer residents, fewer emissions, and a substantially different industrial make-up, is marginally attaining the standard further demonstrates why it is critical that the presence of international emissions be appropriately acknowledged as regulatorily significant. Unless it is the intent of the EPA to suggest that the NWF NAA must reduce its NO_x and VOC emissions to levels similar to that of the SWF, which is impossible given the lack of reasonably available control options available to the state as demonstrated in sections 4 and 5 of this SIP revision, the state does not see how the attainment status of the SWF is relevant. In fact, comparisons between two substantially different NAAs, both of which are facing the Intermountain West's regionally specific challenges in addressing ozone, only further supports that international emissions are regulatorily significant to the region. Thus, section 179B of the CAA is an appropriate mechanism to provide regulatory flexibility to NAAs within this unique geographic region.

As discussed in the introduction of this section, an approved 179B(a) demonstration would not prevent the NWF NAA from being reclassified to a more stringent nonattainment status if the area fails to attain the standard by the attainment date based on ambient monitoring data. Instead, this demonstration serves as further evidence that the modeling attainment demonstration and WOE analysis provided in section 8.3 of this SIP revision adequately demonstrates the NWF NAA is projected to attain the standard by the attainment date, but for the presence of international emissions.

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[179] *Id.* at 3.

[180] 83 Fed. Reg. 62,998.

[181] 179B NWF TSD at 14, Tables 2 and 3.4

Chapter 10 - Transportation Conformity and Motor Vehicle Emission Budget

10.1 Introduction

Motor Vehicle Emission Budgets (MVEB) for NO_x and VOCs were submitted to the EPA in 1997 as part of Utah's maintenance plan for the 1979 1-hour ozone standard. EPA approved these MVEB for transportation conformity purposes when it finalized the approval of that maintenance plan,[182] further reaffirming this budget in subsequent rulemaking.[183] As a result, the local MPO Wasatch Front Regional Council (WFRC) has been using these budgets for subsequent transportation conformity determinations within the ozone NAA. Following this same approach, the UDAQ has developed an updated MVEB for the NWF NAA to be used in future transportation conformity determinations in relation to the 2015 NAAQS standard for ozone. As required by Section 176(c) of the CAA, this MVEB is based on the best available data for emissions, population, and travel estimates available during the development of this SIP.

10.2 Transportation Conformity

Transportation conformity is a requirement under CAA Section 176(c).[184] This requirement ensures that any federally funded or approved highway or transportation activity conforms to the relevant promogulated air quality SIPs, in a way that planned transportation activities do not interfere with a SIPs success in reducing the severity or number of exceedances of a NAAQS. The federal level transportation conformity rules establish the criteria and procedures for determining if a metropolitan transportation plan, TIP, or federally supported highway and transportation projects conform to the SIP.[185] State level transportation conformity requirements are codified in Utah's SIP Section XII.[186] Transportation conformity requirements apply to any designated NAA or maintenance area for a primary NAAQS and must be included in any SIP submitted for these areas.

The metropolitan planning responsibilities for the area encompassed by the NWF NAA are covered by a single MPO—Wasatch Front Regional Council (WFRC). WFRC serves as the MPO for Box Elder, Davis, Salt Lake, Tooele, and Weber counties.

Upon a finding of adequacy or approval by the EPA, the impacted MPO in the NAA will use these budgets to demonstrate that estimated emissions resulting from the implementation of approved transportation plans and TIPs are less than or equal to the budgets included in this SIP revision.

10.3 – Consultation

The ICT is an air quality workgroup in Utah that makes technical and policy recommendations regarding transportation conformity issues related to the SIP development and transportation planning process. Section XII of the Utah SIP established the ICT workgroup and defines the roles and

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[182] 62 Fed. Reg. 38,213.

[183] Approval, Disapproval and Promulgation of Air Quality Implementation Plan; Utah; Maintenance Plan for the 1-Hour Ozone Standard for Salt Lake and Davis Counties, 77 Fed. Reg. 35,873 (June 15, 2012).

[184] 42 U.S.C. § 7506(c).

[185] 40 CFR Part 51; 40 CFR Part 93.

[186] Utah State Implementation Plan; Section XII, Transportation Conformity Consultation. Adopted by the Utah Air Quality Board May 2, 2007

responsibilities of the participating agencies. Members of the ICT workgroup collaborated on a regular basis during the development of the ozone SIP. They also meet on a regular basis regarding transportation conformity and air quality issues.

The ICT workgroup is comprised of management and technical staff members from the affected agencies associated directly with transportation conformity including the following agencies:

- UDAQ
- Cache MPO
- Mountainland Association of Governments
- Wasatch Front Regional Council
- Utah Department of Transportation (UDOT)
- Utah Local Public Transit Agencies
- FHWA
- Federal Transit Administration (FTA)
- EPA

The regional emissions analysis is the primary component of transportation conformity and is administered by the lead transportation agency located in the EPA designated air quality NAA. The responsible transportation planning organization for the Salt Lake City, UT NAA is the WFRC. During the SIP development process, the WFRC coordinated with the ICT workgroup and developed ozone SIP motor vehicle emissions inventories using the latest planning assumptions and tools for traffic analysis and the EPA-approved Motor Vehicle Emission Simulator (MOVES2014a) emissions model. The WFRC and the ICT worked cooperatively to develop local MOVES2014a modeling data inputs using EPA recommended methods where applicable.

10.4 Motor Vehicle Emission Budgets (MVEB)

MVEBs are defined as the *"portion of the total allowable emissions defined in the submitted or approved control strategy implementation plan revision or maintenance plan for a certain date for the purpose of meeting reasonable further progress milestones or demonstrating attainment or maintenance of the NAAQS, for any criteria pollutant or its precursors, allocated to highway and transit vehicle use and emissions."*[187]

Thus, a MVEB refers to the maximum allowable emissions originating from the on-road mobile sector for each applicable regulated pollutant (i.e., NO_x and VOCs) as defined in the SIP and required by the CAA. The MVEB must be used in all future transportation conformity analysis and areas must demonstrate that the estimated emissions from transportation plans, programs, and projects do not exceed the MVEB. MVEBs were developed in collaboration with the MPO WFRC. Details regarding the development of the budget can be found in the accompanying Technical Supporting Document (TSD).[188]

For the purpose of this SIP revision, MVEBs for precursor emissions of VOC and NO_x are established for the attainment year of 2023, and are based on the projected on-road mobile inventory

[187] 40 CFR § 93.101.

[188] TECHNICAL SUPPORT DOCUMENT FOR ON-ROAD MOBILE SOURCES: MOTOR VEHICLE EMISSIONS BUDGET DERIVIATION FOR THE NORTHERN WASATCH FRONT, UT NONATTAINMENT OZONE AREA: https://documents.deq.utah.gov/air-quality/planning/DAQ-2023-001700.pdf

for the same year as described in section 3.2.6. This MVEB represents a single NAA-wide MVEB to be used in transportation conformity purposes.

Within the NWF NAA, both Tooele and Weber counties are not entirely contained within the NAA boundary. Thus, portions of the counties are located outside of the boundary, while most of the population of each county resides within the boundary. To account for the proportion of on-road mobile emissions attributable to the NAA, and thus to be included in a MVEB, 2020 census data was used to determine the percentage of on-road vehicle activity relative to census tracts located within the NAA, and emissions were revised accordingly. For Salt Lake and Davis counties, which are entirely located within the NAA, no such adjustments were made.

10.5 Emission Budgets for the Northern Wasatch Front NAA

For the purposes of transportation conformity in the NWF NAA, Table 75 includes a MVEB in tpd for daily summertime weekday emissions of both VOCs and NO_x.

Table 75: NWF Ozone 2023 NAA MVEB

NWF, UT Ozone 2023 NAA MVEB			
Year	County	NO_x (tpd)	VOC** (tpd)
2023*	Davis (NA)	7.42	2.78
2023*	Salt Lake (NA)	20.98	8.53
2023*	Tooele (NA)	3.49	0.81
2023*	Weber (NA)	5.69	2.06
	Total	37.58	14.18
NA = NAA County Portion			
*** Gasoline 10 PPM Sulfur**			
****VOC = VOC does not include Refueling Displacement and Spillage**			

It is important to note that the MVEBs presented in Table 75 are somewhat different from the on-road mobile emission inventory presented in Table 8. The emissions established for this MVEB were calculated using MOVES3 to reflect an average summer weekday. The totals presented in the summary emissions inventory in section 3, however, represent a summer average-episode-day. Thus, the temporal averaging used to generate these two different products results in slightly different values.

10.6 Implementation of MVEB in Transportation Conformity Determinations

The MVEB for the NWF NAA, once determined adequate or approved by the EPA, will be used for purposes of transportation conformity determinations of Regional Transportation Plans (RTPs) and TIPs for the respective MPOs and planning areas. Once the included MVEB is in effect, the local MPO must make a new determination of conformity for their respective RTP and TIP within two years of EPA's finding of adequacy or SIP approval.[189] Throughout the process of determining conformity with the MVEB included in this SIP revision, the impacted MPO shall consult with federal, state, and local air agencies through the normal interagency consultation process established in Section XII of the Utah SIP.

[189] 40 CFR § 93.104(e).

Chapter 11 - Contingency Measures

11.1 Overview

Section 172(c)(9) of the CAA requires SIPs to include provisions for specific emission reduction measures to be undertaken if the area fails to demonstrate RFP requirements or attain the NAAQS by the attainment date. These provisions are known as contingency measures. These contingency measures shall take effect "without further action by the State, or the [EPA] Administrator", thus no further rulemaking activities by the State or EPA would be needed to implement them if the area fails to attain the standard by the attainment date or if a SIP revision fails to demonstrate RFP.[190] Contingency measures should consist of other available control measures or emission reduction strategies beyond those reasonably required (i.e., RACT or RACM) to expeditiously attain the NAAQS.[191]

The attainment date for the 2015 8-hour ozone NAAQS moderate SIP for the NWF NAA is August 3, 2024. Thus, if triggered, contingency measures must result in additional emission reductions after that date, or upon a disapproval of the RFP plan included in this SIP revision by the EPA. Contingency measures shall provide demonstratable emission reductions of one year's worth of emission reductions, or approximately 3% of the 2017 base year emission inventory.[192] Unlike the RFP requirements of a moderate SIP, emission reductions associated with contingency measures can consist entirely, or in part, of NO_x emission reduction strategies.[193]

11.2 Contingency Measures

11.2.1 NO_x Emission Reductions from Boilers

The UDAQ has proposed R307-315; NO_x Emission Controls for Natural Gas-Fired Boilers 2.0-5.0 MMBtu, and R307-316; NO_x Emission Controls for Natural Gas-Fired Boilers greater than 5.0 MMBtu, both of which were described in section 5.3, Table 58. These rules [~~are expected to be~~]were adopted by the Utah Air Quality Board in May of 2023, with an implementation beginning in May of 2024. These rules require new and modified industrial and commercial boilers installed in the NWF NAA to comply with an emission threshold of 9 parts per million by volume (ppmv). The NO_x emission reductions from these combined rules are anticipated to result in a total reduction of 7.3 tpd, or 2,689 tpy once the full emission potential of the rules are realized. While these [~~proposed~~]rules do not require retrofits or replacements of existing equipment, when accounting for the useful life span of this equipment it is anticipated that the full emission potential of these rules will be realized in 10 – 20 years. Thus, it is expected that these two rules combined will result in ~0.36 tpd of emission reductions per year, compounding over time to the full 7.3 tpd. Given the implementation timeline of these control strategies, one year of emission reductions (0.36 tpd) should be creditable towards contingency measure requirements.

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[190] State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 13,498, 13,512 (April 16, 1992).

[191] *Id.* 57 Fed. Reg. at 13,543.

[192] 83 Fed. Reg. 62,998; 80 Fed. Reg. 12,285.

[193] 83 Fed. Reg. 62,998.

11.2.2 US Magnesium

As part of this SIP revision, and as overviewed in section 4.15, the UDAQ is requiring US Magnesium to install a steam stripper and thermal oxidizer to reduce VOC emissions from its wastewater and deboronated pond water systems.[194] The installation of these controls will reduce 0.44 tpd (161.7 tpy) of VOC emissions from the airshed. It is anticipated that these controls will be installed by October of 2024. US Magnesium is located outside of the existing NAA boundary and thus emission reductions are not creditable towards RFP, emission reductions implemented in areas outside of a NAA may count towards contingency measures as long as they improve air quality in the subject NAA.[195]

11.2.3 NAA NO_x Emission Reductions

As described in detail in section 7.4, the NWF NAA has experienced significant emission reduction of anthropogenic NO_x. From the baseline year of 2017 to the attainment year for this SIP revision of 2023, NO_x emission decreased from 108.3 tpd down to 87.0 tpd. Thus, the area experienced a 21.3 tpd reduction in NO_x emissions, representing a 19.6% decrease. These emission reductions are largely the result of the introduction of more stringent vehicle emission reduction tiers and the introduction of cleaner burning Tier 3 fuels into the NWF NAA. Thus, as the market penetration of Tier 3 fuels continues throughout the NAA as the local refineries finish the transition to refining fuels at these standards, and older vehicles are replaced with newer cleaner vehicles, the emission reductions seen in this sector are expected to continue without further action required.

11.3 Contingency Measures Emission Reduction Demonstration

Currently, no rulemaking exists that precludes a state from implementing a contingency measure before they are triggered, but emission reductions credited towards contingency measures may not be accounted for as part of the RFP demonstration. The emission reductions described in sections 11.2.1 and 11.2.2 will be in effect prior to the attainment date but are not counted towards RFP. The emission reductions described section 11.2.3 are already in place and do not count towards RFP or are being used as a control measure for this SIP revision. Table 76 demonstrates how the area has met the contingency measure requirement of reductions of 3% of baseline emissions.

Table 76: Percent Emission Reductions Based on 2017 Base Year Inventory

	NO_x Emissions (tpd)	VOC Emissions (tpd)
2017 Baseline Inventory	108.3	93.7
3% Baseline Inventory	3.2	2.8
Emission Reductions for Contingency Measures (Percent of 2017 Inventory)	21.66 (20%)	0.44 (0.47%)
Meets Contingency Measure Requirements?	Yes	--

[194] Utah State Implementation Plan; Section IX, Part H.32.k

[195] *See e.g., Louisiana Env't Action Network v. U.S. E.P.A.*, 382 F.3d 575, 585 (5th Cir. 2004).

Chapter 12 - Environmental Justice & Title VI Considerations

12.1 Environmental Justice

EPA defines Environmental Justice (EJ) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to development, implementation, and enforcement of environmental laws, regulations, and policies.[196] Fair treatment ensures no group of people are disproportionately burdened by environmental harms or risks, including those resulting from industrial, governmental, and commercial operations, programs, or policies. Meaningful involvement ensures that populations potentially affected by an action have an opportunity to participate in decisions impacting their environment and health. Meaningful involvement also includes the stipulations that the public's contributions can influence a regulatory agency's decision, the concerns of the public will be considered in the decision-making process, and the rule-writers and decision-makers will seek out and facilitate the involvements of these potentially-affected populations. Executive Order (E.O.) 12898: Environmental Justice,[197] directs federal agencies to incorporate environmental justice initiatives into their missions. E.O. 14008 issued in 2021[198] further reiterated a national focus on EJ. As a result, EPA has encouraged states to consider EJ in their SIP development process as their resulting actions may have impacts on disproportionately affected areas. EPA has also issued guidance on incorporating EJ consideration during the development of regulatory actions.[199]

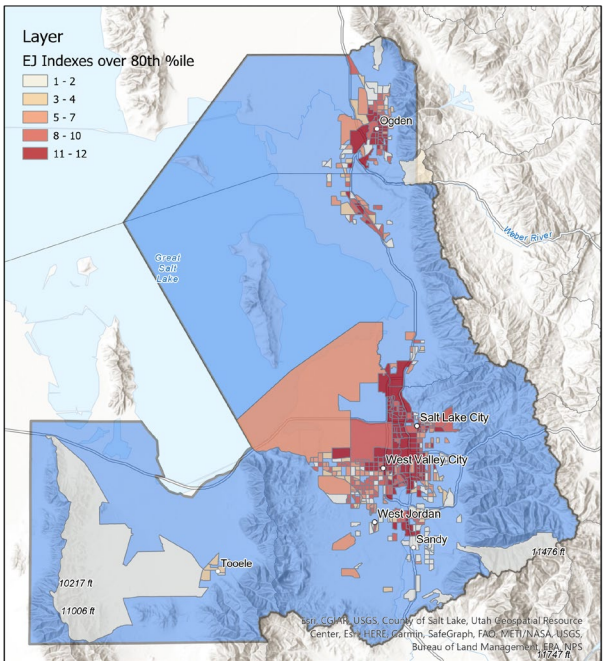

Figure 23: EJ Indexes >80th percentile in Each NWF NAA Census Block

12.2 Title VI of the Civil Rights Act

Title VI of the Civil Rights Act is a federal law that prohibits recipients of federal financial assistance (e.g., states, universities, and local governments) from discriminating based on race, color, or national origin in any program or activity.[200] This prohibition against discrimination under Title VI has been a statutory mandate since 1964 and EPA has had Title VI regulations since 1973. Title VI allows

[196] https://www.epa.gov/environmentaljustice

[197] Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7,629 (Feb. 11, 1994).

[198] Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7,619 (Jan. 27, 2021).

[199] Guidance on Considering Environmental Justice During the Development of Regulatory Actions (May 2015), available at https://www.epa.gov/environmentaljustice/guidance-considering-environmental-justice-during-development-action.

[200] Title VI, 42 U.S.C § 2000d et seq.

persons to file administrative complaints with federal departments and agencies alleging discrimination based on race, color, or national origin and EPA has a responsibility to ensure its funds are not being used to subsidize discrimination. Should a complaint be filed, EPA's Office of Civil Rights is responsible for the Agency's administration of Title VI, including investigation of such complaints. In accordance with Title VI, federal agencies shall ensure that all programs and activities receiving federal financial assistance that affect human health or the environment do not discriminate based on race, color, or national origin. The NWF NAA SIP revision falls under this category of programs and has potential impacts on such areas.

12.3 Screening-Level Analysis

Using Utah's Environmental Interactive Map,[201] UDAQ conducted an analysis of the EJ indices surrounding the NWF NAA. UDAQ reviewed all pollution and sources as well as socioeconomic indicators (a total of 20 indices) as percentiles calculated by comparing data from census blocks within the State of Utah. UDAQ notes that this SIP revision does not have the authority to control the following indexes included in this analysis: lead paint, superfund sites, wastewater discharge, RMP facilities, hazardous waste, or underground storage tanks. Figure 23 shows the count of EJ indexes above the 80th percentile in each of the census blocks within the NWF NAA. Table 77 shows the number of census blocks in the NFW NAA at the 80th percentile and above for each EJ index.

Table 77: Environmental Justice Indexes Over the 80th Percentile in the NWF NAA

EJ Index	Number of Census Blocks >80th Percentile
Superfund Proximity	400
$PM_{2.5}$	387
Ozone	364
Hazardous Waste Proximity	318
Air Toxics Respiratory Health Index	306
People of Color	294
Diesel PM	291
Air Toxics Cancer Risk	282
Underground Storage Tanks	267
Traffic Proximity	262
RMP Facility Proximity	258
Demographic Index	250
Less than High School Education	244
Lead Paint	236
Limited English Speaking	215
Low Income	181
Wastewater Discharge	153
Unemployment Rate	136
Under Age 5	113
Over Age 64	61

[201] https://enviro.deq.utah.gov/

12.3.1 EJ Screening Findings

Based on Figure 23, the areas within the NWF NAA with the highest concentrations of indexes above the 80th percentile include Ogden, Salt Lake City, West Valley City, and West Jordan. There is a total of 498 census blocks within the NWF NAA.

Table 77 shows a high number of census blocks at the 80th percentile or greater for all EJ indexes, with the most prevalent indexes in the NAA being:

- Superfund Proximity
- $PM_{2.5}$
- Ozone
- Hazardous Waste Proximity
- Air Toxics Respiratory Health Index
- People of Color
- Diesel PM
- Air Toxics Cancer Risk
- Underground Storage Tanks
- Traffic Proximity

12.4 Identified Stakeholders

As a result of this EJ analysis, UDAQ has identified the general public and public health departments within the Ogden, Salt Lake City, West Valley City, and West Jordan areas as populations potentially affected by the decisions made in this SIP. UDAQ identified these stakeholders as entities and groups requiring additional facilitation and involvement in the SIP development process.

12.5 Stakeholder Outreach, Meaningful Involvement, and Information Distribution

UDAQ made it a priority to ensure that the identified stakeholders would have ample and equal opportunity within the division's ability to participate in this SIP process through the measures described in section 12.5.1 to 12.5.5.

12.5.1 Public Informational Meetings

UDAQ hosted two virtual public meetings on the subject of "Finding Ozone Emissions Reduction Ideas." The first meeting took place on Wednesday, March 23, 2022, from 6 to 7 PM MST, and the second meeting took place on Saturday, May 3, 2022, also from 6 to 7 PM MST. These times were selected to maximize attendance from households with traditional working hours. Handouts for this meeting were issued via an interactive webpage[202] and potential attendees were invited to submit comments through a public Google Form to be addressed at each of the meetings. 67 individuals attended the first meeting. 45 individuals attended the second meeting. Recordings of each of these meetings are publicly available on YouTube.[203]

UDAQ also presented SIP-related updates to the State of Utah Governance Committee, a joint coordination effort by the Utah Department of Health and local health departments. These presentations took place on September 27, 2022, and on January 24, 2023, to inform the committee of the progress UDAQ has made in the SIP development process and emission reduction strategies employed.

[202] https://deq.utah.gov/air-quality/northern-wasatch-front-ozone-emissions-inventory

[203] https://www.youtube.com/watch?v=ip5D7nRaLTI & https://www.youtube.com/watch?v=b0fHNSFczvE

12.5.2 Environmental Advocate and Industrial Stakeholder Meetings

UDAQ holds regular environmental advocate meetings, industrial stakeholder meetings, and academic stakeholder meetings where UDAQ updated these groups on the development of this SIP and online postings of the SIP-related documents. Members of all groups were provided equal opportunities to ask questions and were encouraged to comment during these meetings as well as follow up afterward.

12.5.3 Public Commenting Period

Upon the approval of the Air Quality Board on [~~DATE~~]April 5, 2023, this SIP and all relating documents were made available for public comment from [~~DATE~~]June 1 to [~~DATE~~]July 17, 2023. Public notices for the commenting period were issued on the UDAQ webpage, via electronic mail, and in the Utah State Bulletin[~~, as well as in the local newspapers of the Ogden, Salt Lake City=, West Valley City, and West Jordan areas~~]. Commenters included:

- [~~COMMENTER~~]49 private citizens;
- [~~COMMENTER~~]US EPA Region 8;
- [~~COMMENTER~~]Breathe Utah;
- [~~COMMENTER~~]HEAL Utah;
- [~~COMMENTER~~]Utah Petroleum Association and Utah Mining Association;
- Chevron Products Company;
- Marathon Tesoro Refining & Marketing Company LLC;
- Rio Tinto Kennecott;
- Western Resource Advocates; and
- Utah Manufacturers Association

12.5.4 Public Hearing

As part of the public commenting period, a public hearing was conducted at the State of Utah Multi-Agency State Office Building[~~LOCATION~~] on [~~DATE~~]July 12, 2023 at [~~TIME~~]12:00 PM. The public hearing information was advertised in [~~PLACE~~]the Utah State Bulletin, [~~PLACE,~~]and [~~PLACE~~]the UDAQ webpage[~~NUMBER OF WEEKS~~] 41 days prior to the event. Attendance to this hearing was available both in-person as well as virtually. [~~Attendees~~]Commenters included:

- [~~COMMENTER~~]Nick Schou of Western Resource Advocates;
- [~~COMMENTER~~]Alex Veilleux of Heal Utah; and
- [~~COMMENTER~~]Gregor Green a private citizen

All comments made by [~~these~~]groups and individuals listed in Sections 12.5.3 and 12.5.4 were duly considered in the decision-making process of this SIP. These comments are summarized and responded to in [~~I~~]APPENDIX B[~~X~~] with original versions of each group or individual's comments available at https://deq.utah.gov/air-quality/northern-wasatch-front-moderate-ozone-sip-technical-support-documentation.

12.5.5 Information Dissemination

All materials related to this SIP have been posted on UDAQ's public platforms as the division has received and processed them throughout the development of this SIP. UDAQ uses all resources at its disposal to disseminate information to its stakeholders including:

- UDAQ webpage [204]
- State Bulletin
- Ozone SIP webpage [205]
- Stakeholder meetings
- Local newspapers in identified stakeholder communities.

[204] https://deq.utah.gov/division-air-quality

[205] https://deq.utah.gov/air-quality/northern-wasatch-front-moderate-ozone-sip-technical-support-documentation

APPENDIX B: Northern Wasatch Front Moderate 2015 NAAQs Ozone SIP Responses to Public Comment

On April 5, 2023, the Utah Air Quality Board proposed the incorporation of the Northern Wasatch Front (NWF) moderate ozone State Implementation Plan by reference into R307-110-13 and -17 for a 45-day public comment period. This public comment period began on June 1, 2023, and ended on July 17, 2023. During this time, staff at the Utah Division of Air Quality (UDAQ, the Division) continued ongoing conversations with stakeholders, and received submissions of written comments from 58 commenters. In addition to receiving written comments, on July 12, 2023, the Division hosted a public hearing where stakeholders could provide oral comments. During the hearing, three individuals provided oral comments, two of which submitted corresponding written comments.

The Division has reviewed and evaluated all comments received during this 45-day public comment period in accordance with the Utah Administrative Rulemaking Act, Utah Code § 63G-3-301(11)(b). All written comments received by the Division have been posted on its webpage where they can be viewed in their entirety. Below is a summation of comments and UDAQ responses:

Comments received from the general public: The Division received comments from 49 individuals who belong to an environmental advocacy stakeholder group.

1) **Public Comment:** All individuals that participated as part of this comment campaign commented on the inclusion of a prospective 179B(a) demonstration within the SIP noting that it was done in an attempt to justify Utah's nonattainment status. These commenters noted that the 179B provisions included within the CAA act are "intended for states that share international borders and should only be used if neighboring countries' ozone production affects the state." The commenters further state that, "The EPA has ruled that Utah is not eligible for this waiver", finishing that the state of Utah should focus on finding, "solutions to our own ozone production by allocating our time, energy, and funds to regulating our own sources".

   UDAQ Response: The Division appreciates the significant number of individuals who participated in the public comment process by submitting comments along these lines. The Division also recognizes that the inclusion of a prospective 179B demonstration within the SIP has generated a substantial amount of attention. However, the Division would like to note that a prospective 179B(a) demonstration was included in an effort to appropriately apportion modeled ozone concentrations in the NWF NAA to their sources as an effort to further bolster the Weight of Evidence approach included in the modeling demonstration (section 8). Further, in EPA's own guidance on the development of 179B demonstrations EPA explicitly states that section 179B of the CAA is "not restricted to areas adjoining international borders", however non-boarder demonstrations may require, "additional technical rigor and resources compared to demonstrations for border areas."[1] While EPA did determine that the state of Utah's previous retrospective 179B(b) demonstration was insufficient based on technical rigor,[2] among other factors, at no point did the EPA determine that Utah, or any other non-border state for that matter, was precluded from submitting a 179B demonstration. Especially, a prospective demonstration under 179B(a), which differs from a retrospective demonstration. Prospective demonstration, as the name suggests, is a forward- looking demonstration "based on future emissions estimates for

[1] Guidance on the preparation of Clean Air Act Section 179B Demonstrations for Nonattainment Areas Affected by International Transport of Emissions (179B Guidance) at 6 (Dec. 2020).

[2] Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Areas Classified as Marginal for the 2015 Ozone National Ambient Air Quality Standards, 87 Fed. Reg. 60,897 (Oct. 7, 2022).

international and domestic sources."[3] Utah's prior 179B demonstration was retrospective under subjection (b) and analyzed international contributions based on the past data instead of future emissions projections.[4] Thus, these two different ways of ascertaining contributions from international emissions cannot be compared because they approach the required demonstration in two different ways.

Lastly, the Division would like to thank the commenters for encouraging the Division to identify and implement solutions that reduce ozone concentrations. The Division would like to note that the SIP as it was proposed for public comment includes a host of NO_x and VOC emission reduction controls and rules, demonstrates continued emission reductions from some of the largest emission sources including the on-road sector, and wants to assure the commenters that the Division is committed to its continued mission of identifying and implementing viable emission reduction strategies that meet the CAA requirements.

2) **Public Comment on Solvents:** The same set of commenters representing environmental advocacy stakeholders suggested that the state should consider strengthening Utah's current regulations in Utah Administrative Code (UAC) rule R307-357 [Consumer Products], noting "other states are proposing stricter regulations on solvents that emit VOCs." The commenters finish by stating, "To protect public health and the environment, Utah should conduct its own assessment of solvent risks and consider regulating them to avoid carcinogenic exposure."

   UDAQ Response: The Division appreciates the suggestion to further evaluate the existing administrative rules regulating VOC emissions from consumer products, among other solvent based rules. As noted in section 5.1 (table 55) of the proposed SIP, Utah currently has 24 administrative rules that reduce VOC emissions from area sources, all of which were compared to similar rules in other ozone nonattainment areas. The results of this analysis concluded that these rules currently represent some of the most stringent available solvent based regulations, and thus there are no currently viable additional emission reductions available in this sector. However, it is important to note that California recently proposed more stringent consumer product thresholds that will be phased in in the coming years, with full implementation by 2027. As part of the state's ongoing obligation to fulfill the VOC emission reduction requirement of this SIP (Reasonable Further Progress or RFP), Utah will be examining if the impacted industry is able to meet California's update, more stringent thresholds. If so, the State will further examine if implementing these new consumer based thresholds is a viable emission reduction strategy for the NWF NAA as the products become available.

3) **Public Comment:** The same set of commenters from the environmental advocacy stakeholders also noted that, "It would benefit the Division of Air Quality to take preventative measures and collaborate with the new Great Salt Lake water commissioner to understand the link between the recently exposed lakebed and high ozone levels. Ongoing studies at the University of Utah suggest that interaction between the increased reflectance of the lakebed and chemicals in the air can result in the production of ozone that is then transported into urban areas."

   UDAQ Response: The Division appreciates this comment and recognizes the significance of the interconnectedness of air quality and the condition of the Great Salt Lake. The Division works closely with a wide array of academic stakeholders, including the University of Utah, in understanding the role the Great Salt Lake, and other unique geographical features of the region,

[3] 179B Guidance at 40; also see 87 Fed. Reg. 60,897, 60,904 (discussion on prospective and retrospective 179B demonstrations).

[4] Utah Division of Air Quality Clean Air Act 179B(b) Demonstration Northern Wasatch Front Ozone Nonattainment Area (May 5, 2021).

play in the formation of summertime ozone and other pollutants. For this SIP specifically, the modeling conducted included several improvements focused on the role of the Great Salt Lake, including adjustments to explore the link between exposed lakebed and ozone formation as the commenters suggested.[5] Specifically, the Division adjusted its model inputs that better capture the extent of the salt flats and playas, as well as better represent the UV reflectivity of those surfaces. In addition to adjusting the lake extent to reflect actual lake levels during the modeling episode, the playa and salt flat UV albedos were adjusted in the meteorological and photochemical models using satellite observations, literature values for similar surfaces, and local observations made by researchers at the University of Utah. The UV albedo was increased from a value of 0.08 for *both* the salt flats and playa to 0.69 and 0.34, respectively.

4) **Public Comment:** One individual representing the general public provided comment at the Public Hearing held on July 12, 2023. This individual urged the Division to work closely with the state legislature to find effective ways to regulate emissions. The commenter also urged the Division to explore ways of reducing emissions from mobile sources, including on-road sources as well as lawn mowers, yard equipment and other non-road sources.

   UDAQ Response: The Division wants to thank this commenter, as well as all other commenters representing the general public, for participating in the public comment and rule making process for this SIP revision. The Division wants to assure the commenter that it will continue to actively engage with our partners in the legislative branch as we work to find solutions to our ongoing air quality challenges. The Division would also like to highlight its plans to propose rules aimed at reducing emissions from the lawn and garden sector, as outlined in sections 5.3 and 7.5 of the proposed SIP.

United States Environmental Protection Agency - Region 8 Comments:

5) **EPA Comment: "**The SIP submission was due to EPA by January 1, 2023, and is still outstanding. The EPA strongly encourages the State to submit the Moderate SIP as soon as possible**."**

   UDAQ Response: The Division understands that the SIP is late and is committed to submitting a complete SIP at the earliest possible date. However, the Division would like to note that due to a significant delay in the issuance of the Determination of Attainment by Attainment Date by the EPA, Utah was left with an unusually short period of time post reclassification to Moderate prior to the Moderate SIP deadline.[6] The effective date of the redesignation was November 7, 2022 with a deadline to submit a full SIP by January 1, 2023. While the state had begun work on a SIP submission for the moderate designation several years prior to the late redesignation, the work did not need to be completed due to uncertainty in redesignation. Once this late redesignation was issued, the state only had 55 days to prepare and submit a completed final plan to EPA. A time frame of slightly less than two months is inadequate for this task. Under Utah's administrative rulemaking process, the plan first has to be proposed to the Utah Air Quality Board[7] that proposes it to the public for a public comment period[8] (at least 30 days and in this case an extended period of 45 days due to the complexity and volume of the proposed plan). The Division then needs time

[5] Great Salt Lake Playa and Salt Flat UV Albedo Adjustments. Technical Supporting Document, Utah Division of Air Quality State Implementation Plan 2015 Ozone NAAQS Northern Wasatch Front Moderate Nonattainment Area 2023 Section IX Part D.11.

[6] 87 Fed. Reg. 60,897.

[7] Utah Code § 19-2-104(1)(a), (b) (powers of the board); *id*. § 63G-3-201(2) (when rulemaking is required).

[8] *Id*. § 63G-3-301(11)(a).

to review and evaluate public comments,[9] and propose the plan back to the Air Quality Board for final adoption. Only after the Board adopts the plan, can it be submitted to EPA. The Utah Administrative Rulemaking Act allows for 120 days to complete this process from the first publication of the proposed rule in the Utah Bulletin to the final adoption by the rulemaking Board.[10]

6) **EPA Comment: "**The emissions inventory methodology is not sufficiently supported in the SIP narrative or TSD... Please provide to EPA the workbooks for all sources' emissions inventory, or make them available on the state's website upon submittal of the final SIP." Beyond the request for the underlying workbooks, the EPA also provided substantial editorial comments requesting additional information in the SIP narrative or the TSD to help clarify how the inventories were developed. Additionally, EPA suggested extensive editorial revisions to the TSD and the SIP in regards to details for the I/M program [i.e EPA comments 6-1, through 6-3-3 and 10-1].

   UDAQ Response: The Division appreciates the request for the underlying workbooks and added details regarding the emission inventory development, as well as the additional details for the I/M program within the nonattainment area (NAA). As is standard practice for Utah, all underlying data, workbooks, and relevant scripts will be provided to the EPA upon submission of the SIP. The Division believes that the inclusion of these files upon submission should clarify the majority of requests for additional details in the SIP or TSDs. However, the Division has made efforts to implement the suggested edits where appropriate. These edits are too extensive to list here, but they include updates to TSD, and where necessary, changes to the SIP narrative.

7) **EPA Comment 3-2-6:** "Inland port VMT estimate methodology: It is unclear if this adjustment is currently being used in regional conformity analyses or if it is only used for the SIP EI. In the time between Wasatch Front Regional Council (WFRC) forecasting 2024 socio-economic data, has there been any observed increase in class 50 and 60 VMT, particularly any increase attributable to the inland port freight activity? If so, documentation should be provided explaining this."

   UDAQ Response: The Division appreciates this comment and agrees that some added information would be useful in addressing this comment. The On-Road SIP TSD describes what has been used at the time of the development of the SIP inventory satisfying the requirements for the latest planning assumptions requirements (40 CFR § 93.110) and Ozone Inventory Guidance requirements (Meeting the Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations). This SIP revision's modeling timeline for creating inventories began in the spring of 2020 utilizing MOVES 2014b along with Travel Demand Model data that utilized the 2015 base year. The baseline transportation data did not initially include Inland Port Emissions activity estimates as it did not exist at the time. The Division requested from the responsible Metropolitan Planning Organization (MPO) that an estimate of Inland Port emissions be included in the SIP in addition to updating the emissions factors utilizing MOVES3, which was not required at the time. The current Air Quality Memorandum submitted by WFRC was issued on May 26, 2023 demonstrating a clear planning timeline indicating that reasonable assumptions have been used in the SIP emissions inventory. There are not currently SIP or Transpiration Conformity requirements specifically detailing how to compare different Travel Demand activity data sets and their respective impacts on inventories. There are numerous planning assumptions and details that change from one Travel Demand data set to another. There are requirements on what needs to be published in SIP and Conformity TSDs as far as what local planning assumptions are being

[9] *Id*. § 63G-3-301(11)(b).
[10] *Id*. § 63G-3-301(12)(e).

used (40 CFR § 93.110). The Division believes that the On-Road SIP provides sufficient details on the impact of Inland Port emissions.

8) **EPA Comment 4-4: "**The Reasonably Available Control Technology (RACT) chapter's reliance on Utah $PM_{2.5}$ SIP sections IX.H.11 and IX.H.12, which have only recently been proposed for approval, could impact this SIP until these sections have been finalized… To avoid such an effect, the references in the table could be revised to be more general, but there's no specific requirement or guidance on how to best reference another SIP section. We recommend that the Utah Division of Air Quality (UDAQ) be prepared to revise these tables if appropriate based on changes to the $PM_{2.5}$ sections."

   UDAQ Response: The Division appreciates this comment, however feels that at this time including specific citations to existing Part H conditions increases the transparency of the RACT analysis and determinations conducted for this SIP. The Division received several comments from other stakeholders indicating that they felt the RACT process needed greater transparency, and thus any modification of the current draft that reduces transparency is not in the best interest of providing the public with the information needed to evaluate the results of the RACT chapter. At this time, the Division will proceed with the citations as they stand and if modifications to the $PM_{2.5}$ Part H conditions change in a way that impacts this SIP, appropriate steps will be taken at that time to rectify any discrepancies.

9) **EPA Comments 4-1 and 4-2:** The EPA commented that the Division did not "include sufficient information in chapter 4 or in the TSD related to the evaluation and adoption of rules associated with applicable Control Technique Guidelines (CTG) and Alternative Control Techniques (ACT)... CTGs should be listed individually, with State rules identified that comply with each CTG. CTGs should also be listed individually for sources the State is making a negative declaration for, with supporting documentation confirming that no such sources operate in the Nonattainment Area (NAA)."

   In addition to the request for additional details surrounding the CTG analysis, EPA further noted in comment 4-2 that the "proposed RACT chapter will need to include a comparison to other State rules or additional analysis to substantiate compliance with a CTG as being representative of RACT-level controls.

   UDAQ Response: The Division appreciates the EPA identifying the insufficient information surrounding the CTG and ACT analyses included in the RACT analysis of the SIP. The Division has developed an additional TSD that examines, in detail, each CTG and ACT as they relate to the NWF and the RACT determinations. This TSD, titled NWF CTG TSD aims to fulfill this additional information request from EPA. A citation has been added to section 4.19 to link this added analysis directly to the RACT section.

10) **EPA Comment 7-1: "**Only a quarter of the emissions reductions required under reasonable further progress (RFP) requirements are demonstrated. EPA may be required to disapprove this SIP element, which would lead to a transportation conformity freeze until this element is remedied. The transportation conformity freeze would be effective on the date of the disapproval (see 40 CFR 93.120(a)(2) and 40 CFR 93.101)... EPA has been working with the State since 2021 to try to identify sufficient reductions to meet this requirement for a Moderate NAA and recognizes the efforts the State has made under other NAAQS to reduce VOCs. Unfortunately, these prior reductions cannot be credited towards this 15% VOC requirement for the 2015 ozone NAAQS." The EPA goes on to suggest that the state consider seeking a "RPF waiver" which would allow relief from the impacts of an insufficient RFP by lowering the major source threshold, and thus the threshold for sources to be included as part of the RACT process, to 5 tons

per year of NO_x or VOC. The EPA finishes by noting, "without a waiver or other alternatives, EPA may be required to disapprove this SIP element, which would lead to a transportation conformity freeze until this element is remedied.

UDAQ Response: As noted by the EPA, Utah has been working in close coordination with EPA in efforts to identify viable VOC emission reduction since 2021 to meet the RFP requirement of a 15% reduction in VOC emissions. However, the reality is that as a result of the state's previous emission reduction efforts addressing wintertime $PM_{2.5}$, the identification and implementation of viable and meaningful emission reductions has become extremely difficult in the NWF area. Realistically, the VOC emission reduction options available to the state at this time are few and are increasingly costly. The very fact that the state has been in close coordination with the EPA in efforts to identify emissions reduction strategies for several years now is evidence of the exceedingly difficult position the state of Utah is in. The failure to implement RFP is not due to a lack of willingness or desire, but instead is due to the lack of available and cost effective options. This is, in part, why the state must consider the availability of emissions reduction strategies as it examines the reasonable level of cost effectiveness for controls. This holds true for emission reduction strategies for area or point source emissions.

As for the EPA's suggestion the state pursues an "RFP waiver" under Section 182(b)(1)(A)(ii) of the CAA, the state deems this option to be an overly burdensome pathway to effectively implement in an area with as extensive economic activities as the NWF. The sheer number or sources that would be brought into the SIP process would exceed the state's ability to effectively manage the RACT process, and the added regulatory burden including Title V requirements to sources as small as 5 tpy is currently viewed as excessive for sources that size. The evidence that this approach is exceptionally burdensome is clear in the fact that in the 53 years since the passing of the CAA, no state or nonattainment area to our knowledge, has found Section 182(b)(1)(A)(ii) to be a meaningful pathway to fulfilling RFP requirements. At this time, the Division does not view Section 182(b)(1)(A)(ii) as a viable option. However, this does not preclude the state from pursuing a "waiver" under 182(b)(1)(A)(ii) in the future if this pathway is necessary to alleviate repercussions of a disapproved RFP element such as conformity freezes.

Lastly, the state would like to comment on cooperative federalism as we explore pathways to fulfill RFP. As noted above, the state has been working diligently in coordination with its partners at the EPA to identify and implement emission reductions on a very short timeline. Moreover, the state has proposed additional measures to help the area attain the standard at the earliest possible date including NO_x emission reductions, regulations on small non-road engines, and a NAA specific cost threshold for Reasonably Availability Control Technologies that takes into consideration the regulatory reality of our existing extensive emission reduction policies in place. However, despite these efforts we remain unable to fulfill the full reduction on the short timelines required by Section 182 of the CAA. The Division recognizes that the EPA is tasked with implementing the CAA as it is written, but requests that the state's extensive efforts to address ozone pollution in the NWF are kept in mind when punitive measures such as those included in 40 CFR 93.120(a)(2) and 40 CFR 93.101 are considered. The NWF faces a substantial challenge in identifying viable VOC emission reductions, as well as significant regionally specific challenges in addressing ozone pollution, but nonetheless has proceeded with every reasonable option available at this time. The Division requests that these efforts and challenges are taken into consideration when the EPA makes its final determination.

11) **EPA Comment 8-1: "**Table 68 does not calculate the final design value correctly for values that exclude wildfire events in 2016 and 2017. Per EPA's guidance, the adjusted base design value should carry one decimal to the right when applying the relative response factors (RRF)... correct calculation, which results in a wildfire-adjusted modeled design value of 73 parts per billion

(ppb) instead of 72 ppb for the Hawthorne site, and 72 ppb instead of 71 ppb for the Bountiful and Herriman sites."

UDAQ Response: The Division calculated ozone design values excluding wildfire days following 40 CFR Part 50, Appendix U 3(b) and U 3(e). According to 40 CFR Part 50, Appendix U 3(b), calculated 8-hour averages are reported to three decimal places (in ppm) with additional digits past the third decimal truncated. In accordance with 40 CFR Part 50, Appendix U 3(e), the Division calculated the 3-year average design values up to three decimal places (in ppm) and then truncated digits to the right of the third decimal point. Because the 3-year design values are truncated to the third decimal, this methodology was used in calculating the weighted 5-year average DVB in order to remain consistent with the rules. Therefore, using this approach we formulated the DVBs listed in Table I in EPA's comment 8-1. The Division is aware of EPA guidance which states that, "The resultant 5-year weighted average DVB should carry one digit to the right of the decimal point for ozone and 24-hour $PM_{2.5}$ and two digits to the right of the decimal for annual $PM_{2.5}$." However, the above guidance to "carry one digit to the right of the decimal point for ozone" for a 5-year DVB is not explicitly stated in the applicable parts of the Code of Federal Regulations and therefore UDAQ defaulted to the rules in 40 CFR Part 50, Appendix U, outlining the ozone design value calculation technique.

Thus, the Division has concluded that, in light of conflicting methodologies in the guidance and the CFR, that it will default to the language in the CFR as originally done in the SIP and will retain the originally calculated wildfire impacted design values.

12) **EPA Comment 8-2:** "Attainment year modeling shows that the future design value exceeds the standard by several parts per billion. While EPA does not specify an exact value for what may constitute "close to the NAAQS," it is generally agreed that approximately 1 ppb over NAAQS is the acceptable limit for an attainment demonstration using WOE. The proposed SIP is exceeding the NAAQS by 2-3 ppb at its highest monitors, which likely exceeds the 70 ppb standard by too great an amount to permit a successful WOE demonstration."

UDAQ Response: The Division finds this comment to be ambiguous and surprising given the level of coordination between the EPA and the Division during the development of the WOE approach found in section 8 of the SIP. If the expectation is that a WOE is only a viable approach if the "generally agreed" threshold of 1 ppb is met, that threshold should be established in guidance or rulemaking and clearly communicated to all responsible air agencies. As noted in the comment, the EPA has established in guidance that a WOE has specific criteria including, "1) A fully-evaluated, high-quality modeling analysis that projects future values that are close to the NAAQS. 2) A description and explanation of each of the individual supplemental analyses, preferably from multiple categories. Analyses that utilize well-established analytical procedures and are grounded with sufficient data should be weighted accordingly higher. 3) A written description as to why the full set of evidence leads to a conclusive determination regarding the future attainment status of the area that differs from the results of the modeled attainment test alone."[11] The Division thinks that it has fulfilled each of these criteria as explicitly stated in the guidance and that a "generally agreed" threshold, one that to this point has never been expressed to the Division, should not be a determining criteria in the approvability of a WOE approach. Whether a WOE is approvable or not should be based on established guidance or rulemaking.

[11] U.S. EPA, Modeling Guidance for Demonstrating Air Quality Goals for Ozone, PM2.5, and Regional Haze at 102 (Nov. 2018), https://www.epa.gov/sites/default/files/2020-10/documents/o3-pm-rh-modeling_guidance-2018.pdf.

EPA itself acknowledges that it "does not specify an exact value for what may constitute "close to the NAAQS" and cites one example of the WOE approval for Texas where two of the 19 monitors were projected to be less than 1 ppb above standard.[12] One example is insufficient to definitely establish the threshold value and to consider such value as "generally agreed" on approvable threshold for WOE.

13) **EPA Comment 8-4:** "Herriman monitor appears to be omitting 7/14/2017 and 9/3/2017 in adjusted base year design value when omitting wildfire days. It appears that 9/3/2017 and 7/14/2017 have been omitted from the 4th maximum calculations for the Herriman monitor. When 9/2/2017, 9/5/2017, and 9/6/2017 are omitted from the 2017 values, the 4th max should be 75 ppb on 7/14/2017, and not 74 ppb on 8/16/2017. While this adjustment is important, it would not change the adjusted future design value after truncation. If there is an explanation for why these days have been omitted, please include it in the exceptional event TSD to make this clearer."

UDAQ Response: The Division acknowledges the discrepancy in the adjusted 4th max according to the comment and the WOE analysis for data exclusion due to wildfire smoke impacts. Originally, data was grouped 9/2-9/3/2017 as one wildfire smoke event, and therefore upon initial analysis and adjustment of the 2017 4th max at Herriman we had excluded both 9/2 and 9/3/2017 as well as the 9/5-9/6/2017. This methodology allowed the Division to arrive at the adjusted 4th max of 74 ppb on 7/15/2017. However, when the analysis went forward with the WOE approach, the Division chose to focus only on 9/2/2017 for exclusion and not 9/2-9/3/2017. The initial adjusted 4th max was not changed to consider only 9/2, 9/5, and 9/6/2017 for exclusion, and this is where the inconsistency in adjusted 4th max arose. After reviewing the comment, the Division concurs that the new adjusted 4th max should be 75 ppb on 7/14/2017 (excluding just 9/2, 9/5, and 9/6/2017). This oversight has been corrected in the relevant portions of the TSDs and the SIP narrative including updates to the baseline DV and future DV as reported in section 9 of the SIP.

14) **EPA Comment 9: "**The proposed SIP includes a CAA section 179B(a) prospective international transport demonstration, and also addresses several areas of concern that the EPA cited in its decision not to approve the previous 179B(b)" demonstration. EPA lists three "specific concerns" with the Divisions 179B(a) demonstration.

First, "EPA recommends the use of APCA tool" as opposed to the OSAT which was used in this demonstration, "for source apportionment studies because APCA attributes ozone production to the anthropogenic precursor when ozone is produced by reactions between anthropogenic and biogenic precursors. The APCA results are more useful than OSAT results for identifying the anthropogenic emissions sources that can be controlled to reduce ozone."

Second, "Model error and bias is another important factor that should be considered when interpreting model source apportionment results. If a model underestimates ozone production, it might not accurately quantify source contributions to ozone… The proposed SIP presents results based on the total modeled ozone concentrations without correction for model bias. Typically, EPA would recommend first applying model relative response factors to correct for model bias, and then evaluating source apportionment using the bias corrected model results."

[12] Approval and Promulgation of Implementation Plans; Texas; Attainment Demonstration for the Dallas/Fort Worth 2008 Ozone Nonattainment Area, 83 Fed. Reg. 19,483, 19,492 (May 3, 2018).

Lastly, EPA notes that the way in which the UDAQ subtracted international contributions in its demonstration conflicts with EPA guidance since EPA instead " recommends evaluation of the relative contributions of domestic and international contributions, and states that a strong 179B demonstration would show a large international contribution relative to the domestic contribution."

UDAQ Response: The Division appreciates these comments from the EPA on the included prospective 179B(a) demonstration. As documented in these responses to comments, the majority of comments received during the public comment process made mention of the 179B(a) demonstration, with a range of opinions including those in strong opposition to its inclusion, to groups advocating for its inclusion. The Division thinks that it is important to continue to engage in the discussion and bring attention to all the regionally specific challenges impacting the ability of the NWF to attain the health-based standard, including the presence of international emissions.

First, in response to EPA's comment on APCA versus OSAT tool, the Division would like to note that while it's important to accurately identify contribution to ozone formation from anthropogenic activities, it is equally important to consider the total atmospheric composition present when modeling ozone because the non-anthropogenic emissions significantly impact the NWF's ability to attain the standard as well. While we agree that there are strengths and weaknesses to each tool, the Division thinks that using OSAT for this demonstration is appropriate and adequately demonstrates the impacts of international emissions on the area's ability to attain the standard. The Division will note, however, that it may consider APCA as an additional tool for evaluating the impacts of international contributions in future analyses.

Second, the Division does not disagree that model bias, and the systematic underestimation of ozone observed by the model, is important to keep in mind when evaluating the full impacts of international emissions. While the model is currently underestimating ozone, that underestimation is likely predominantly associated with local photochemistry as demonstrated by the models ability to closely recreate observed ozone concentrations at the Gothic, CO monitoring site. Thus, as model bias is accounted for, or as model performance improves, it is unlikely that the results as applied to international emissions contributions would change significantly. Likewise, the final conclusions that international emissions are impacting the NWF in a significant enough way to prevent the area from attaining the standard are not likely to change.

Lastly, while the Division understands EPA's position that a strong 179B demonstration will show larger international contributions relative to local, the Division will note that this requirement is not found anywhere in the CAA. While EPA's point that local anthropogenic emissions do account for more ozone than international emissions, it is critical to keep in mind which emissions Utah can regulate and which ones are under the EPA's domain. As demonstrated in Figure 18 of the SIP, on exceedance days international emissions contribute to a nearly identical amount of ozone in the NWF as emissions that Utah has direct authority to regulate. Thus, when accounting for regulatory authority, the contributions from international emissions are nearly equivalent (therefore large in comparison). Regardless of regulatory authority or proportionality of local vs international contributions, the 179B(a) demonstration included in this SIP shows beyond a reasonable doubt that international emissions are preventing the NWF NAA from attaining the standard by the attainment date. This fact is not disputed by the EPA at any point in its comments pertaining to section 9 of the SIP.

15) **EPA Comment 10-2: "**Motor vehicle emissions budgets cannot be greater than the future year SIP mobile source emissions inventory… EPA will not find a motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan to be adequate for transportation conformity purposes unless the following minimum criteria are satisfied [...] The

motor vehicle emissions budget(s), when considered together with all other emissions sources, is consistent with applicable requirements for reasonable further progress, attainment, or maintenance".

UDAQ Response: As noted in the SIP, the Motor Vehicle Emissions Budget (MVEB) established in this SIP is not greater than the values identified in the emission inventory and thus used for modeling, rather the temporalization of the tons per day (tpd) is different and thus the numbers are slightly different. What is more, a MVEB is a regulatory tool based on an average summer weekday modeled emission estimate, while the on-road emission inventory represents a summer average-episode-day, which is temporalized over an assumed weekly traffic distribution that has variation between weekend and weekday emissions. While it is understandable that one would assume the values in a MVEB and an emission inventory would be the same, or the MVEB would be lower, the reality here is that they are independent numbers, used for very different purposes, and temporally aggregated differently. Thus, the Division disagrees with this comment from EPA and concludes that the values in both the inventory and MVEB are correct, appropriate and approvable.

16) **EPA Comment 11: "**Contingency measures are not creditable if implemented before a triggering event… the contingency measures (CM) included will not [be] approvable if they are implemented prior to a future EPA action determining that the nonattainment area either failed to attain by the Moderate attainment date or failed to meet RFP… [c]ontingency measures must be designed so as to be implemented prospectively; control measures that have already been implemented may not serve as contingency measures even if they provide emissions reductions beyond those needed for any other CAA purpose… For more explanation on how EPA intends to evaluate CMs, see EPA's recent draft guidance, issued in March 2023."

UDAQ Response: The Division appreciates the comment that the reductions included as contingency measures as proposed do not meet the criteria of a contingency measure as they are not triggered upon a triggering event. The Division would like to note, as stated in our response to EPA Comment 7-1,that this plan does not demonstrate a full 15% emission reduction as required to fulfill the RFP requirement. Thus, the state does not have additional measures available to it to propose as contingency measures which trigger upon disapproval of RFP or a failure to attain by the attainment date. If additional emission reduction strategies were available, the state would have adopted those as part of our RFP. Furthermore, the CAA requires the state to attain the standard as expeditiously as practicable.[13] It seems counterproductive to withhold the implementation of an emission reduction that can work towards reducing pollution and improving human health until a future date, if those reductions are required to fulfill other requirements like RFP and advance the attainment date. The Division also appreciates the newly released draft guidance, but would like to note that this guidance was released in March of 2023, 74 days after the deadline for the moderate SIP, and substantially after the point in which responsible agencies can examine and implement this guidance given the extensive timeline for rulemaking.

<u>Utah Petroleum Association & Utah Mining Association Comments:</u>

17) **UPA Comment II:** The Utah Petroleum Association (UPA) and the Utah Mining Association (UMA) submitted joint comments. The comments noted, "The SIP fails to address some important scientific considerations. The proposed Moderate SIP makes no attempt to explain why the design value trend over the past twenty years would suddenly be responsive to new and very limited NO_x and VOC reductions, significantly smaller than reductions over the past several years, and provides little or no evidence in support of the anticipated response." In this comment,

[13] 42 U.S.C. § 7502(a)(2)(A).

the UPA is questioning the UDAQ determination that NO_x emission reductions are a necessary component in moving the area towards attainment. UPA goes on to state, "the SIP must include only those NO_x reductions needed to achieve RACT and RACM". The commenter goes on to cite several recent studies that demonstrate that VOC emission reductions at certain locations in the NWF are more beneficial than NO_x emission reduction alone, noting "multiple recent scientific studies call for very large reductions of NO_x or NO2 to make a difference in ambient ozone concentrations and stand in stark contrast to the very small reductions from the added NO_x controls.

UDAQ Response: The Division disagrees with the comment that important scientific considerations were not taken into account in the SIP. The SIP contains extensive information on historic trends of ozone in the NWF including figure 3, and tables 4 and 5, which demonstrate that the area has experienced significant downward trends in observed ozone concentrations. These downward trends began in the mid 2000's and continued until the mid twenty-teens when the trends flattened or plateaued. The Division further analyzed the underlying atmospheric chemistry associated with NO_x and VOC sensitivities, with the predominant findings represented in figure 6, in which the Division demonstrates the importance of both NO_x and VOC emissions in the formation of ozone in the NWF NAA. While the Division agrees with the commenter that VOC emission reductions will continue to be beneficial in the reduction of ozone formation in the NWF, there are important real world considerations that must be kept in mind when examining NO_x vs VOC emission reduction strategies.

First, the SIP is a planning document that puts forward strategies to move the entire NAA towards attainment. The NWF NAA is a spatially complex region, in which varying degrees of NO_x to VOC sensitivities are expected to exist. Thus, citing the NOx dominant conditions at one location as grounds for excluding NO_x emission reductions elsewhere in the NAA ignores that the plan must demonstrate improvements to air quality throughout the NAA.

Second, only very limited VOC emission reduction strategies are available to the State given the existing regulatory landscape. This is demonstrated extensively throughout the SIP, and is evident in difficulties meeting the 15% RFP requirement. Given the availability of emission reduction technologies, and the lack of a viable pathway to attainment with VOC reductions alone, the Division has determined that a continued emphasis on NO_x reductions paired with modest VOC controls, where available, is an appropriate pathway to attainment.

This approach, a "NO_x -heavy approach with modest VOC controls", is consistent with the approach taken by other nonattainment areas that faced a similar situation as the NWF.[14]

Additionally, as the NWF NAA is expected to fail to attain the standard by the moderate attainment date of August 3, 2024, it is anticipated that the area will be further redesignated to serious nonattainment. As a serious NAA, the NWF will have an additional 3% year-over-year emission reduction requirement beyond the 15% moderate NAA emission reduction requirement. This additional serious emission reduction requirement can be achieved with NO_x or VOC reductions, and it is anticipated that NO_x reductions will play a significant role in achieving this requirement.

Lastly, the Division has found no language in the CAA which is consistent with the statement that "the SIP must include only those NO_x reductions needed to achieve RACT and RACM." Nor does the commenter provide any citation to indicate where this statutory requirement, or legal precedent, exists. On the contrary, the CAA places the explicit requirement on the state to

[14] VOC Controls, South Coast Air Quality Management District, 2016 AQMP White Paper, September 2015.

develop a SIP that demonstrates attainment of the standard as expeditiously as practicable.[15] Given the lack of available VOC emission reduction control options, the importance of NO_x in the formation of ozone within the NAA, a NO_x and VOC emission reduction strategy is Utah's best, and only, viable pathway towards attaining the standard at this time.

18) **UPA Comment III:** "Ramboll's scientific review of the modeling aspects of the SIP calls the modeling conclusions into question, indicating the area may be more likely VOC-limited during peak ozone formation hours, and shows the insignificance of the added NO_x controls requested of Marathon and Chevron in the proposed Part H revisions… recent studies show the NWF to be more likely VOC-limited during peak ozone formation hours, and NO_x reductions may have little or no benefit or may even pose a disbenefit in some areas, resulting in increased ozone formation… Ramboll found that the total simulated 2023 ozone design value reduction from the NO_x and VOC controls required of Marathon and Chevron is a combined 0.03 ppb based on the SIP source apportionment modeling results, in other words, not enough to support expeditious attainment."

UDAQ Response: As noted in the Division's response to UPA Comment II, the Division does not disagree with the comment that the NAA is likely VOC limited at times, and at different locations. However, the Division would like to draw attention to the results of an analysis performed by the Division, and cited by Ramboll in UPA's comments, which indicates that the area often experiences transitional regimes, in which both NO_x and VOC reductions are beneficial to reducing ozone formation.[16]

The Division also disagrees with the comment that the NO_x reductions proposed in the SIP are "not enough to support expeditious attainment" of the standard. On the contrary, the commenters' own analysis which demonstrated that the proposed controls will likely result in a net benefit to air quality, further demonstrates that NO_x emission reductions are a viable strategy for progressing towards attainment. Further, while the Part H proposed controls alone do not demonstrate attainment, they should not be viewed in isolation, but instead must be viewed as part of a larger and longer term strategy to attain the standard. In fact, the comments imply that these controls should not be implemented since they do not individually demonstrate attainment. This approach would set an unrealistic and unattainable bar for all future controls. That is, as the commenters are attempting to establish, that any individual control must be modeled to demonstrate that control on its own results in the area attaining the standard, while ignoring all other controls and future emission reduction strategies as part of any future SIP. Any control must be considered in the larger context of all proposed strategies that assist in bringing the area into attainment. As the commenters' own modeling demonstrates, these controls, when combined with the additional emission reductions accounted for in the SIP, do indeed advance the area towards attaining the standard.

Additionally, the model used by the commenter to examine the proposed controls, as identified by the commenters, underpredicts local photochemistry. Therefore, the 0.03 ppb cited should be viewed as a lower bound of the potential benefits seen from the implementation of these controls, with the real benefit likely to be larger than that reported by the model. In addition to the underprediction of local photochemistry, the Division thinks that this scaling approach used by the commenter results in low-biased estimates, as detailed in its response to Ramboll Comment 11. Taken together, the underprediction of the model and problematic approach to scaling mean

[15] 42 U.S.C. § 7502(a)(2)(A).

[16] Sghiatti, M. and N. Daher, 2022. Summertime Ozone Production and its Sensitivity to NOx and VOCs in the Salt Lake Valley. Poster presentation at the 6th Annual Science for Solutions Conference, April 7, 2022.

that the reported benefits to air quality presented by the commenters should be considered as a lower bound, with the real benefit likely to be larger.

The benefits to air quality reported by the commenters paired with the modeling results reported in the SIP as performed by the Division, continue to demonstrate that NO_x emission reductions are a critical component to advancing NAA to attainment. This further supports the Division's determination that a NO_x emission reduction strategy paired with modest VOC reductions is the best, and only, strategy available to the State at this time to advance towards attainment.

19) **UPA Comment IV: "**The proposed Moderate SIP falls far short (of RFP), demonstrating only 3.7 tons per day ("tpd"), a shortfall of 10.3 tpd… We recommend adding a robust discussion of additional VOC reduction opportunities to Chapter 7 of the Moderate SIP. The discussion should include evaluation of various options to be more restrictive, considering the large role that mobile sources fulfill in the emissions inventory, as well as other possible ways to reduce VOC emissions… The absence of robust discussions on achieving the 15% RFP goal provides no confidence to the regulated community and other stakeholders that Utah has a strategy to meet the requirements, thus fostering concerns about pending sanctions and a FIP. Additionally, the lack of a strategy leaves the regulated community in a state of uncertainty about "surprise" demands for additional controls to be installed in short order and, consequently, at unreasonably high cost."

UDAQ Response: The Division appreciates the recommendation to add a "robust discussion of additional VOC reduction" strategies to chapter 7." However, the SIP already contains an extensive examination of emission reduction options in section 5, Reasonably Available Control Measures (RACM) Analysis, as well as outlines planned additional VOC emissions reductions in section 7.5. The results of these sections taken together demonstrate the significant challenge facing Utah in identifying and implementing VOC emissions reductions. The Division shares the commenter's concerns regarding potential sanctions and imposition of a Federal Implementation Plan.

These concerns are part of the reason why the Division proposed the controls included in the SIP. Beyond the very real possibility of sanctions and a Federal Implementation Plan, the state has the obligation to implement reasonable controls as necessary to attain the standard. While the included controls do not fulfill RFP requirements, they demonstrate that Utah is implementing all available options and is working in good faith towards attaining the standard at the earliest possible date. These actions alone will not prevent sanctions or a FIP, but will help the State while working with the EPA to find the best possible solutions to our ongoing challenges reducing ozone concentrations.

20) **UPA Comment V:** "The SIP fails to provide an adequate contingency plan."

UDAQ Response: The Division does not disagree with the comment that the contingency measures in the plan are not fully creditable as currently written. The Division has provided response to this point in its response to EPA comment 11.

21) **UPA Comment VI:** UPA, as well as several other industry commenters, provided extensive comments that the controls proposed to reduce emissions from the Chevron and Marathon refineries exceed previously established RACT cost thresholds, and therefore cannot be implemented as either RACT or Beyond-RACT. The commenter states, "The SIP implies the added NO_x controls to be required of Chevron and Marathon Petroleum are RACT, but these controls cannot be RACT… The SIP has not shown the controls requested of Chevron and Marathon to be necessary as required by the definition of RACT… the cost for these controls far

exceeds the range of RACT costs previously applied by other jurisdictions and even by UDAQ, and cannot be considered reasonable costs."

In addition to the comment that the controls exceed RACT cost thresholds, the commenter notes that the proposed controls are not RACT since the SIP did not directly provide analysis for the "necessity of imposing such controls in order to attain and maintain" a standard. The commenter further explains, "In other words, the controls reduce ozone only a miniscule amount and do not contribute appreciably to attainment and maintenance of the standard, as required by the RACT definition" and concludes with a comment that these "controls may not help and could actually provide a disbenefit, resulting in increased ozone."

UDAQ Response: The Division appreciates these comments and to clarify its position has added a write-up in section 4.20 (p. 91) that demonstrates the controls included in the SIP are reasonable when considering the implementation of controls in an area that requires beyond-RACT controls to attain the standard as is the case in the NWF.

The added text reads, "While the controls identified in Table 54 have been determined to be beyond-RACT, the UDAQ has concluded that these controls meet the definition of reasonable when considering their cost effectiveness for controls considered beyond-RACT. This determination was made when examining three variables that impact what constitutes reasonable including: 1) the regulatory landscape of the NWF NAA (i.e. availability of control options), 2) other NAA determination of cost thresholds, 3) appropriate adjustments for inflationary and other price pressures.

First, as noted in sections 5 and 7 of this SIP revision, Utah has previously implemented an extensive array of emission reduction strategies at the BACT threshold while the state worked to address wintertime $PM_{2.5}$ pollution. These emission reductions target the same precursor emissions for ozone, i.e. NO_x and VOCs. As a result, there are exceedingly few control options available for the State to implement at this time in the regulatory landscape of the NWF. In essence, the supply of available controls is exceptionally low, while the demand to implement controls to comply with CAA requirements is high. This same economic reality—what is considered a reasonable cost in one area will be different than another area based on supply and demand— is seen in a wide array of economic activities, such as housing. Therefore, it is reasonable to conclude that an appropriate cost threshold for controls in the NWF NAA would be higher than that seen in an area with greater control options available to it. This same reasoning follows that a reasonable cost threshold would be more similar to a cost threshold seen in an NAA with fewer control options available. Further, a recent analysis conducted by the UDAQ examining the cost effectiveness of emissions reduced from incentive programs identified a similar scenario, with the cost to reduce emissions increasing as a result of previously implemented incentive programs. In short, as programs (incentive or regulatory) reduce emissions from older, dirtier equipment, the remaining pool of emissions sources are relatively cleaner, and thus the emission reductions are more expensive per ton of pollutant removed.

Second, the UDAQ compared and contrasted the RACT cost thresholds with a number of other NAAs, and compared cost thresholds for both RACT and BACT implemented controls. While many contrasting NAAs that have recently implemented RACT determined an appropriate cost threshold between $5,000 - $10,000 per ton of pollutant removed,[17] these areas are doing so with

[17] Approval and Promulgation of Air Quality Implementation Plans; Pennsylvania; Reasonably Available Control Technology Determinations for Case-by-Case Sources Under the 1997 and 2008 8-Hour Ozone National Ambient Air Quality Standards, 85 Fed. Reg. 66,484, 66,486 (Oct. 20, 2020) (examples of benchmarks from several other states examined by Pennsylvania).

a wider array of emission reduction strategies available to them. In contrast, the UDAQ examined BACT cost thresholds in areas with more similar regulatory frameworks in place to see what the higher end of cost effectiveness could be considered reasonable. The Division found instances of BACT cost thresholds near $43,000 per ton of VOC and $41,000 per ton of NO_x emission reductions.[18] While these higher end estimates are considered BACT, and thus represent a more stringent standard, the Division has concluded that, given the existing regulatory framework in place in the NWF and the similarities between these higher cost threshold NAAs, that a RACT cost threshold of approximately $10,000 per ton of pollutant removed below that reported on the high end is reasonable for the NWF. The controls outlined in Table 58 all fall near or below this threshold.

Additionally, the UDAQ identified instances in which a cost threshold of $10,000 was determined reasonable for Regional Haze SIPs.[19] It's worth noting that Regional Haze SIPs are developed to meet visibility standards, not health-based standards as in this moderate ozone SIP. The Division believes that a reasonable threshold for a control used to protect human health should be considerably higher than that determined reasonable for protecting visibility.

Lastly, the UDAQ also considered inflationary forces when determining a reasonable cost-effectiveness threshold. Since 2000, the United States has seen a cumulative price increase associated with inflationary pressures of 77.18%.[20] Similar upward price pressures have been observed in other parts of the economy that impact the price of pollution controls. For example, the building cost index for construction for nonresidential buildings over the same period cited for inflation above (2000 – 2023) has risen from ~50 to just over 130—a 160% increase.[21] If inflationary pressures are not taken into consideration over time when determining reasonable cost-effectiveness thresholds, the ever-increasing costs associated with building and installing controls would result in a diminished ability for responsible air agencies to identify and require effective controls. These same inflationary economic forces have been realized elsewhere in the regulatory world, resulting in an increase in the statutory civil monetary penalties for violations as enforced by the EPA for the CAA violations rising from $25,000 in 1991 to $55,808 in 2023 for each day of continued noncompliance.

When all three of these factors (existing regulatory framework, similar NAA thresholds, and inflationary pressures) are taken together, the UDAQ has determined that the controls outlined in Table 54 are reasonable for an area in which beyond-RACT controls are necessary to attain the standard.[22] A SIP is intended to be a plan that matches the unique characteristics of each NAA, which is why the responsible air agency has primacy to develop and implement the plan it determines best meets the unique challenges of its air shed. When considering appropriate cost thresholds for a NAA, it is important to recognize that the cost effectiveness for controls for that air shed will also be unique to the NAA in question."

The Division would like to note, as discussed in the response to UPA comment III, that modeling performed by the commenter further supports the finding that the controls as proposed do result

[18] 2022 South Coast Air Quality Management District BACT Maximum Cost Effectiveness Values.
[19] Oregon Regional Haze State Implementation Plan, for the period 2018 – 2028, available at https://www.oregon.gov/deq/rulemaking/Pages/rhsip2028.aspx.
[20] Bureau of Labor Statistics Consumer Price Index (CPI), available at https://www.bls.gov/cpi/.
[21] Construction Analytics, Construction Inflation 2023, available at https://edzarenski.com/2022/12/20/construction-inflation-2023/.
[22] 42 U.S.C § 7545(d)(1); 40 CFR § 19.4.

in improved air quality and reduced ozone concentrations. While the total reductions are small, and the results represent lower boundaries of expected ozone reductions, the controls do result in an advancement of attainment, and are thus further supported as RACT.

22) **UPA Comment VII:** UPA and multiple other industry stakeholders commented that, "The SIP describes the added NO_x controls as "necessary to demonstrate attainment as expeditiously as practicable" but does not adequately demonstrate the necessity for these beyond-RACT controls." The comment goes on to state that "these controls cannot be considered to be beyond-RACT ("B-RACT") and that the proposed SIP goes beyond what the CAA allows in attempting to adopt these controls as B-RACT. In summary:
    a) UDAQ relies on the 2008 Ozone NAAQS Implementation Rule to impose B-RACT controls. The authority for B-RACT controls stems from the interpretation included in the more "directly applicable" 2015 Ozone NAAQS Implementation Rule, which requires that controls be reasonable, yet by seeking controls with costs that are not reasonable, the SIP goes beyond this requirement.
    b) B-RACT controls must be able to be implemented by the attainment date, but the SIP seeks these controls to be implemented in 2026, well beyond the August 3, 2024, attainment date for the NWF at Moderate.
    c) EPA references the $PM_{2.5}$ rulemaking in explaining B-RACT and the process to assess whether controls qualify as B-RACT. The process requires determining whether the control measure is economically reasonable and ensuring that the controls can be installed by the attainment date.
    d) The proposed Moderate SIP fails to show that the added NO_x control measures are necessary for attainment or if they even provide a marginal benefit or if they will advance attainment by one year or more, as required.
    e) Requiring the B-RACT controls (which will not be installed until after that date) is inconsistent with the claim that it has a "strong case that [Utah has] met the requirements for the statutory requirements for a moderate nonattainment area demonstration" by the attainment date.
    f) UDAQ's authority under the CAA to impose B-RACT is contingent on first complying with the mandatory 15% VOC reduction requirement for RFP, which, as discussed above, has not been fulfilled.

    Based on the reasoning in the legal comments, UDAQ should remove the B-RACT requirements from the SIP and the proposed Part H revisions."

    UDAQ Response: The Division addresses points (a) through (f) in the comment above as follows:
    (a) Both the 2008[23] and 2015[24] Ozone NAAQS Implementation Rules are applicable to this SIP. EPA expressly states in the 2015 Implementation Rule, "This final rule is largely an update to the implementing regulations previously promulgated for the 2008 ozone NAAQS, and we are retaining without significant revision the majority of those provisions to implement the 2015 ozone NAAQS."[25] Thus, the 2015 Implementation Rule is an update to the 2008 Implementation Rule provisions retained by EPA in their majority and applicable to development of the ozone SIPs. UDAQ properly and accurately relied on the 2008 Implementation Rule in this SIP.

[23] Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements, 80 Fed. Reg. 12,264 (March 6, 2015).
[24] Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area State Implementation Plan Requirements, 83 Fed. Reg. 62,998 (Dec. 6, 2018).
[25] Id. at 62,998.

The commenter argues that the 2015 Implementation Rule provides more extensive and directly applicable guidance on B-RACT controls than the 2008 Implementation Rule. However, close examination of these two rules shows that the 2015 Implementation Rule does not contain the term "beyond-RACT." It instead talks about "other controls measures" and codifies the requirements for these measures directing state air agencies to consider "the impacts of emissions from sources outside an ozone nonattainment area (but within a state's boundaries)," and require "**other control measures** on these intrastate sources if doing so is necessary to provide for attainment . . . by the applicable attainment date."[26] The codified regulation in 40 CFR § 51.1312 further explains, "The SIP revision shall include, as applicable, **other control measures** on sources of emissions of ozone precursors **located outside the nonattainment area**, or portion thereof, located within the state if doing so is necessary or appropriate to provide for attainment of the applicable ozone NAAQS in such area by the applicable attainment date."[27] Thus, the term "other controls measures" in the 2015 Implementation Rule means control measures imposed on the sources outside of the nonattainment area. "Beyond-RACT" term carries a different meaning.

"Beyond-RACT" measures are defined in the 2008 Implementation Rule as measures "necessary in some cases . . . to achieve 'beyond-RACT' reductions in order to demonstrate attainment as expeditiously as practicable."[28] Note that EPA considers "beyond-RACT" measures to be within the state's authority to impose if they are needed to achieve attainment "as expeditiously as practicable" and not by a date certain. EPA's approach provides states with the discretion to require such controls.[29] This application and interpretation of "beyond-RACT" requirements is further confirmed by EPA's recent approval of the New York 2008 Ozone NAAQS SIP revision.[30]

In the New York rulemaking, EPA proposed to approve[31] and then approved[32] New York's SIP-strengthening measure that went beyond RACT requirements for the 2008 ozone NAAQS.[33] New York passed a regulation (Subpart 227-3) to lower allowable NO_x emissions from simple cycle and regenerative combustion turbines during the ozone season,[34] which it then proposed to include in the revised SIP as the beyond-RACT measure. EPA approved the measures because they "will reduce emissions and help New York State attain and maintain the national ambient air quality standards for ozone."[35]

This approval came against the backdrop of worsening air quality in the New York-Northern New Jersey-Long Island Connecticut metropolitan area (NYMA). In 2012, the area was designated by the EPA as marginal nonattainment for the 2008 ozone NAAQS.[36] In 2016, the EPA reclassified the area to "moderate" nonattainment and finally to serious nonattainment on September 23, 2019

[26] Id. at 63,015 (emphasis added); see also codification of this requirement in 40 CFR § 51.1312(c).
[27] 40 CFR § 51.1312(c).
[28] 80 Fed. Reg. at 12,279.
[29] Id.
[30] Approval and Promulgation of Implementation Plans; New York; Ozone Season NOx Controls for Simple Cycle and Regenerative Combustion Turbines, 86 Fed. Reg. 43,956 (Aug. 11, 2021).

[31] Approval and Promulgation of Implementation Plans; New York; Ozone Season NOx Controls for Simple Cycle and Regenerative Combustion Turbines, 86 Fed. Reg. 11,688 (Feb. 26, 2021) (proposed rule).
[32] 86 Fed. Reg. 43,956.
[33] Id.
[34] Id. at 43,957.
[35] Id. at 43,956.
[36] 86 Fed. Reg. at 11,688.

with a serious attainment date and RACT measures deadline of July 20, 2021.[37] The New York air agency proposed to implement the beyond-RACT requirements in two phases—the second implementation phase and effective date of controls was May 1, 2025.[38] This date was almost four years after the attainment date deadline but was approved by EPA as control measures going beyond RACT requirements.[39]

Moreover, EPA approved this later implementation date despite a public comment urging EPA to require more expeditious implementation.[40] EPA examined reasons provided by the New York air agency that the 2025 timeframe was appropriate due to considerations related to electric system reliability, "time demands for permitting and implementing other requirements, such as stack testing," and time needed for the impacted facilities to determine compliance options, including retirement of older units.[41] EPA then concurred with the proposed 2025 deadline.[42]

This rulemaking demonstrates that the states have substantial discretion in imposing beyond-RACT controls if the areas they regulate need to achieve attainment as expeditiously as practicable. Utah did not exceed its authority in imposing beyond-RACT controls. Notwithstanding this, UDAQ did conduct additional cost-effectiveness analysis and revised the SIP to include it as discussed in the response to UPA comment VI. The UDAQ has determined that these controls are reasonable for an area in which beyond-RACT controls are necessary. Additional language has been added to the SIP explaining the bases for this determination.

(b) The Division disagrees with the commenter's interpretation that beyond-RACT controls must be implemented by the moderate attainment date. The provisions for beyond-RACT are found in Section 172(c)(6) of the CAA, "Other Measures". Section 172 describes the general provisions for a SIP, and thus when the CAA states "as may be necessary or appropriate to provide for attainment of such standard in such area by the applicable attainment date specified in this part[,]"[43] the CAA is referencing the entire attainment schedule for a NAA and not the specific attainment date as would be described in section 182. Therefore, the authority for implementing "Other Measures" is tied to the advancement of the attainment date of the NAA throughout the ozone planning process, across all NAA designations (i.e. moderate, serious and beyond) and is not specific to the moderate designation. This is further supported by the EPA's approval of the New York's 2008 Ozone NAAQS SIP revision that implemented beyond-RACT measures with implementation date in 2025 described in point (a) above.

c) As noted in a and b above, the Division has determined that the controls are economically reasonable for beyond-RACT controls and disagrees that the timeline for installation is tied to an individual NAA classification attainment date, but instead is in reference to the total attainment timeline of the NAA area.

d) See UDAQ responses to UPA comments III and VI.

e) When the commenter notes that "Requiring the B-RACT controls (which will not be installed until after that date) is inconsistent with the claim that it has a "strong case that [Utah has] met the

[37] Id.
[38] Id. at 11,690.
[39] 86 Fed. Reg. at 43,956.
[40] Id. at 43957-58.
[41] Id. at 43,958.
[42] Id.
[43] 42 U.S.C. § 7502(c)(6).

requirements for the statutory requirements for a moderate nonattainment area demonstration" by the attainment date," the commenter is specifically referencing the included modeling demonstrations found in section 7 of the SIP. In this section, the UDAQ concluded that its future (wildfire adjusted) modeled design value of 72 ppb, paired with the WOE analysis, makes a compelling case that the state has fulfilled its requirement to submit an approvable modeling demonstration (CAA §182(c)(2)(A) and 40 CFR § 51.1308). The Division would like to note that providing a modeling attainment demonstration that adequately demonstrates that the area will attain the standard by the attainment date is an independent statutory requirement of the CAA, and is not tied to the implementation of RACT (or other control measures), and thus a modeling demonstration in one section of the SIP does not preclude the requirement for emission reductions in a separate portion of the SIP. Furthermore, as noted in EPA's comment 8-2, the EPA disagrees that the added WOE provides a compelling case given that the future modeled design value is approximately 2 ppb above the standard. Lastly, recent monitoring data collected in the NWF NAA from the summers of 2020, 2021 and 2022 indicate that the design value for the NAA is currently at 79 ppb. This monitored design value is a strong indication that the NAA will not attain the standard by the attainment date and additional other control measures are needed to advance attainment of the standard as expeditiously as practicable

f) The Division disagrees with the argument that the SIP must first fulfill the 15% RFP requirement, or all other CAA statutory obligations, before requiring beyond-RACT controls. The commenter does not cite any legal authority in support of this argument and this argument is counterintuitive. Beyond-RACT measures are discretionary measures that the states are authorized to consider and impose when the area is struggling with attaining the standard and other available measures have been already implemented. The New York example in subsection (a) above is a good illustration of a beyond-RACT measure intended to remedy poor air quality because all other implemented measures were not sufficiently advancing the area towards attainment. If an area is already meeting the RFP and attainment requirements, the beyond-RACT measures would not be necessary.

23) **Comment VIII:** UPA and multiple industry stakeholders commented that "the State asserts that it is proposing beyond-RACT controls pursuant to the CAA, in particular, sections 189(b) and 172(c)(6). We have explained that the proposed beyond-RACT controls are, in fact, inconsistent with and contrary to the CAA. While the Board does have the authority to engage in rulemaking that is more stringent than corresponding federal regulations, it has not provided notice of an intent to do so, nor has it made the necessary findings that it would be required to make before proceeding under this authority… Beyond the fact that the notice of proposed rulemaking does not purport to be a rulemaking undertaken pursuant to 19-2-106, the rulemaking record includes no findings that the beyond-RACT controls would "provide reasonable added protections to public health or the environment.""

UDAQ Response: The Division disagrees with this comment, and any notion that the Utah Air Quality Board has exceeded its authority when proposing the draft SIP for public comment or did not follow additional procedures in Utah Code 19-2-106. The Division disagrees with this comment for two primary reasons:

1) First, at the April 5, 2023 board meeting, the Utah Air Quality Board did not finalize or enact any of the control measures proposed in the draft SIP. On the contrary, the Board proposed the draft SIP for a 45-day public comment period. At no point on April 5th, or during the public comment period, were the controls proposed in the SIP enacted. As the rulemaking act says, the board "may make rules for the purpose of administering a program under the federal Clean Air Act different than the corresponding federal regulations which address the same circumstances if the board holds a public comment

period . . . and a public hearing" first.[44] The requirement for additional written notice from the board in very specific circumstances when the board enacts a rule different than a corresponding federal regulation comes after the public comment period, upon the notice of final adoption.

2) Second, the circumstances triggering application of Section 19-1-106 of the Utah Code are not present here. The Division is not proposing the adoption of rules that are different than corresponding federal regulations. The Division has explained the law applicable to beyond-RACT controls and its discretion to impose such controls in response to UPA Comment VII. Thus, The Division and the Air Quality Board have not acted beyond any authority or regulation imposed by federal law. The provisions cited in the SIP are provisions found within the CAA itself and are directly related to the implementation of SIPs. Thus, the notion that implementing provisions found in Section 172(c)(6) of the CAA as part of this SIP is in some way engaging in rulemaking that is more stringent than corresponding federal regulations is incorrect, as these provisions are indeed part of the federal regulations that the Board is responsible for enacting.

24) **UPA Specific Question #1:** UPA also provided responses to the four questions in which the Utah Air Quality Board requested for comment. "Specific question #1: The appropriateness of cost thresholds for Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT): Cost thresholds must be used… In the absence of cost thresholds, there is no transparency or validation that costs are held to reasonable levels. Secondly, UDAQ has chosen $/ton levels that exceed typical RACT by a factor of four, without any explanation for such a high level."

UDAQ Response: The division appreciates this comment, and has provided extensive response to these points in its responses to UPA comment VI. In short, the Division agrees that more information on the cost appropriateness of beyond-RACT controls was appropriate and text was added to the SIP providing the necessary information.

25) **UPA Specific Question #2: "**Whether NO_x controls should be required in the absence of the demonstration of meeting the 15% Volatile Organic Compounds (VOC) reduction required by Reasonable Further Progress (RFP): While NO_x controls may be required as RACT and RACM, the added NO_x controls may not be required prior to meeting the 15% VOC reduction required for RFP and, in light of other issues, is a moot question."

UDAQ Response: The Division disagrees with the notion that other reasonable measures can not be required until other statutory requirements, including RFP, have been met and has provided extensive responses in its response to UPA comment VII.

26) **UPA Specific Question #3: "**Appropriateness of timelines requiring controls in the State Implementation Plan (SIP): Timelines to install controls by May 2026 are not appropriate for the Moderate SIP… there is no basis to require controls in the Moderate SIP past the January 1, 2023, RACT installation date or past the August 3, 2024, attainment date when B-RACT must be implemented. Moreover, even if not considered to be RACT, no basis has been established for the May 2026 installation date for the Moderate SIP, long after the Moderate attainment date by which B-RACT must be installed."

UDAQ Response: The Division disagrees with this comment, and thinks that the requirement for the installation of controls beyond the attainment date is a necessary step in moving the area towards attainment, and is common practice in SIP planning. The Division has provided specific

[44] Utah Code § 19-1-106(1)(a)(i).

responses to this point in its response to UPA Comment VII(b). Additionally, the state is actively planning for future rounds of SIPs that will be required as the NAA is redesignated to more stringent classification. The State is responsible to begin immediate implementation of controls that will take effect during future planning phases working towards fulfilling statutory requirements and advancing the NWF towards attainment. In light of the short, three year planning phases, associated with ozone SIP planning, any source could get out of installing beneficial controls simply by arguing that the implementation timeline for controls are beyond the horizon of the attainment date for any specific SIP. The Division stands by its decision to implement controls at a date beyond the attainment date and would point the commenter to the text contained on page 91 of the draft SIP which states, "the state of Utah has ongoing obligations under Section 182 of the CAA to demonstrate attainment of the NAAQS. The timing of compliance for states meeting statutory deadlines established in the CAA does not impact or nullify those obligations for future SIP revisions. Thus, a state submitting a SIP revision late, or meeting 182(b)(2) requirements late, does not negate the obligations imposed by the CAA. As a result, the UDAQ has determined that the implementation of the controls identified in Table 54 are required to be implemented on the most expeditiously practicable timelines to comply with these ongoing CAA obligations."

27) **UPA Specific Question #4:** "Whether optional components should be included in the State Implementation Plan (SIP) submission: Yes, the 179B(a) demonstration should be included as a necessary part of the SIP. Failure to use all the tools of the CAA including both §179B and exceptional events, as applicable, would unnecessarily and inappropriately hamstring the NWF compared to Congress' intent and compared to the use of these tools in other NAAs nationwide, by making Utah responsible for ozone from emissions over which neither Utah nor the EPA has control."

UDAQ Response: The Division appreciates this comment. The Division will continue to explore any and all regulatory tools available to it as it works to comply with the CAA obligations.

28) **UPA Comment XIV:** "The SIP needs a number of editorial corrections."

UDAQ Response: The Division appreciates the editorial suggestions and where appropriate has made changes to the SIP.

Ramboll Comments

The Utah Petroleum Association submitted comments prepared by Ramboll which focused on the modeling included in the SIP.

29) **Ramboll Comment 1:** "There is little shown or explained in the main SIP document that supports UDAQ's claim that "the CAMx model performs well at simulating ozone at all sites." Maximum daily 8-hour average (MDA8) ozone performance over all days is consistently under predicted by a large margin and reported normalized mean bias is at the outer end of referenced performance criteria. Bias and correlation are worse when considering only days when observed MDA8 ozone exceeds 60 ppb."

UDAQ Response: The Division appreciates the comment that much of the modeling performance details are not highlighted directly in the SIP narrative. However, the Division thinks that the level of detail provided in the SIP narrative is appropriate. Relevant technical details regarding the performance of the model can be found in the CAMx modeling TSD. Regarding the comments that the MDA8 ozone concentrations are underpredicted, the Division does not disagree with this comment, and provided ample levels of transparency regarding this point in both the SIP and relevant TSD. However, as noted in the SIP, the model is performing

within all established criteria metrics. The model performance evaluation conducted by the Division is consistent with other recent model performance evaluations done by the air agencies for regulatory applications. The evaluation procedure, statistical metrics, and graphical methods used, all of which are explained in detail in the CAMx modeling TSD, are similar to those applied in similar modeling exercises.[45] Normalized mean bias, normalized mean error and correlation coefficient are all within established performance benchmarks when considering all modeling days of the episode. While bias and correlation are worse at some sites when considering only days when observed MDA8 ozone exceeds 60 ppb, this is not beyond expectations considering that the established benchmarks are based on model performance aggregated across multiple monitors and many days. The correlation coefficient, R, in particular, is best characterized over the entire range of concentration distribution. Emery et al. recommend that "correlation coefficient be calculated for the entire range of paired prediction–observation pairs to yield a more robust and meaningful statistic."[46] In this respect, it is expected that there would be some days with increased model bias and poorer correlation.

30) **Ramboll Comment 2:** "The claim that "model performance statistics suggest that the model performs well" is questionable and inaccurate. Reported statistics just within benchmark criteria indicate that the model performs somewhat better than the worst third of US photochemical modeling applications over past 15-20 years. Important contextual information about the purpose of benchmarks should be stated in Section 8.2.1. The statistical performance criteria are neither derived nor recommended by EPA; we suggest deleting any such references alluding to EPA acceptance criteria."

UDAQ Response: The Division appreciates this suggestion but is not inclined to adopt it. The model performance benchmarks considered in the photochemical model performance evaluation are statistical metrics that have been widely applied and referenced in past and similar regulatory modeling applications, including recent modeling conducted by the EPA (Final Good Neighbor Plan for the 2015 Ozone National Ambient Air Quality Standards (NAAQS)[47]). Considering that these benchmarks are widely applied and well-accepted by the scientific and regulatory community, these benchmarks are referenced as "established performance criteria" throughout the SIP package. The Division does not indicate at any point that these benchmarks are derived or recommended by the EPA. Since these benchmarks are widely applied and accepted in peer-reviewed literature,[48] we will retain current references in the SIP text.

31) **Ramboll Comment 3:** "The contention that regional background is well characterized by better ozone performance at the Gothic, Colorado monitoring site could be bolstered (or weakened) by showing results at other rural sites throughout the Great Basin."

UDAQ Response: The Division appreciates the comment, but thinks that the similarities between the Gothic monitoring site and the NWF, with the distinct difference in elevation, make it the most suitable site for a model performance evaluation site. As a result, the Division

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[45] https://www.epa.gov/system/files/documents/2022-03/aq-modeling-tsd_proposed-fip.pdf
https://raqc.egnyte.com/dl/pxHfZAhquy/TSD_2011_BaseCaseModeling%26MPE.pdf_

[46] C. Emery, Z. Liu, A. G. Russell, M. T. Odman, G. Yarwood and N. Kumar. 2017. Recommendations on statistics and benchmarks to assess photochemical model performance. Journal of the Air & Waste Management Association. 67 (5), 582-598.

[47] Air Quality Modeling Final Rule Technical Support Document 2015 Ozone NAAQS Good Neighbor Plan. Office of Air Quality Planning and Standards United States Environmental Protection Agency

[48] Simon H., K. R. Baker, S. Phillips. Compilation and interpretation of photochemical model performance statistics published between 2006 and 2012. Atmospheric Environment 61 (2012) 124e139.

concludes that the model performance evaluation for background performance is appropriate as it was conducted and reported in the SIP.

32) **Ramboll Comment 4:** "Additional information on precursor performance should be included in the main SIP document to support UDAQ's argument that the modeled ozone is well simulated, and to present likely root causes for the ozone under prediction tendency."

UDAQ Response: The Division thinks that the information presented in the SIP narrative is appropriate for a wider audience and if parties are interested in further analysis of the model performance including precursor performance, the necessary information is available in the TSD.

33) **Ramboll Comment 5:** Ramboll provided several comments on the Division's approach for modeling Planetary Boundary Heights (PBL), stating "UDAQ should include their rationale for selecting different planetary boundary layer (PBL) techniques to define vertical mixing in the WRF meteorological model and CAMx. It would be helpful to conduct sensitivity tests with WRF and/or CAMx using different PBL schemes, or at least describe why the specific options for each model were selected. • UDAQ references data from ceilometer instruments in comparing PBL heights between WRF and CAMx. Caution and context should be included when comparing PBL heights among WRF, CAMx, and ceilometers. • There are some key uncertainties that should be addressed: (1) ceilometers do not specifically measure PBL heights; (2) PBL differences between WRF and CAMx are most likely related to the use of different PBL approaches in each model."

UDAQ Response: WRF simulations were run with both MYNN and YSU PBL schemes. Initial sensitivity tests indicated that MYNN had better performance for daytime temperatures and relative humidity in WRFv4.1. Subsequent WRF runs were made with MYNN as the PBL physics scheme, and that selection was ultimately included in the final WRF modeling platform. PBL schemes will be reevaluated with different WRF versions in future modeling platforms. Details of every WRF sensitivity test (over 20 simulations) are not included in the TSD.

The AQS-reported ceilometer mixing layer height (or PBL height) and WRF PBL height comparisons are qualitative. Not only are the ceilometer data for different years, the comparison points are the hourly average value for the entire month of July. The Division clearly indicates in the TSD that the modeled values cannot be directly compared to the ceilometer measurements, but despite the qualitative nature of the analysis, there is a clear pattern of WRF over-estimating the PBL height. The PBL heights calculated from twice-daily soundings also support that WRF has higher mixing layer heights when using the MYNN PBL scheme.

The Division agrees that the difference in PBL heights is related to the use of different PBL approaches in CAMx and WRF. The CAMx meteorological preprocessor, wrfcamx, recalculates meteorological PBL height following a different methodology, resulting in shallower nighttime and higher daytime PBL heights compared to the WRF (CAMx TSD, Figure 24). Figure 24 in the CAMx TSD is included to highlight these differences in PBL height and their impact on NO_x simulations. As shown in the figure, this shallower PBL is a possible reason for elevated NO_x levels modeled during nighttime hours.

34) **Ramboll Comment 6:** "UDAQ mentions that excessive simulated cloudiness may be a cause for large ozone under predictions on certain days. It would be helpful to show a sensitivity test that entirely removes sub- grid (or all) clouds to confirm this hypothesis."

UDAQ Response: Excessive simulated cloudiness is not mentioned as a cause for large ozone under predictions on certain days. Contrary to the commenter's statement, UDAQ indicates that

the lack of simulated clouds may be a cause for large ozone overpredictions on certain days. Cloud cover was not completely simulated on days with ozone overprediction, and maximum daily solar radiation was overestimated on these days, as indicated by a comparison between modeled and observed hourly surface radiation (Figure 20 in the CAMx TSD). The role of clouds is presented as a possible reason for this ozone overprediction, and conducting additional WRF/CAMx simulations to confirm this is beyond the scope of this demonstration.

35) **Ramboll Comment 7:** "NO_x sensitivity indicated by the CAMx modeling results do not agree with a conceptual model for VOC sensitivity indicated by monitoring studies. UDAQ uses NO_x sensitivity suggested by the modeling as justification for NO_x controls despite not meeting VOC reduction requirements. NO_x controls under VOC-limited conditions may result in higher ozone, or a "NO_x disbenefit."

UDAQ Response: Neither the modeling performed by the Division, nor the commenter, indicates that the emission reductions proposed within the SIP will result in a NO_x disbenefit as implied by the commenter. On the contrary, the modeling performed by the commenter identified a net benefit to ozone concentration when the proposed controls were modeled. It is important to keep in mind that decreases in ozone modeled by the commenter likely represent the lower bounds of improvements to air quality as described in response to Ramboll Comment II. The Division also disagrees with the comment that the modeling shows different results than the monitoring studies, as the cited studies (further discussed in response to Ramboll Comment 8) indicate that the NAA is either slightly VOC-limited or transitional depending on the time of day and location within the NAA. In this sense, the monitoring studies and the modeling results agree.

36) **Ramboll Comment 8:** "Daily VOC:NO_x ratios from a 2021 UDAQ monitoring study (Sghiatti and Daher, 2022) indicate that ozone at Hawthorne forms in a transitional regime (NO_x and VOC sensitive). However, results from using reactivity-weighted VOC show a stronger tendency toward VOC sensitive conditions, which should be emphasized given the abundance of reported higher-reactivity alkene, aromatic and aldehyde compounds... The Sghiatti and Daher (2022) study also presents a weekday-weekend analysis that indicates statistically significant ozone increases during 2021 summer weekends relative to weekdays as a result of reduced mobile source NO_x emissions. The authors correctly suggest that this "points to a VOC-limited regime" during 2021."

UDAQ Response: While valuable, the weekday-weekend analysis presented by Shgiatti and Daher (2022) does not distinguish between weekday/weekend differences in meteorology and VOCs composition/reactivity, and their influences on ozone chemistry. Results from this analysis should therefore not be considered independently, but complementary to the VOC:NO_x ratio analysis conducted by the Division using reactivity-weighted VOC monitoring data. The VOC:NO_x ratio analysis better captures these influences, and only indicates a VOC-limited regime over certain hours of the day. The regime is transitional for most hours of the day. Considering that ozone formation is dependent on the mix of ozone precursors, their accumulation in the atmosphere, and previous-hours carryover of ozone and its precursors, the Division has concluded that a NO_x and VOC reduction strategy is an appropriate pathway to attaining the standard.

37) **Ramboll Comment 9:** "A recent 2022 Science for Solutions monitoring study (Ninneman et al., 2023) shows ozone production increasing during the morning hours and peaking around noon, after which ozone destruction processes dominate. Therefore, VOC:NO_x ratio is best evaluated during the morning hours (e.g., 6 AM to 12 PM), when results from the 2021 UDAQ study indicate a more VOC-limited regime regardless of reactivity weighting. Box modeling showed strong responses to VOC and little response to NO_x, supporting a VOC-limited conditions."

UDAQ Response: The Ninneman et al. 2023 study that is referenced was conducted at UDAQ's Tech Center, which is one of the highest- NO_x sites in the Salt Lake City metropolitan area. As reported by the authors, the average daily maximum 1-h NO_2 concentration at this site was ~ 50% higher than the regional mean during the August–September 2022 study period. Conditions at this site are therefore not likely to be representative of typical conditions in the NWF NAA, and results from this analysis cannot be directly applied to other sites within the NAA, including the controlling monitors. Considering this along with results from the Division's NO_x:VOC ratio analysis using 2021 reactivity-weighted VOC measurements, and that ozone formation is dependent on the mix of precursors, their accumulation in the atmosphere, and previous-hours carryover of ozone and its precursors, the Division has concluded that a NO_x and VOC reduction strategy is an appropriate pathway to attaining the standard.

38) **Ramboll Comment 10:** "Both modeling and monitoring techniques are associated with uncertainties, and these are likely at play to various extents. However, the documented CAMx performance issues weaken conclusions drawn from the modeling that suggest NO_x-sensitive conditions and strengthen conclusions drawn from two monitoring studies that suggest VOC-sensitive conditions."

UDAQ Response: The Division disagrees with this conclusion, as monitoring and modeling are both tools that are used in tandem to improve our understanding of the atmospheric conditions present within the airshed. The Division does not disagree that portions of the NWF NAA are VOC-sensitive, however, as the regulatory agency the Division is responsible for implementing reduction strategies that improve the air throughout the NAA. Modeling by both Ramboll and UDAQ has indicated that NO_x emission reductions are beneficial to air quality, and the emission reduction strategies currently available to the state make a combined NO_x and VOC emission reduction strategy the best available option at this time.

39) **Ramboll Comment 11:** "Combining emission reductions from Tesoro/Marathon (NO_x and VOC) and Chevron (NO_x) with source apportionment results, we find that the total simulated 2023 ozone DV reduction from required refinery controls is 0.03 ppb at Hawthorne."

UDAQ Response: The Division appreciates this comment since the comment further demonstrates that the airshed is responsive to NO_x emission reductions, and that the required controls are likely to advance the attainment date of the NWF NAA. Additionally, the commenter projected the total refinery ozone reduction estimate to the 2023 ozone design value (DV) by scaling by the ratio of the 2023 projected design value to the mean modeled ozone over the top 10 modeled days. The Division believes that this scaling approach results in low-biased estimates of ozone reductions. Considering the non-linearity in ozone chemistry, and the fact that the model underestimates local ozone production, this approach likely underestimates the projected reduction in future ozone design values from the required refinery controls. Since the model underestimates local ozone production, and ozone formation largely occurs under a transitional regime at Hawthorne, as supported by measurements (Sghiatti and Daher 2022),[49] the effectiveness of the controls is possibly underestimated. Thus, the Division believes that the 0.03 ppb reduction reported by the commenter likely represents a lower bound of the anticipated reduction associated with the proposed controls. As model performance continues to improve, the total modeled benefit to air quality is likely to increase.

HEAL Utah Comments:

[49]https://harbor.weber.edu/Airqualityscience/docs/conferences/AQSfS-2022/AQSfS2022Posters/sghiatti_sci_4_sol_poster_2022.pdf

HEAL Utah provided both written and oral comments. These comments were generally similar and have been consolidated below.

40) **HEAL Solvent Regulations Comment:** "In the Chapter 5 section of the Draft NWF Moderate Nonattainment SIP RACM analysis, several ozone sources are only addressed as "no further action warranted" due to their status as "in line" with the Ozone Transport Commission Model Rule. However, we believe the state of Utah could do more to reduce these sources by considering recently updated examples of ozone regulation to protect the health of communities along the Northern Wasatch Front in controlling ozone pollution." The commenter goes on to provide suggestions to update Utah administrative rules R307-342, 357 and 361 to conform with California Air Resources Board standards, concluding "considering the outsized contribution of VOCs from solvents to our anthropogenic ozone pollution problem, the Utah Air Quality Board should consider following the lead of other states like California, and adopt more stringent solvent regulations."

UDAQ Response: The Division appreciates this comment and the level of detail provided by the commenter highlighting some of the differences between existing Utah Administrative Code rules as compared with other states. As was noted in the response to comment #2, "Public Comment Solvents," the State is committed to continuing to verify that the solvents and consumer products available for sale in the NWF NAA comply with the most stringent VOC standards. While the commenter is correct that there are some instances where slightly more stringent standards exist in solvent regulations in other regions, it is important to note that when stricter standards exist for overlapping products in multiple jurisdictions, manufacturers typically comply by adjusting their low VOC content products to the most stringent standard and supplying those products to all markets with low VOC content requirements. Manufacturers tend to take this approach as it is easier to develop, make, and distribute a single formulation that complies with all low VOC requirements, rather than develop and manufacture many different formulations with slightly different VOC requirements. Thus, as CARB and other air agencies continue to tighten their VOC requirements for solvent-based products, the NWF is poised to gain the real-world benefits of those reductions. It is important to also note that the VOC inventory generated by EPA's VCPy product as done in this SIP also takes this into account, and thus the VOC solvent sector that the commenter references has already accounted for the lower VOC content products described in other regulations, as those products are likely to be representative of products available in the NWF.

The Division notes, as the commenter described in detail, that California recently proposed more stringent consumer based product thresholds that will be phased in in the coming years, with full implementation by 2027. As part of Utah's ongoing obligation to fulfill the VOC emission reduction requirement of this SIP, Utah will be examining if the impacted industry is able to meet these new thresholds. If so, the Division will further examine if implementing these new consumer based thresholds is a viable emission reduction strategy for the NWF NAA as the products become available, especially as the current inventory does not account for these more stringent standards and thus reductions may be creditable towards RFP requirements. Additionally, the Division agrees that the discrepancy between existing administrative rules' language and more stringent regulations elsewhere introduces an unnecessary ambiguity into what VOC products are available. The Division will explore updates to these rules to bring them in line with other states' regulations in an effort to remove ambiguity and provide clarity on the expected VOC content of solvent based products.

41) **HEAL SB 136 Texas Emissions Reduction Plan Comment: "**In 2022, the Utah State Legislature passed Senate Bill 136 which directed the Division of Air Quality to examine

potential programs to reduce diesel emissions statewide. The initial inspiration for this piece of legislation was the Texas Emissions Reduction Program (TERP), a suite of grants transitioning Texas away from higher-emitting diesel engines to cleaner technologies… A similar program to TERP in Utah could go a long way toward meeting NAAQS compliance requirements for ozone. Further examination of this program would provide DAQ with a unique opportunity to recommend some of these programs to the state legislature for action."

UDAQ Response: The Division appreciates the commenter bringing attention to SB 136 and the TERP program as it relates to reducing ozone precursor emissions from mobile emissions. The Division would like to note that it has drafted a Status Report as part of its obligations under SB 136 which highlights many of the same potential programs to reduce emissions from this sector.[50] While the Division agrees that grant programs similar to TERP, and like those extensively highlighted in section 8.3.5 of the SIP, will be an important tool in moving the NWF NAA towards attaining the standard, it is important to keep in mind that grant based programs are very limited in their ability to count towards SIP creditable emission reductions.

42) **HEAL IRA Funding Comment:** "The Inflation Reduction Act provides a plethora of opportunities for Utah to take advantage of. While these programs are mainly targeted at climate initiatives, there are many co-benefits to these programs that could reduce VOC and NO_x emissions." The commenter goes on to provide an overview of potential grants and incentives in the IRA that could, "offer additional support for future regulatory efforts."

UDAQ Response: The Division appreciates the information regarding IRA funding opportunities as they relate to emission reduction planning activities, and agrees that there are significant co-beneficiary opportunities available. The Division would like to point to its SB 136 Status Report mentioned above, in which the Division similarly analyzed available IRA and Infrastructure Investment and Jobs Act (IIJA) funding opportunities as they relate to potential to reduce emissions from on-road activities. Lastly, as noted in the response to the commenter's comment on SB 136, while grant opportunities are very difficult to include in a SIP as a creditable emission reduction strategy, the Division does view the continued use of grants aimed at reducing criteria pollution as an important part of the total strategy for attaining health-based standards in the NWF.

43) **HEAL Disproportionately Impacted Communities Comment:** "We encourage the DAQ to continue to seek input and consider the impacts of the current moderate nonattainment, as well as the likely future serious nonattainment designation disproportionately impact communities within the NWF."

UDAQ Response: The Division appreciates the encouragement to continue to seek and consider the impacts of this, and future, SIP planning efforts on EJ communities. The Division is committed to continuing to seek and provide opportunities to engage with EJ communities and, as highlighted in section 12 of the SIP, incorporate EJ considerations during the development phase of every relevant regulatory action.

Utah Manufacturers Association (UMA) Comments:

44) **UMA Comment I:** The UMA provided extensive comments regarding the Division's decision to include Beyond-RACT language in the draft SIP. "UMA requests that UDAQ explain the legal authority underlying UDAQ's decision – and that of the Utah Air Quality Board (AQB)... beyond

[50] Senate Bill 136 Status Report November 2022 Interim Committees https://documents.deq.utah.gov/air-quality/planning/DAQ-2022-012729.pdf

RACT is a shorthand way of UDAQ proposing controls that are not reasonably available.. EPA made it clear that the concept of beyond RACT does not vest a state with broad discretion to impose controls that are not reasonably available… UMA requests that UDAQ remove the controls that it identified as beyond RACT in the proposed Moderate Ozone SIP as outlined in the sections below." The commenter continues by requesting that "UDAQ provide an explanation of how it determined that beyond RACT would be applied as part of the proposed Moderate Ozone SIP. Furthermore, we request that UDAQ provide an explanation of the parameters and limitations of the discretion to impose beyond RACT," as well as requesting more information regarding how the Division evaluated the impacts of Beyond-RACT controls on attainment.

UDAQ Response: The Division has provided extensive responses to these points in its response to UPA comments VII and VIII. In short, the added determination that the proposed controls are economically appropriate as beyond-RACT should provide clarity to the commenter's concerns with Beyond-RACT determinations.

45) **UMA Comment:** UMA also requested UDAQ "disclose the process that it used to determine beyond RACT", specifically requesting insights into "1) the sources that would be subject to beyond RACT; 2) what emission units would be subject to beyond RACT; 3) what pollutants would be subject to beyond RACT; and 4) the economic thresholds that governed UDAQ's analysis."

UDAQ Response: The UDAQ appreciates the request for additional insights into the RACT, and Beyond-RACT determination process. The Division provides the following explanation of the process: (1) the UDAQ followed the standard RACT determination process when evaluating what sources could be subject to RACT or beyond-RACT (i.e. all major sources within the NWF NAA and those outside the NAA that had been determined to impact the NAA); (2) each source provided analysis to the UDAQ evaluating all emission units for; (3) both NO_x and VOC emissions; (4) UDAQ then determined the economic cost-effectiveness threshold; and (5) UDAQ provided an additional explanation in the revised SIP supporting the selection of the threshold. See UDAQ Response to UPA Comment VI.

46) **UMA Comment II:** "DAQ Must Provide Reasonable Time to Respond to Information Requests. it did not allow sources adequate time to prepare updated RACT analyses and did not give those sources that were subject to beyond RACT determinations sufficient time to respond to UDAQ's requests."

UDAQ Response: The Division appreciates this comment and agrees with the commenter that reasonable timeframes are necessary. It is important to note that during this SIP planning process the Division was working within a compressed time frame for evaluating RACT submittals. The Division originally planned to rely exclusively on previously submitted BACT analysis until stakeholders approached the Division in November of 2022 requesting to instead submit updated RACT analyses. Thus, the Division was left with very little time to analyze the updated RACT reports submitted by those industry members who requested an opportunity to submit a new RACT. Regardless, the Division agrees that these determinations take time to review, which was partially the reason for an extended public comment period recommendation when the SIP was proposed for comment, allowing impacted stakeholders extra time to evaluate the RACT selected controls and provide additional comment to the Division. In total, from the time the SIP was proposed for public comment to the time comment period closed, impacted stakeholders had an additional 103 days to evaluate and work with the Division to determine appropriate final controls and emission limit thresholds.

47) **UMA Comment III:** Lastly, UMA provided comment on Utah's inclusion of a 179B(a) demonstration, stating "UMA supports UDAQ's decision to include a CAA section 179B(a) prospective demonstration, which shows that the Northern Wasatch Front NAA would have attained the Ozone NAAQS by August 3, 2024 but for the presence of international emissions. 16 This demonstration should be retained as part of the proposed Moderate Ozone SIP package."

UDAQ Response: The Division appreciates this comment, and as noted in the response to UPA Specific Question #4, the Division will continue to explore all regulatory tools available as it works to comply with its ongoing CAA obligations.

Rio Tinto Kennecott Comments:

48) **Rio Tinto Comment a, b, c, d, e, & f:** Kennecott provided a number of editorial suggestions that reference their operations as overviewed in the SIP in sections 4, 7, and 8. In addition to these editorial suggestions, Rio Tinto Kennecott also requested additional information to be added to the TSDs regarding emission reduction credits (ERCs) banked credits as well as more information regarding OSAT source apportionment grouping.

UDAQ Response: The Division appreciates these suggested edits, and where appropriate has updated the SIP to reflect these changes. Additional information was also added to the appropriated TSDs.

49) **Rio Tinto Specific Question #1 Comment:** "The appropriateness of cost thresholds for Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT). Kennecott believes that UDAQ should manage the RACT/RACM process following EPA guidelines and in a manner that is consistent with other jurisdictions, just as UDAQ has implemented RACT/RACM in previous SIP planning for PM10 and $PM_{2.5}$."

UDAQ Response: The Division appreciates this comment and would like to point to its responses to UPA Comment VI where it addressed this issue.

50) **Rio Tinto Specific Question #2 Comment:** "Whether NO_x controls should be required in the absence of a demonstration meeting the 15% Volatile Organic Compounds (VOC) reduction required by Reasonable Further Progress (RFP). In addition to technical and economic feasibility, Kennecott believes that any controls considered should be evaluated in the attainment modeling demonstration analysis."

UDAQ Response: The Division also appreciates Rio Tinto providing comment to the Air Quality Board's second comment, and would like to point to its response to UPA Comment III and UPA Comment VI where the Division explained its position.

51) **Rio Tinto Specific Question #3 Comment:** "Appropriateness of timelines requiring controls in the SIP… Kennecott believes that affected companies should have adequate time to evaluate the feasibility of controls on an appropriate timeline for both internal and external reviews as well as internal assignment of necessary capital. Evaluating feasibility of controls is a multi-step process, including prefeasibility study, feasibility study, detailed engineering and execution. This involves many stakeholders within a company and capital investment at each step. Evaluating feasibility through these phases ensures that the solutions selected for implementation meet not only emissions requirements, but are effective, economically feasible, and address worker environment."

UDAQ Response: The Division appreciates this comment and would like to point to its extensive responses to this point found in its response to UMA Comment II.

52) **Rio Tinto Specific Question #4 Comment:** "Whether optional components should be included in the SIP submission… Kennecott supports UDAQ in the consideration of international emissions and the preparation of the 179b demonstration. The Salt Lake Valley nonattainment area is unique in its geographical and meteorological conditions and incorporating the 179b demonstration allows Utah to continue a clear dialogue about how international emissions are impacting the airshed in conjunction with local and regional sources. Kennecott supports the incorporation of the 179b demonstration in the current SIP and in future SIP evaluations."

UDAQ Response: The Division would like to thank the commenter for supporting the inclusion of a prospective 179B(a) demonstration in the current and future SIP evaluations.

Western Resource Advocates (WRA) Comments:

WRA submitted both written and oral comments. These comments are summarized and responded to below.

53) **WRA Comment II:** "The weight of the evidence does not support finding that modeling has demonstrated attainment because it is almost certain that the NWF will not attain the standard… for example, the Bountiful monitor show that the 4th highest 8-hour average concentrations from 2021 and 2022 are .082 and .075 ppm, respectively. This means that a 4th highest 8-hour average concentration of around .056 ppm or greater in 2023 will mean that the NWF will not attain the standard by the attainment date… because it is very likely that the NWF will fail to attain the ozone NAAQS by the moderate attainment date, there is no reason to conclude that the draft plan has modeled attainment… we believe that weight of the evidence does not support a determination that the modeling accompanying the draft SIP has demonstrated attainment."

UDAQ Response: The Division appreciates the commenter's detailed comments regarding the modeling attainment demonstration and the included WOE. The commenter makes a good point that the monitored and observed trends in ambient ozone concentrations do not necessarily point towards the area attaining the standard by the attainment date. However, it is important to remember that a modeling attainment demonstration, and or any included WOE, is an independent statutory requirement and is not determined to be approvable based on past observed concentrations, or even whether or not the area actually attains the standard by the attainment date. Take for example the Moderate Area Ozone SIP for the Denver Metro and North Front Range Nonattainment Area for the 2008 ozone standard.[51] In this SIP the responsible air agency provided an approvable modeling demonstration that demonstrated attainment by the attainment date,[52] however the area failed to attain based on actual monitoring data.[53] This is not to suggest

[51] Approval and Promulgation of State Implementation Plan Revisions; Colorado; Attainment Demonstration for the 2008 8-Hour Ozone Standard for the Denver Metro/North Front Range Nonattainment Area, and Approval of Related Revisions, 83 Fed. Reg. 31,068 (July 3, 2018) (EPA's final rule approving Colorado plan).

[52] Id. at 31,069 ("As described in the 2008 Ozone Implementation Rule (80 FR 12292), '[t]o demonstrate attainment, the modeling results for the nonattainment area must predict that emissions reductions implemented by the beginning of the last full ozone season preceding the attainment date will result in ozone concentrations that meet the level of the standard' (80 FR 12270, March 6, 2015). We find the attainment demonstration submitted on May 31, 2017, adequate to meet this requirement.").

[53] Finding of Failure To Attain and Reclassification of Denver Area for the 2008 Ozone National Ambient Air Quality Standard, 84 Fed.Reg. 70,897 (Dec. 26, 2019).

that modeling demonstrations are not valuable in providing context to critical questions around important considerations like ozone formation, transport, atmospheric composition, source contributions, control strategies, and more. But it is critical to remember that there is often a disconnect between an approvable modeling demonstration which requires an air agency to provide a compelling case of attainment to be approvable, and the final observed concentrations in a NAA. The Division has also provided some additional context to a similar comment in its response to UPA Comment VII(e).

54) **WRA Comment III:** "The Draft Ozone SIP Does Not Meet the Clean Air Act's Reasonable Further Progress (RFP) Requirement… Because the draft Ozone SIP does not meet the requirement to achieve a 15% reduction in 2017 VOC emissions by 2023, the plan does not comply with the applicable CAA requirements. As the deadline for the 15% reduction has passed, it appears that adherence to this requirement for the purposes of the plan is precluded. As a result, the draft Ozone SIP is not legally adequate."

UDAQ Response: The Division does not disagree with the commenters point regarding the 15% RFP requirements and has provided extensive response to this comment in its response to EPA Comment 7-1 and UPA Comment IV.

55) **WRA Comment IV:** "The Draft Ozone SIP Does Not Meet the Clean Air Act's Contingency Measures Requirements…the draft plan fails to meet section 172(c)(9), a central CAA requirement. Therefore, the draft Ozone SIP is not legally adequate."

UDAQ Response: The Division appreciates this comment regarding the approvability of the included contingency measures found in section 11 of the SIP. The Division would like to point to the extensive response provided on this subject found in the Division's responses to EPA Comment 11 for additional context.

56) **WRA Comment V:** "The Draft Ozone SIP's 179B(a) Submission Necessarily Fails Because the Plan Has Not and Can Not Meet the Relevant RFP/ROP and Contingency Measures Provisions… DAQ acknowledges that it cannot demonstrate attainment of the 2015 Ozone NAAQS… to be valid, the 179B(a) submission must show that Utah's final moderate ozone SIP meets all applicable CAA requirements other than the attainment demonstration. As established above, Utah's draft Ozone SIP has not and cannot meet the sections 182(b)(1) and 172(c)(9) elements required of a SIP. As a result, the submission fails to fulfill a central requirement of 179B(a)."

UDAQ Response: The Division agrees with the commenter that a successful 179B(a) demonstration is contingent upon whether, "such plan or plan revision meets all the requirements applicable to it." The Division interprets this language to be essentially a completeness requirement, i.e. all statutory requirements of the SIP must be approvable for a prospective 179B(a) demonstration to be approvable. As noted in the Division's response to EPA Comment 9, the Division believes that it is critical to continue to bring attention to all the substantial challenges facing the NWF's ability to attain the current standard, including the presence of international contributions. Further, as stated in the same response, the Division believes, regardless of the completeness of the SIP, that it has demonstrated that the presence of international contributions are in fact interfering with the area's ability to attain the standard by the attainment date.

57) **WRA Comment VI:** "The SIP's 179B(a) submission does not meet this "but for" test because it fails to show, inter alia, that on days the NWF exceeds the ozone NAAQS, the contribution of international anthropogenic emissions to ozone concentrations is greater than the contribution from Utah anthropogenic emissions… Second, the 179B(a) analysis confirms that Utah

anthropogenic emissions increase substantially more during exceedance episodes than do international anthropogenic emissions."

UDAQ Response: The Division has provided significant response to the commenter's first point regarding the contribution of international as opposed to local emissions on exceedance days relative to non-exceedance days in its response to EPA Comment 9. In short, while the Division understands that it is EPA''s position that a strong 179B demonstration will demonstrate greater contribution of international emissions on exceedance days, that language is not found anywhere in the CAA. Additionally, when looking at the contributions of international emissions relative to the emissions Utah has direct authority to regulate (i.e. non-mobile emissions), the contributions of international emissions are nearly identical to those of Utah anthropogenic emissions.

Lastly, there appears to be some confusion from the commenter regarding the OSAT source apportionment results discussed in the commenter's second point. The Division's OSAT results demonstrate that local photochemistry increases on exceedance days due to photochemically favorable atmospheric conditions, however the emissions, local or international, are not necessarily changing. This is an important distinction to keep in mind when considering the impacts of emissions emanating from beyond the borders in which the state has regulatory authority. Nonetheless, the state believes that, regardless of exceedance vs non-exceedance day contributions, it has made a compelling case in its 179B(a) demonstration that the NAA would have demonstrated attainment but for the presence of international emissions.

58) **WRA Comment VII:** "In the Immediate Future, Utah Must Impose Measures that Achieve Significant Reductions in VOC and NO_x Emissions… These current requirements and the future mandates likely to apply to the NWF underscore that now and in the near future, Utah must secure considerable emission reductions of first VOCs and then, almost certainly, NO_x."

UDAQ Response: The Division appreciates this comment and agrees with the commenter that in order to fulfill current and future CAA obligations, as well as attain the standard at the earliest possible date, the State must continue to implement emission reductions of both VOC and NO_x. The Division recognizes that the current SIP is only the first step towards achieving these obligations and will continue to identify and propose for implementation emission reduction strategies that fulfill these obligations.

59) **WRA Comment V(III):** "DAQ Would be Well-Served to Adopt the Following Measures to Meet its Current and Future CAA Obligations." The commenter then goes on to provide extensive analysis on three potential emission reduction policies including, "A. Flare Minimization Rule… B. Small Non-Road Engine Regulations… C. Advanced Clean Trucking Rules."

UDAQ Response: The Division appreciates the substantial amount of information provided by the commenter for all three of the outlined policies. The Division is committed to fulfilling its ongoing emission reduction requirements, and will examine each of the included policies as possible strategies for implementation in Utah. The Division also appreciates and encourages the continued dialogue with all stakeholders regarding the identification of viable emission reduction policies. A brief response to each specific policy identified by the commenter is provided below, however significantly more extensive analysis is needed before conclusive determinations can be provided.

a) Flare Minimization Rule: The Division has reviewed the BAAQMD flare minimization rule as well as the individual FMPs approved by that agency and has preliminarily determined that no additional reduction in air pollutants will be gained through the

implementation of this rule. This potential rule will double up the monitoring data, which is already required by 40 CFR Part 60, Subpart Ja. Although some discussion of flare water seals and flare staggering is provided, no additional reductions in emissions would be gained through these programs.

Each of the refineries located in the NWF Ozone NAA is already subject to the flare minimization requirements of Subpart Ja. Three of the four refineries have implemented flare gas recovery, while the fourth follows the alternative procedures outlined in Subpart Ja, which equate to flare minimization. The Division implemented the Subpart Ja requirements and the other flare requirements as part of the $PM_{2.5}$ SIPs to reduce and minimize routine flaring. Therefore, upon initial examination, the Division does not believe that implementing a flare minimization rule as proposed by the commenter would result in additional reduction within the NAA.

b) Small Non-Road Engine Regulations: The Division appreciates the commenter's added insights into reducing emissions from both 2 and 4-stroke small non-road engines. While more analysis is required before the Division could conclusively agree with the commenter that "no federal preemption issues" face the state's ability to reduce emissions from this sector, the Division will note, as the commenter did as well, that it is currently planning on introducing policies to reduce both NO_x and VOC emissions from this sector. Those plans are highlighted in the SIP in sections 5.3 and 7.5.6.

c) Advanced Clean Trucking Rule: The Division appreciates the in-depth analysis provided by the commenter highlighting the potential emission reductions, pathways for adoption, and timelines, associated with the Advanced Clean Trucking Rule. The Division will examine the included materials and explore if the adoption of such a policy is a viable option for the State.

60) **WRA Comment VI(X):** "The draft Ozone SIP states that CAA "section 209(e) specifically preempt[s] states from regulating emissions from non-road sources." Draft Ozone SIP at 102. As a result, DAQ appears to limit its consideration of emission reduction strategies relating to small non-road engines to in-use restrictions, or "restrictions on when or where these engines can be operated[.]" Draft Ozone SIP at 103."... Thus, we urge DAQ to maximize emission reductions from "in use" regulations of these engines. Following this effort, we hope that the agency will consider and, as soon as it is authorized by EPA, adopt California's newest zero emission rule for small non-road engines as a reasonable measure to substantially decrease emissions of VOCs from lawn and garden equipment and other small non-road engines."

UDAQ Response: The Division appreciates the insights provided by the commenter regarding Section 209 preemptions. The Division wants to note that the quoted section of the SIP read "Section 209 of the CAA prohibits states from regulating mobile sources *in certain ways*, with section 209(e) specifically preempting states from regulating emissions from non-road sources. While section 209 does prohibit a state from regulating mobile source emissions, *the prohibition is not absolute*" [emphasis added]. Thus, the State agrees with the commenter that Section 209 is not an absolute preemption and allows some limited regulation for the Division. However, the State's regulation of emissions from this sector is very narrow and very limited. As noted in its response to WRA Comment V(III), the division is in the process of drafting policies aimed at reducing emissions from this sector, and will take into consideration the information provided by the commenter regarding authorities under 209 as it relates to adopting California emission standards for these engines.

Chevron Products Company's Comments:

61) **Chevron Comment 1:** "UDAQ failed to scrutinize the costs associated with the additional controls applicable to the SLC Refinery. In fact, UDAQ dismissed Chevron's updated RACT analysis showing that installation of ULNBs during an unplanned shutdown is not economically feasible. UDAQ also imposed an implementation date for installation of the ULNBs untethered from this Moderate Area SIP as a means of applying the associated emissions reductions towards its Reasonable Further Progress Requirement in a yet-to-be-required Serious Area SIP."

UDAQ Response: The Division appreciates the commenter drawing attention to the point of the inclusion of shutdown costs as it applies to the economic feasibility of controls. The Division agrees that in this instance, the cost incurred from an unplanned shutdown may be considered as part of the economic cost of this control. As a result, the Division agrees with the commenter that the RACT cost thresholds associated with these controls if an unplanned shutdown is required are excessive. Therefore, the Division has modified the SIP narrative, as well as in the relevant portions of Part H, to remove these controls.

In regards to the comment requiring the installation of controls beyond the moderate SIP timeline, the Division does not disagree that the implementation timeline of the controls is beyond the moderate attainment date, however will note here as it has in response to UPA Comment VII and to UPA Specific Question 3, that the Division is within its authority to require controls beyond any specific NAA timeline if those controls are needed to advance the attainment date. Regardless, these controls have been removed from the SIP.

62) **Chevron Comment 2:** "UDAQ's proposed imposition of "beyond RACT" controls at the Chevron Refinery is unjustified where, as here, UDAQ has failed to establish that the associated emissions reductions are necessary to lead to timely attainment of the NAAQS. In fact, UDAQ appears to conclude the opposite – that the weight of the evidence demonstrates that Utah will attain the ozone NAAQS without imposing any new controls. Anticipating a future serious designation for the NWF does not justify preemptively imposing control technologies that may be necessary for a serious SIP under the guise of moderate nonattainment SIP requirements."

UDAQ Response: The Division has provided extensive comment on this point in its response to UPA Comment III and UPA Comment VI. In short, the Division thinks that it has demonstrated that the proposed controls are necessary and will advance the attainment date of the NWF NAA by effectively reducing NO_x emissions.

Further, the Division has provided extensive response to the comment regarding its modeling demonstration and WOE analysis as evidence that controls are not necessary in response to UPA Comment VII and WRA Comment II. It is necessary to keep in mind that a modeling attainment demonstration is an independent statutory requirement and is deemed to be adequate by the EPA based on entirely independent criteria, and thus a disconnect between a modeling demonstration and the future attainment of the NAA in question can differ.

63) **Chevron Comment 3:** "UDAQ was inconsistent in its application of RACT among different major sources. For some sources, UDAQ simply agreed with the source's analysis that additional control technologies were not economically feasible. But for Chevron, UDAQ imposed control technologies that cost substantially more and will result in smaller emission reductions than other sources for which UDAQ ultimately declined to impose additional controls."

UDAQ Response: The Division appreciates this comment as it highlights the need for additional transparency regarding Division's RACT process, as the Division at no point "simply agreed with the source's analysis." For each and every control submitted to the Division as part of a RACT

analysis, if the costs were in line with other controls being considered, the Division followed up with the relevant source to identify if the controls were technologically and economically feasible. The Division has provided additional comment on this point in its response to comment Breathe Comment #1.

64) **Chevron Comment 4:** "UDAQ did not comply with Utah law when it imposed stricter controls than what is required under the Clean Air Act. Utah law requires that before UDAQ may impose requirements different from what is required under the Clean Air Act, it must make written findings showing that the requirements will provide reasonable added protections to public health or the environment and base the findings on evidence, studies, or other data. UDAQ violated statutory law by not doing so."

UDAQ Response: The Division disagrees with this comment and has provided extensive response to this point in its response to UPA comment VIII.

65) **Chevron Comment IV A:** "Chevron concluded that ULNBs on the crude heaters were not economically feasible based on nearly the same cost estimates ($27,252 and $29,246 per ton removed for F21001 and F21002, respectively) that Chevron calculated for its initial cost determination in this RACT analysis."

UDAQ Response: The Division disagrees with the comment and has provided additional text in the SIP addressing this point and has also provided significant additional context in its response to UPA Comment VI.

66) **Chevron Comment IV B and V:** Chevron provided comment that "UDAQ's Requirement of ULNBs for the SLC Refinery's Crude Heaters as a "Beyond RACT" Control is Arbitrary and Capricious, Not Supported by Substantial Evidence, and Exceeds UDAQ's Legal Authority" since such controls can only be required "if the reductions are necessary for timely and expeditious attainment may UDAQ impose "beyond RACT" measures. Conversely, if regulating "beyond RACT" will not lead to timely attainment, only if the reductions are necessary for timely and expeditious attainment may UDAQ impose "beyond RACT" measures. Conversely, if regulating "beyond RACT" will not lead to timely attainment."

UDAQ Response: The Division appreciates this comment and has provided extensive response to this point in its response to UPA Comment III.

67) **Chevron Comment V A: "**UDAQ attempts to circumvent cost altogether by asserting that it has discretion to require ULNBs as a "beyond RACT" control. According to UDAQ, ULNBs for Chevron's crude heaters are appropriate "beyond RACT" controls because "UDAQ has determined that these controls are necessary for the NWF NAA to demonstrate attainment of the 2015 8-hour ozone NAAQS as expeditiously as possible."

UDAQ Response: The Division has provided a response on the beyond-RACT cost and timeline appropriateness and the demonstration of the necessity of the controls for advancing attainment in its response to UPA Comment VI and UPA Comment III.

Tesoro Refining and Marketing Company LLC Comments:

68) **Tesoro Comment I:** "This has led UDAQ to, by its own admission, disregard the economic feasibility or reasonableness of the control measures it has proposed pursuant to the Act's beyond-RACT authority. In fact, UDAQ has acknowledged that the cost effectiveness of the beyond-RACT control it is proposing for Marathon's cogeneration units (SCR) exceeds what it

deems to be reasonable. But as explained below, disregarding the economic feasibility of control measures is contrary to the Clean Air Act. EPA has made clear that beyond-RACT controls must be reasonable; that is, cost effective. Additionally, UDAQ has acknowledged that SCR controls cannot be installed by the attainment-date deadline of August 3, 2024… UDAQ has failed to show that such controls are necessary for expeditiously attaining the NAAQS… Finally, UDAQ's proposed SIP does not comply with the mandatory Reasonable Further Progress (15% VOC reduction) requirement that is a prerequisite to the State being able to impose beyond-RACT controls."

UDAQ Response: The Division has provided extensive response to each of these points in its response to UPA Comment III, UPA Comment VI, UPA Comment VII, and UPA Specific Question #3, as well as elsewhere in response to other industry stakeholders. In short, the Division disagrees with each point the commenter is making as the Division thinks that the economic feasibility of the beyond-RACT controls is appropriate, and that the State and the Utah Air Quality Board are acting entirely within their authority to impose the selected controls on the finalized timelines as is written in the SIP.

69) **Tesoro Comment II:** "Based on a review of previous emissions testing reports, an engineering analysis of the entire cogeneration system, and the technical evaluation of the emissions reduction capability of an SCR by CECO Peerless (Peerless), the 2 ppmvd NO_x limit is not achievable as a compliance limit for all of the cogeneration unit's operating conditions… paper, the achievable NO_x emissions at the cogeneration units after an SCR retrofit is 5 ppmvd at 15% dry mole percent of excess oxygen on a 12-month rolling average basis." The commenter also provides suggested modifications for the emission limits and operating practices as proposed in Part H of the SIP.

UDAQ Response: The Division appreciates the detailed additional information provided by the commenter regarding achievable NO_x emission limits for the cogeneration units after the installation of SCR. Upon further review, the Division agrees that the originally proposed limit of 2 ppmv is not appropriate, and agrees with the commenter that an emission limit of 5 ppmv is appropriate. The Division has revised the relevant portions of the SIP and Part H to reflect this change.

70) **Tesoro Comment III:** "Proposed SCR controls for Marathon's cogens are not economically feasible and, for this reason, rejects those controls as qualifying as RACT. Additionally, the assessment of economic feasibility for a control is the same for beyond-RACT as it is for RACT. Marathon's preliminary cost analysis for SCR installation at the cogeneration systems determined a cost-effectiveness of $23,600/ton, almost four times what is typically considered RACT. Since the submittal of the preliminary cost analysis, Marathon has performed additional engineering analysis to improve the accuracy of the cost-effectiveness estimate and determined a cost-effectiveness of $50,300/ton." "Adjustment of the capital costs to reflect an implementation deadline of May 1, 2026. Based on early project development, the capital cost of this project is expected to be $27.7 million, compared to the original estimate of $18.3 million. This update value is based on a typical cost-driven project parameters. The cost was originally developed assuming a typical project schedule of 59 months to startup. This duration is aligned with industry benchmarking data for similarly sized capital revamp projects for refineries in the Mountain-West region. However, the revised capital cost estimate assumes startup by May 1, 2026. To accelerate the schedule beyond industry standard introduces additional cost and schedule risk. The additional costs include increased overtime required for engineering and construction, expediting fees on major equipment deliveries, increased number of engineering staff supporting the project, increased travel for collaboration and co-location for engineering and vendor support, and a decrease in costs due to reduced escalation."

UDAQ Response: The Division appreciates the substantial additional information provided by the commenter further examining the costs of implementing the controls as proposed in the draft SIP. Given the significant additional costs associated with installing the controls by the originally proposed May 1, 2026 deadline, the Division is proposing to modify the timeline for the installation of SCR on the cogen units to match with a typical timeline for a project of this magnitude, extending the timeline to October 1, 2028. As a result, the Division has updated the implementation timeline for the associated controls in the relevant sections of both Part D and Part H of the SIP. The Division has reanalyzed the RACT analysis for this control option accounting for the increased emission limit of 5 ppmv as discussed in response to Tesoro Comment II while removing the increased capital costs associated with the original timeline of May 1, 2026 and has concluded that the resulting cost per ton of NO_x removed is $36,539. This is in line with the Division's determination of cost effectiveness for controls proposed within this SIP revision.

71) **Tesoro Comment IV:** "As detailed in Appendix 2, UPA contracted Ramboll to evaluate the modeling completed by UDAQ and to evaluate the impact of emissions controls required under beyond-RACT. Operation of the emissions controls required under beyond-RACT result in a combined reduction of only 0.03 ppb ozone, which would not have a significant impact on the attainment demonstration even if included in UDAQ's model… In addition to the analysis performed by Ramboll and UPA, Marathon notes that UDAQ's modeling over-estimated Marathon's impacts from NO_x emissions because UDAQ did not appropriately consider emission limits on Marathon's Fluidized Catalytic Cracking Unit. Marathon installed a wet gas scrubber with LoTOx emission controls in late 2017 with startup in January 2018, which reduced NO_x emissions by 98 tpy compared to the uncorrected 2017 baseline. Marathon also notes that the baseline appears to include major sources outside of the nonattainment area, apparent by comparing Table 7 with Table 4 of the SIP."

UDAQ Response: The Division has provided extensive response to the commenter's first point regarding the evaluation and the effectiveness of NO_x controls in its response to UPA Comment III and UPA Comment VII. Regarding the second point that UDAQ "did not appropriately consider emission limits" for the FCCU, the Division would like to note that all major sources included in the inventory directly reviewed and confirmed the baseline and projected year inventories. Therefore, any and all emissions included were reviewed by the stakeholder prior to its use in this SIP revision. Lastly, the Division is unclear what the commenter means when it says, "the baseline appears to include major sources outside of the nonattainment area, apparent by comparing Table 7 with Table 4 of the SIP." Table 7 references the 2017 baseline inventory, while table 4 references historic atmospheric monitoring data. However, the Division has reexamined all emissions included in the relevant inventories and can confirm that only emissions from within the NWF NAA have been included.

Breathe Utah Comments:

72) **Breathe Comment #1:** "UDAQ did not complete a Reasonably Available Control Technology (RACT) review that followed a common and comprehensive methodology for all major sources. The information used in planning for the SIP is incomplete because some facilities submitted incomplete RACT reports, and UDAQ evaluated some emission units as a group rather than individually. Because the draft SIP is based on incomplete information, it is not a comprehensive plan…Because of incomplete reporting, UDAQ was only able to evaluate 43% of the combustion sources and 39% of the tank capacities at refineries and terminals individually."

UDAQ Response: The Division appreciates this comment as it highlights the need for additional transparency regarding the Division's RACT process. The UDAQ conducted a comprehensive

RACT evaluation for each facility, which included re-submitted RACT reports, past BACT reports, and, where necessary, additional or clarifying information. The commenter stated that some facilities submitted incomplete RACT reports, but did not provide additional information on which sources submitted incomplete RACT reports. Based on the information that went into the Divisions RACT evaluation for each facility, the Division disagrees with the commenter and believes that all RACT reports are as complete as possible. The Division reasonably evaluated some small source categories as a group for the Moderate Ozone SIP rather than individually, using "Appendix A – $PM_{2.5}$ Serious SIP BACT for Small Sources". This does not indicate that not all VOC and NO_x emission units weren't evaluated, rather that they were evaluated as a category. The Division used a similar process during the $PM_{2.5}$ Serious SIP process, and believes that using the same approach still provides a thorough evaluation.

The commenter goes on to state that "because of these incomplete evaluations, UDAQ did not require NO_x controls on the two largest NO_x emitters: Kennecott (4,209 tpy) and US Magnesium (1,062 tpy). Nor did UDAQ require VOC controls on the largest VOC emitter: Big West Oil (677 tpy) …it is unreasonable to conclude that only three sources had controls that qualify as RACT." RACT is not evaluated on a facility-wide basis, regardless of the overall emissions from a facility. RACT identifies and evaluates all reasonably available control technologies for each emission unit at a facility on a case-by-case basis using actual emissions. As discussed above, the UDAQ thoroughly evaluated each source based on their submitted updated RACT analyses, additional submitted information, and past BACT reports, and determined reasonable control technologies on a unit-by-unit basis based on technical and economic feasibility.

In regards to the commenter's statement that "because of incomplete reporting, UDAQ was only able to evaluate 43% of the combustion sources", which the commenter later points out to apply specifically to process heaters and boilers at Holly Frontier and Chevron, which had 30% and 27% "unreported" sources, respectively, the UDAQ disagrees with these statements. The units the commenter later includes in a table in Attachment A are out of date. Several of the units the commenter lists as not included for Chevron have been replaced. Of the remaining "unreported" sources, as discussed above, the Division conducted a comprehensive RACT evaluation for each facility, which included re-submitted RACT reports, past BACT reports, and, where necessary, additional or clarifying information. Where additional information was not provided in the updated RACT analysis, the Division used $PM_{2.5}$ Serious SIP BACT reports.

The process heaters and boilers at Chevron were thoroughly evaluated as part of both RACT and past $PM_{2.5}$ Serious BACT analyses. For the units that were not included in the updated RACT analysis, UDAQ determined as part of the $PM_{2.5}$ Serious BACT analysis, based on UDAQ's $PM_{2.5}$ SIP Evaluation Report dated July 1, 2018, that it was economically infeasible to control these process heaters and boilers. The cost per ton of NO_x removed for evaluated controls ranged from $47,000/ton-removed to $806,000/ton-removed. The Division allowed similar units with similar capacities and processes to be grouped together as part of this analysis, instead of evaluating each similar unit repeatedly. The Division still agrees as part of the Moderate Ozone SIP that these costs are economically infeasible.

All of the units the commenter lists as not included for Holly Frontier in Attachment A have been removed from the most recent Approval Order (AO) DAQE-AN101230053-22 dated September 1, 2022.

In regards to the commenter's statement that the Division only evaluated 39% of the storage capacity of refineries and terminals, the Division has provided additional comment on this point in its response to Breathe Comment #4, Point 4.

73) **Breathe Comment #2:** "For US Magnesium, which has VOC baseline emissions of 660 tons per year (tpy) (the second largest emitter of VOC), UDAQ agreed to only evaluate the VOC emissions from the Boron Plant (97.5% of US Magnesium VOC emissions). From there, UDAQ only evaluated 165 tons per year of VOC emissions from the spent strip water. Because only approximately 25% of the emissions from this source was evaluated, UDAQ fell short of completing a comprehensive evaluation of the entire source.

UDAQ Response: After discussions with US Magnesium, the Division agreed to require US Magnesium to submit a RACT analysis that focused on the VOC emissions from the Boron Plant. The remainder of equipment located at US Magnesium with VOC emissions consists of various small combustion sources and small storage tanks. As in the case of other sources, the Division allowed US Magnesium to evaluate the remainder of their VOC sources using "Appendix A – $PM_{2.5}$ Serious SIP BACT for Small Sources", which includes BACT analyses for the various miscellaneous types of VOC-emitting sources located at US Magnesium, outside of the Boron Plant. Therefore, UDAQ evaluated the remainder of the VOC-emitting units using the previous evaluations found in the $PM_{2.5}$ Small Source BACT.

Emissions from the Boron Plant process come from two process streams at the Boron Plant: de-boronated brine sent on to the brine process ponds, and strip wastewater sent to the waste ponds. For more information on this process, please refer to US Magnesium's May 20, 2022 and January 31, 2023 RACT evaluations. Emissions from the de-boronated brine are approximately 237 tons per year. The process water is sent through the melt reactor, which combusts those VOC emissions in the process. After discussions with US Magnesium, the Division agreed that controlling the de-boronated brine sent to the process ponds could affect the chemical make-up of the process water and inherently change the process. Therefore, the VOC RACT analysis focused on the strip wastewater at the waste ponds.

US Magnesium originally calculated the emissions from the strip wastewater as being approximately 288 tons per year of VOCs. After additional discussions with US Magnesium and obtaining the process flow rates from US Magnesium's databases, the Division determined that the original calculated value was incorrect; based on a flow rate of strip wastewater to the waste ponds of 150 gallons per minute and an organic weight content of the wastewater of 0.05%, emissions were re-calculated to 165 tons per year of VOCs. Therefore, UDAQ based the RACT evaluation on these updated calculations for the wastewater ponds.

74) **Breathe Comment #3:** "UDAQ only evaluated 25% of the VOC emissions for US Magnesium and 0% of NO_x emissions."

UDAQ Response: The Division disagrees that 0% of the NO_x emissions from US Magnesium were evaluated during the RACT process. US Magnesium submitted a RACT analysis for NO_x emissions May 17, 2021, which can be found under the Supporting TSD information. This evaluation was based on a previous Best Available Retrofit Technology (BART) analysis US Magnesium submitted as part of the Regional Haze Phase 2 process. The Division evaluated this RACT analysis and, based on US Magnesium's current status during the Moderate Ozone SIP process as a source outside of the Moderate Ozone Nonattainment Boundary, did not determine any additional controls as technically or economically feasible. VOC controls were determined technically and economically feasible to install as beyond-RACT contingency measures for the Moderate Ozone SIP.

75) **Breathe Comment #4:** "UDAQ did not complete RACT analysis using a common methodology across peer groupings… had UDAQ completed systematic RACT analysis for sources using a

consistent methodology, more controls would have been required…UDAQ's approach of accepting determinations made by sources without critical evaluation is universal in the SIP."

Breathe Utah went on to highlight the following as "key discrepancies":

1) UDAQ requires control of only one of four cogeneration units.
2) UDAQ accepted inadequate reasoning for technical infeasibility determinations on heaters and boilers.
3) UDAQ did not evaluate all available control technologies for all flares.
4) UDAQ requires a secondary seal on a single storage tank without evaluating each tank individually.

UDAQ Response: The Division appreciates this comment as it highlights the need for additional transparency regarding the Division's RACT process. As stated in Breathe Comment #1, UDAQ conducted a thorough RACT evaluation process that evaluated all reasonable control technologies and costs. The Division will address each of Breathe Utah's "key discrepancies" below.

1) "UDAQ requires control of only one of four cogeneration units"

The Division evaluated all four cogeneration units found at the major sources, and made case-by-case determinations based on each process. RACT is a case-by-case process based on actual emissions, technical feasibility, and economic feasibility. Based on those factors, RACT will be different for each source. The Division determined it was not technically or economically feasible to control the cogeneration units at the KUC Smelter and Refinery, University of Utah, and US Magnesium.

Regarding the KUC Smelter and Refinery Cogeneration Unit, Breathe Utah's comments discuss discrepancies between cost estimates for a SCR done for the KUC Smelter and Refinery cogeneration unit for Approval Order (AO) DAQE-AN103460058-20 issued November 12, 2020 versus the cost estimates used for the RACT evaluation process. The BACT process used for an AO bases estimates off of the potential to emit (PTE) of an emission unit, while the RACT process used 2017 actual emissions for all sources. The referenced application for KUC's 2020 AO assumed a PTE of 29.52 tons of annual NO_x emissions controlled and a cost effectiveness of $26,264/ton-removed. For the RACT analysis, using 2017 actual NO_x emissions of 6.25 tons per year and updated 2023 cost estimates, the cost effectiveness of $165,707/ton-removed was found to be economically infeasible.

Regarding the University of Utah, Breathe Utah's comments state "The University of Utah indicated that SCR was technically infeasible on their cogeneration unit due to space constraints, which UDAQ accepted." The Division disagrees with this statement. The University of Utah presented several reasons for technical infeasibility in their RACT analysis, including physical limitations, public safety concerns, and the need to install an additional combustion device to increase exhaust stream temperatures. The Division did not require an additional analysis regarding physical limitations from the University of Utah due to the University's arguments regarding public safety concerns. The University of Utah is a unique major source with emission units interspersed throughout public areas. The cogeneration units are located adjacent to a TRAX line, event center, museum, hospitals, and other public facilities. The addition of SCR would require ammonia storage and handling in a densely-packed public area, which poses potential health and safety hazards. Based on this reasoning, coupled with the 2017 actual NO_x emissions from the cogeneration unit of 6.24 tons per year, the Division determined that SCR was technically and economically infeasible for the University of Utah.

Regarding US Magnesium, Breathe Utah's comments state "US Magnesium and UDAQ did not evaluate the feasibility of installing NO_x controls downstream of the spray dryers at the exhaust to atmosphere…UDAQ should not disqualify add-on NO_x controls at the cogeneration unit as technically infeasible without addressing installation downstream of the spray dryers". The exhaust stream from the cogeneration units at US Magnesium is an integral part of the magnesium production process. The exhaust stream is used as part of the spray dryer, which is used to dry the magnesium chloride slurry into a magnesium chloride powder. Any modifications to this process would impact product development and require significant alterations to the spray dryers. UDAQ has determined that evaluating significant process changes is outside of the scope of the current RACT process for US Magnesium at this time, and maintains that the installation of SCR on the cogeneration units is technically infeasible. However, the Division reserves the right to re-evaluate this determination as part of a future SIP process.

2) UDAQ accepted inadequate reasoning for technical infeasibility determinations on heaters and boilers.

In this comment, Breathe Utah states that "several facilities argued that control technologies for heaters and boilers are technically infeasible. Because UDAQ accepted these arguments without further evaluation, the draft SIP fails to achieve meaningful reductions in NO_x emissions." Breathe Utah goes on to mention Holly Frontier's RACT analysis for SCR specifically, and states that "SCR is technically feasible for heaters and boilers with certain modifications that should be fully considered in a RACT analysis." As the Division states in the Moderate Ozone SIP TSD and Breathe Utah quotes, "UDAQ reviewed all analyses submitted in conjunction with past BACT reports". Installing SCR on the heaters and boilers at Holly Frontier was thoroughly evaluated as part of both the RACT and past $PM_{2.5}$ Serious BACT analyses. The installation of SCR on the naturally drafted heaters would require replacing or rebuilding those heaters as mechanical draft heaters. The Division determined as part of the $PM_{2.5}$ Serious BACT analysis, based on information submitted to the Division July 26, 2017, that it was economically infeasible to replace or rebuild these heaters. The cost per ton of NO_x removed to rebuild and install SCR for these heaters and boilers ranged from $80,097/ton-removed to $262,329/ton-removed. The Division still agrees as part of the Moderate Ozone SIP that these costs are economically infeasible. Therefore, no additional analysis is required at this time for Holly Frontier's heaters and boilers.

3) UDAQ did not evaluate all available control technologies for all flares.

Breathe Utah states in this comment that "by not evaluating the refinery flares with the same level of rigor, UDAQ missed potential NO_x and VOC emissions." The commenter goes on to summarize the flare technologies at each refinery and states "UDAQ must re-evaluate technical feasibility and cost-effectiveness determinations for all flares for all available control technologies." The Division disagrees with the summary the commenter prepared for controls evaluated for all refineries. Chevron Refinery did evaluate and currently operates flare gas recovery. The Division further disagrees that the refinery flares were not evaluated consistently, and that additional potential NO_x and VOC emission reductions would be determined with additional analysis. Each of the refineries located in the NWF Ozone NAA is subject to the flare minimization requirements of NSPS Subpart Ja. Three of the four refineries have implemented flare gas recovery, while the fourth follows the alternative procedures outlined in NSPS Subpart Ja, which equate to flare minimization. Upon initial examination, the Division does not believe additional evaluation would result in additional reductions.

4) "UDAQ requires a secondary seal on a single storage tank without evaluating each tank individually."

The commenter states that "sites evaluated tanks in groups rather than individually and the Division accepted faulty technical feasibility assessments. As a result, the SIP missed opportunities to reduce VOC emissions." The Division disagrees with this comment and believes that it did not accept faulty technical feasibility assessments in regards to the storage tank RACT analyses. After much evaluation, the Division has decided to evaluate individual storage tanks much more in-depth as part of a Serious Ozone SIP. Due to the additional time required to thoroughly evaluate each storage tank individually, the Division has determined that there was inadequate information to identify RACT determinations for individual storage tanks. While some of the refineries provided initial analyses for individual storage tanks, each refinery stated the need for an in-depth engineering study to determine feasibility of controls on a tank-by-tank basis. Therefore, the Division determined it was not reasonable as part of the Moderate Ozone SIP to require additional controls on storage tanks at this time. The storage tank that does have secondary seal requirements was an isolated case that was identified as being a control option at that facility.

76) **Breathe Comment #5:** "The draft SIP does not achieve the 15% reduction in VOC emissions mandated by the CAA." Breathe Utah goes on to state that in order to achieve a 15% reduction, UDAQ should reevaluate some of the largest sources of VOC emissions and require controls. "Based on the missed opportunities for emission reductions described in the sections above, it appears UDAQ could have captured a much larger percent reduction of VOC emissions in this draft Moderate Ozone SIP."

UDAQ Response: The Division does not disagree with the commenters point regarding the 15% RFP requirements and has provided extensive response to this comment in its response to EPA Comment 7-1 and UPA Comment IV. In regards to the re-evaluation of RACT and the "missed opportunities" the commenter referred to, the Division has provided extensive information on these points in Breathe Comments #1 - #4 above.

ITEM 7

State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-062-23

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

THROUGH: Erica Pryor, Rules Coordinator

FROM: Ryan Bares, Environmental Scientist

DATE: August 25, 2023

SUBJECT: PROPOSE FOR FINAL ADOPTION: Amendment to Section R307-110-17; Incorporation of Utah State Implementation Plan, Section IX.H.31 and Section IX.H.32: Emission Limitations and Operating Practices.

On August 3, 2018, the U.S. Environmental Protection Agency (EPA) designated Utah's Northern Wasatch Front (NWF) as a marginal nonattainment area (NAA) for the 2015 National Ambient Air Quality Standard (NAAQS) for 8-hour ozone concentrations (83 FR 25776). On October 7, 2022, EPA finalized the reclassification of the NWF NAA from marginal to moderate status (87 FR 60897) since the area failed to attain the standard by the attainment date of August 3, 2021. The reclassification to moderate status became effective on November 7, 2022. As a result of this designation, under Section 182(b) of the Clean Air Act (CAA), the state of Utah is required to submit a revision to Utah's State Implementation Plan (SIP) with specific requirements to demonstrate efforts to attain the NAAQS.

The proposed amendments to Section R307-110-17 result in the incorporation of specific emission limitations for major industrial sources located within, and around, the NWF NAA. These emission limitations serve to fulfill Utah's statutory obligations under Section 182(b)(2) of the CAA, and further serve to demonstrate attainment of the NAAQS as expeditiously as practicable.

The emission limitations proposed in this rulemaking are done so in parallel with the SIP revisions included in the proposed amendments to Section R307-110-13; Incorporation of Utah State Implementation Plan, Section IX.D.11: 2015 Ozone NAAQS Northern Wasatch Front Moderate Nonattainment Area. Details regarding the analysis that identified the proposed emission limitations,

expected emission reductions, and supporting information on the CAA requirements surrounding these proposed emission limitations can be found in the documentation associated with the proposed revisions in Section IX.D.11.

These emission limits underwent a 45-day public comment process in parallel with the proposed amendments to Section R307-110-13. Technical comments submitted during the public comment period by impacted stakeholders resulted in the following changes to the proposed amendments to Section R307-110-17:

- The emission limit for the proposed cogeneration turbines at the Tesoro Refining and Marketing Company Marathon Refinery was increased from 2.0 to 5.0 ppmv.
- The timeline for the proposed controls for the cogeneration turbines at the Tesoro Refining and Marketing Company Marathon Refinery was adjusted to match a typical project schedule for a project of this size; with a new control implementation deadline of October 1, 2028. Reasonably Available Control Technologies (RACT) costs were adjusted to account for the updated timeline and the inclusion of additional costs incurred by the source during the installation of controls, which were deemed to be economically reasonable. This determination was assisted by the cost thresholds outlined in Table 1 of APPENDIX A.
- The originally proposed low NOx burners for crud e heaters F21001 and F21002 at Chevron Products Company Salt Lake Refinery were deemed to exceed RACT cost thresholds and were subsequently removed. This determination was assisted by the cost thresholds outlined in Table 1 of APPENDIX A.

Recommendation: Staff recommends the Board approve the amendment to Section R307-110-17; Incorporation of Utah State Implementation Plan, Section IX.H.31 and Section IX.H.32: Emission Limitations and Operating Practices, for final adoption.

State of Utah
Administrative Rule Analysis
Revised May 2023

NOTICE OF CHANGE IN PROPOSED RULE		
Title No. - Rule No. - Section No.		
Rule or Section Number:	**R307-110-17**	**Filing ID: Office Use Only**
Date of Previous Publication:	**06/01/2023**	

Agency Information

1. Department:	Environmental Quality	
Agency:	Air Quality	
Room number:		
Building:	MASOB	
Street address:	195 N 1950 W	
City, state and zip:	Salt Lake City, UT 84116	
Mailing address:	PO BOX 144820	
City, state and zip:	Salt Lake City, UT 84114-4820	
Contact persons:		
Name:	**Phone:**	**Email:**
Erica Pryor	385-499-3416	epryor1@utah.gov
Ryan Bares	801-536-4216	rbares@utah.gov
Please address questions regarding information on this notice to the persons listed above.		

General Information

2. Rule or section catchline:

R307-110-17. Section IX, Control Measures for Area and Point Sources, Part H, Emission Limits.

3. Reason for this change:

The materials being incorporated by reference in R307-110-17 underwent a 45-day public comment period. During this time, stakeholders submitted additional technical information that resulted in modifications to the proposed emission controls and some timelines. More accurate financial information was also submitted to the Division during this time.

4. Summary of this change:

1) Controls for Chevron Products Company Salt Lake Refinery have been removed, 2) The timeline for implementation of controls at the Tesoro Refining & Marketing Company LLC Marathon Refinery have been modified from May 1, 2026 to October 1, 2028, 3) More accurate values for the annual operating costs have been determined, and 4) Fiscal impacts have been updated to accurately reflect the fiscal year they will occur in and not the calendar year.

Fiscal Information

5. Provide an estimate and written explanation of the aggregate anticipated cost or savings to:

A) State budget:

These changes to the rule are not expected to create additional costs or savings for the state government since these facilities are already permitted and inspected under existing rules. Inspectors will be able to confirm compliance as part of normal inspection processes.

B) Local government:

These changes to the rule are not expected to impact local governments; therefore, no costs or savings are anticipated.

C) Small businesses ("small business" means a business employing 1-49 persons)**:**

These changes to the rule are not expected to impact small businesses; therefore, no costs or savings are anticipated.

D) Non-small businesses ("non-small business" means a business employing 50 or more persons)**:**

The Utah Division of Air Quality anticipates that the changes to the rule will impact two non-small businesses. The impacts are described below:

(1) NOx limits for Tesoro Refining & Marketing Company LLC Marathon Refinery. Installation of Selective Catalytic Reduction on two cogeneration turbines with heat recovery steam generation that meet an emission concentration limitation of 5 ppmv @ 15% O2 (as required in Section IX Part H.32.j.b of the SIP).

Installed Capital Costs: $18,263,558
Annual Operating Costs: $547,099*
Implementation timeline: October 1, 2028.

(2) VOC limits for US Magnesium LLC (Cost Information from 1/31/23 RACT Analysis). Installation of a steam stripper in series with regenerative thermal oxidizer on boron plant process wastewater ponds (as required in Section IX Part H.32.k.a of the SIP).

Installed Capital Costs: $3,749,632
Annual Costs: $5,077,156*
Implementation timeline: October 1, 2024

* Includes costs associated with annual interest.

E) Persons other than small businesses, non-small businesses, or state or local government entities ("person" means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an ***agency***)**:**

These changes to the rule are not expected to impact persons other than small businesses, non-small businesses, or state or local government entities; therefore, no cost or savings are anticipated.

F) Compliance costs for affected persons:

Impacted non-small businesses are existing permitted sources with reoccurring testing and permitting obligations. Any additional costs for determining compliance are accounted for in the annual operating costs outlined above in Section D and are included in the Regulatory Impact Summary Table in Section G.

G) Regulatory Impact Summary Table (This table only includes fiscal impacts that could be measured. If there are inestimable fiscal impacts, they will not be included in this table. Inestimable impacts will be included in narratives above.)

Regulatory Impact Table

Fiscal Cost	**FY2024**	**FY2025**	**FY2026**
State Government	$0	$0	$0
Local Governments	$0	$0	$0
Small Businesses	$0	$0	$0
Non-Small Businesses	$0	$3,749,632	$5,077,156
Other Persons	$0	$0	$0
Total Fiscal Cost	**$0**	**$3,749,632**	**$5,077,156**
Fiscal Benefits	**FY2024**	**FY2025**	**FY2026**
State Government	$0	$0	$0
Local Governments	$0	$0	$0
Small Businesses	$0	$0	$0
Non-Small Businesses	$0	$0	$0
Other Persons	$0	$0	$0
Total Fiscal Benefits	**$0**	**$0**	**$0**
Net Fiscal Benefits	**$0**	**$0**	**$0**

H) Department head comments on fiscal impact and approval of regulatory impact analysis:

The Executive Director of the Department of Environmental Quality, Kim D. Shelley, has reviewed and approved this regulatory impact analysis. Kimberly Shelley

Citation Information

6. Provide citations to the statutory authority for the rule. If there is also a federal requirement for the rule, provide a citation to that requirement:

Utah Code 19-2-104	U.S.C. Title 42 Chapter 85 Subchapter I Part A Section 7410 (a)(1) 2 (A)	

Incorporations by Reference Information

7. Incorporations by Reference (if this rule incorporates more than two items by reference, please include additional tables)**:**	
A) This rule adds, updates, or removes the following title of materials incorporated by references (a copy of materials incorporated by reference must be submitted to the Office of Administrative Rules; *if none, leave blank*)**:**	
Official Title of Materials Incorporated (from title page)	Utah State Implementation Plan Emission Limits and Operating Practices Section IX, Part H.31 and H.32
Publisher	Utah Department of Environmental Quality, Division of Air Quality
Issue Date	
Issue or Version	

B) This rule adds, updates, or removes the following title of materials incorporated by references (a copy of materials incorporated by reference must be submitted to the Office of Administrative Rules; *if none, leave blank*)**:**	
Official Title of Materials Incorporated (from title page)	
Publisher	
Issue Date	
Issue or Version	

Public Notice Information

8. The public may submit written or oral comments to the agency identified in box 1. (The public may also request a hearing by submitting a written request to the agency. See Section 63G-3-302 and Rule R15-1 for more information.)		
A) Comments will be accepted until:		Click or tap to enter a date.
B) A public hearing (optional) will be held:		
Date (mm/dd/yyyy)**:**	**Time** (hh:mm AM/PM)**:**	**Place** (physical address or URL)**:**
No Formal Comment Period		

To the agency: If more space is needed for a physical address or URL, refer readers to Box 4 in General Information. If more than two hearings will take place, continue to add rows.

9. This rule change MAY become effective on:	10/31/2023
NOTE: The date above is the date the agency anticipates making the rule or its changes effective. It is NOT the effective date.	

Agency Authorization Information

To the agency: Information requested on this form is required by Section 63G-3-303. Incomplete forms will be returned to the agency for completion, possibly delaying publication in the *Utah State Bulletin* and delaying the first possible effective date.			
Agency head or designee and title:	Bryce C. Bird, Director, Division of Air Quality	**Date:**	08/24/2023

R307. Environmental Quality, Air Quality.
R307-110. General Requirements: State Implementation Plan.
…

R307-110-17. Section IX, Control Measures for Area and Point Sources, Part H, Emission Limits.

The Utah State Implementation Plan, Section IX, Control Measures for Area and Point Sources, Part H, Emission Limits and Operating Practices, as most recently amended by the Utah Air Quality Board on [~~December 4, 2019~~]September 12, 2023, pursuant to Section 19-2-104, is hereby incorporated by reference and made a part of these rules.

…

KEY: air pollution, PM10, PM2.5, ozone
Date of Enactment or Last Substantive Amendment:
December 5, 2019 Notice of Continuation: January
27, 2017
Authorizing, and Implemented or Interpreted Law: 19-2-104

Utah State Implementation Plan

Emission Limits and Operating Practices

Section IX, Part H.31 and Part H.32

Adopted by the Air Quality Board [~~Month Day~~] September 12, 2023

H.31. General Requirements: Control Measures for Area and Point Sources, Emission Limits and Operating Practices, Ozone Requirements

a. Except as otherwise outlined in individual conditions of this Subsection IX.H.31, the terms and conditions of this Subsection IX.H.31 shall apply to all sources subsequently addressed in Subsection IX.H.32. Should any inconsistencies exist between these two subsections, the source specific conditions listed in IX.H.32 shall take precedence.

b. The definitions contained in R307-101-2, Definitions and R307-170-4, Definitions, apply to Section IX, Part H.

c. The terms and conditions of R307-107-1 and R307-107-2 shall apply to all sources subsequently addressed in Subsection IX.H.32.

d. Any information used to determine compliance shall be recorded for all periods when the source is in operation. All records required by IX.H.31 shall be kept for a minimum of five years. These records shall be made available to the Director upon request.

e. All emission limitations listed in Subsections IX.H.32 shall apply at all times, unless otherwise specified in the source specific conditions listed in IX.H.32. Each source shall submit a report of any deviation from the applicable requirements of Subsection IX.H, including those attributable to upset conditions, the probable cause of such deviations, and any corrective actions or preventive measures taken. The report shall be submitted in accordance with the requirements of R307-170, Continuous Emission Monitoring Program. Deviations due to breakdowns shall be reported according to the breakdown provisions of R307-107.

f. Stack Testing:

    i. As applicable, stack testing to show compliance with the emission limitations in Subsection IX.H.32 shall be performed in accordance with the following:

        A. Sample Location: The testing point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, or the most recent version of the EPA-approved test method if approved by the Director.

        B. Volumetric Flow Rate: 40 CFR 60, Appendix A, Method 2, or other EPA-approved testing methods acceptable to the Director.

        C. Nitrogen Oxides (NOx): 40 CFR 60, Appendix A, Method 7E, or other EPA approved testing methods acceptable to the Director.

        D. Calculations: To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors to give the results in the specified units of the emission limitation.

        E. Notification: The Director shall be notified of the date, time, and place of stack testing no less than 30 days prior to conducting any required emission testing. A

source test protocol shall be submitted to DAQ when the testing notification is submitted to the Director.

F. The source test protocol shall be approved by the Director prior to performing the tests. The source test protocol shall outline the proposed test methodologies, stack to be tested, and procedures to be used. A pretest conference shall be held, if directed by the Director.

G. Source Operation: The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three years.

H. Testing Frequency: Test once every three years or sooner if directed by the Director.

g. Continuous Emission and Opacity Monitoring:

i. For all continuous monitoring devices, the following shall apply:

A. Except for system breakdown, repairs, calibration checks, and zero and span adjustments required under paragraph (d) 40 CFR 60.13, the owner/operator of an affected source shall continuously operate all required continuous monitoring systems and shall meet minimum frequency of operation requirements as outlined in R307-170 and 40 CFR 60.13.

B. The monitoring system shall comply with all applicable sections of R307-170; 40 CFR 60.13; and 40 CFR 60, Appendix B – Performance Specifications.

C. For any hour in which fuel is combusted in the unit, the owner/operator of each unit shall calculate the hourly average NOx concentration in lb/MMBtu.

H.32. Source-Specific Emission Limitations in Northern Wasatch Front Ozone Nonattainment Area

a. Big West Oil LLC Refinery

    a. Source-wide NOx and VOC:

        i. Compliance with SIP Section IX Part H.12.b is required.

        ii. Compliance with SIP Section IX Part H.11.g is required.

b. Chevron Products Company Salt Lake Refinery & Salt Lake Marketing Terminal

    a. Source-wide NOx and VOC:

        i. Compliance with SIP Section IX Part H.12.d is required.

        ii. Compliance with SIP Section IX Part H.11.g is required.

    [~~b. Crude Heaters F21001 & F21002~~

        ~~iii. Crude heaters F21001 and F21002 shall be equipped with ultra-low NOx burners that meet an emission rate of 0.025 lb/MMBtu no later than May 1, 2026.~~

        ~~iv. Compliance with the above emissions limits shall be determined by CEMs as outlined in SIP Section IX Part H.31.g.i.~~]

c. Hexcel Corporation

    a. Source-wide NOx and VOC:

        i. Compliance with SIP Section IX Part H.12.f is required.

d. Hill Air Force Base

    a. Source-wide NOx and VOC:

        i. Compliance with SIP Section IX Part H.12.q is required.

e. Holly Frontier Sinclair Refinery & Holly Energy Partners Terminal

    a. Source-wide NOx and VOC:

        i. Compliance with SIP Section IX Part H.12.g is required.

        ii. Compliance with SIP Section IX Part H.11.g is required.

f. Kennecott Utah Copper Bingham Canyon Mine & Copperton Concentrator

    a. Source-wide NOx and VOC:

i. Compliance with SIP Section IX Part H.12.h is required.

g. Kennecott Utah Copper Smelter & Refinery

a. Source-wide NOx and VOC:

i. Compliance with SIP Section IX Part H.12.j is required.

h. Lhoist North America of Arizona, Inc.

a. Source-wide NOx and VOC:

i. Compliance with SIP Section IX Part H.12.c is required.

i. Pacificorp Energy Gadsby Power Plant

a. Source-wide NOx and VOC:

i. Compliance with SIP Section IX Part H.12.l is required.

j. Tesoro Refining & Marketing Company LLC Marathon Refinery & Tesoro Logistics Operations LLC Truck Loading Rack

a. Source-wide NOx and VOC:

i. Compliance with SIP Section IX Part H.12.m is required.

ii. Compliance with SIP Section IX Part H.11.g is required.

b. Cogeneration Turbines with Heat Recovery Steam Generation CG1 & CG2

i. Emissions to the atmosphere from the cogeneration turbines with heat recovery steam generation CG1 and CG2 shall not exceed the following concentration no later than [~~May 1, 2026~~]October 1, 2028:

1. Pollutant ppmdv (15% O_2 dry)
NOx [~~2~~]5

2. Compliance with the above emissions limits shall be determined by stack test as outlined in SIP Section IX Part H.31.f.

3. Subsequent to initial compliance testing, stack testing is required every two years.

4. The above emission limits apply to steady state operations when ambient temperature is between 0 °F and 120 °F, not including startup, shutdown, and minimum power load operations.

ii. Startup / Shutdown / Minimum Power Load Emission Minimization Plan

1. Startup and shutdown events shall not exceed 614 hours per 12-month rolling period per turbine.

2. Cumulative minimum power load operations shall not exceed 421 hours per 12-month rolling period per turbine.

3. Startup begins when the fuel valves open and natural gas or fuel gas is supplied to the combustion turbines.

4. Startup ends when the following conditions are met:

    a. The SCR inlet gas temperature is at least 575 °F, the ammonia block valve has opened and ammonia is being injected into the SCR, and the unit has reached an output of 50% operating load.

5. Shutdown begins when the unit load or output is reduced below 50% operating load with the intent of removing the unit from service.

6. Shutdown ends at the cessation of fuel input to the turbine combustor.

7. Minimum Power Load begins when the turbine generator is less than 50% operating load, the heat recovery steam generation unit is no longer supplemental fired, and the SCR remains operational with the intent to continue operation of the turbine generator at minimum power make.

8. Minimum Power Load ends when the turbine generator is greater than 50% operating load.

9. Turbine output (turbine load) shall be monitored and recorded on an hourly basis with an electrical meter.

c. Tank 321

    i. Tank 321 shall be equipped with secondary seals in compliance with 40 CFR 63 MACT Subpart CC no later than May 1, 2026.

d. Wastewater System API Separator Unit

    i. The wastewater system API separator unit shall be equipped with a closed vent system vented to carbon adsorption in compliance with 40 CFR 60 NSPS Subpart QQQ no later than December 31, 2025.

k. US Magnesium

a. Boron Plant Process Wastewater Ponds

    i. A steam stripper in series with a regenerative thermal oxidizer (RTO) shall be installed on the boron plant process wastewater ponds no later than October 1,

2024. Process emissions shall be routed through the operating RTO prior to being emitted to the atmosphere.

ii. The RTO shall be operated with a minimum temperature of 1,400 deg F and the residence time shall be greater than or equal to 0.5 seconds.

1. RTO temperatures shall be monitored with temperature sensing equipment that is capable of continuous measurement and readout of the combustion temperature. The readout shall be located such that an inspector/operator can, at any time, safely read the output. The measurement need not be continuously recorded. All instruments shall be calibrated against a primary standard at least once every 180 days. The calibration procedure shall be in accordance with 40 CFR 60, Appendix A, Method 2, Paragraph 6.3 and 10.31, or use a type "K" thermocouple.

2. RTO volumetric flow rate shall be monitored with a flow meter in accordance with SIP Section IX Part H.31.f.i.B.

3. RTO temperature and volumetric flow rate shall be recorded on an hourly basis while operating.

l. Utah Municipal Power Agency West Valley Power Plant

a. Source-wide NOx and VOC:

i. Compliance with SIP Section IX Part H.12.o is required.

m. University of Utah

a. Source-wide NOx and VOC:

i. Compliance with SIP Section IX Part H.12.p is required.

ITEM 8

State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-060-23

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Erica Pryor, Rules Coordinator

DATE: August 25, 2023

SUBJECT: Five-Year Review: R307-361. Architectural Coatings.

Utah Code Title 63G-3-305 requires each agency to review and justify each of its rules within five years of a rule's original effective date or within five years of the filing of the last five-year review. This review process is not a time to revise or amend the rules, but only to verify that the rule is still necessary and allowed under state and federal statutes. As part of this process, we are required to identify any comments received since the last five-year review of each rule. This process is not the time to revisit those comments or to respond to them.

DAQ has completed the five-year review for Rule R307-361, Architectural Coatings. The results of this review are found in the attached Five-Year Notice of Review and Statement of Continuation form.

Recommendation: Staff recommends that the Board continue this rule by approving the attached form to be filed with the Office of Administrative Rules.

State of Utah
Administrative Rule Analysis
Revised May 2023

FIVE-YEAR NOTICE OF REVIEW AND STATEMENT OF CONTINUATION		
Title No. - Rule No.		
Rule Number:	**R307-361**	**Filing ID: Office Use Only**
Effective Date:	**Office Use Only**	

Agency Information

1. Department:	Environmental Quality	
Agency:	Air Quality	
Room number:		
Building:	MASOB	
Street address:	195 N 1950 W	
City, state and zip:	SLC, UT 84116	
Mailing address:	PO BOX 144820	
City, state and zip:	Salt Lake City, UT 84114-4820	
Contact persons:		
Name:	**Phone:**	**Email:**
Erica Pryor	(385) 499-3416	epryor1@utah.gov
Mat Carlile	(385) 306-6535	mcarlile@utah.gov
Please address questions regarding information on this notice to the persons listed above.		

General Information

2. Rule catchline:

R307-361. Architectural Coatings

3. A concise explanation of the particular statutory provisions under which the rule is enacted and how these provisions authorize or require this rule:

This rule was enacted under Subsection 19-2-104(1)(a). Subsection 19-2-104(1)(a) authorizes the Air Quality Board to promulgate rules "regarding the control, abatement, and prevention of air pollution from all sources and the establishment of the maximum quantity of air pollutants that may be emitted by an air pollutant source." Rule R307-361 reduces VOC emissions emitted from architectural coatings by establishing reasonably available control technology (RACT) requirements, as well as clarifying regulatory requirements to the industry.

4. A summary of written comments received during and since the last five-year review of this rule from interested persons supporting or opposing this rule:

There have been no public comments since the last review of R307-361.

5. A reasoned justification for continuation of this rule, including reasons why the agency disagrees with comments in opposition to this rule, if any:

R307-361 is needed to establish RACT controls in architectural coatings emitting VOCs, which are precursors to the formation of PM2.5. R307-361 is a component of Utah's State Implementation Plan (SIP), and cannot be removed from the SIP without EPA approval. Therefore, this rule should be continued.

Agency Authorization Information

To the agency: Information requested on this form is required by Section 63G-3-305. Incomplete forms will be returned to the agency for completion, possibly delaying publication in the *Utah State Bulletin*.

Agency head or designee and title:	Bryce C. Bird, Director	**Date:**	09/12/2023

Reminder: Text changes cannot be made with this type of rule filing. To change any text, please file an amendment or a nonsubstantive change.

R307. Environmental Quality, Air Quality.

R307-361. Architectural Coatings.

R307-361-1. Purpose.

(1) The purpose of R307-361 is to limit volatile organic compounds (VOC) emissions from architectural coatings.

(2) This rule specifies architectural coatings storage, cleanup, and labeling requirements.

R307-361-2. Applicability.

R307-361 applies to any person who supplies, sells, offers for sale, applies, or solicits the application of any architectural coating, or who manufactures, blends or repackages any architectural coating for use within Box Elder, Cache, Davis, Salt Lake, Tooele, Utah, and Weber counties.

R307-361-3. Definitions.

The following additional definitions apply only to R307-361.

"Adhesive" means any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

"Aerosol coating product" means a pressurized coating product containing pigments or resins that dispenses product ingredients by means of a propellant, and is packaged in a disposable can for hand-held application or for use in specialized equipment for ground traffic/marking applications.

"Aluminum roof coating" means a coating labeled and formulated exclusively for application to roofs and containing at least 84 grams of elemental aluminum pigment per liter of coating (at least 0.7 pounds per gallon).

"Appurtenance" means any accessory to a stationary structure coated at the site of installation, whether installed or detached, including, but not limited to, bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lampposts; partitions; pipes and piping systems; rain gutters and downspouts; stairways, fixed ladders, catwalks, and fire escapes; and window screens.

"Architectural coating" means a coating to be applied to stationary structures or their appurtenances at the site of installation, to portable buildings at the site of installation, to pavements, or to curbs.

(1) Coatings applied in shop applications or to non-stationary structures such as airplanes, ships, boats, railcars, and automobiles, and adhesives are not considered architectural coatings for the purposes of this rule.

"Basement specialty coating" means a clear or opaque coating that is labeled and formulated for application to concrete and masonary surfaces to provide a hydrostatic seal for basements and other below-grade surfaces, meeting the following criteria:

(1) Coating must be capable of withstanding at least 10 psi of hydrostatic pressure, as determined in accordance with ASTM D7088-04 and;

(2) Coating must be resistant to mold and mildew growth and must achieve a microbial growth rating of 8 or more, as determined in accordance with ASTM D3273-00 and ASTM D3274-95.

"Bitumens" means black or brown materials including, but not limited to, asphalt, tar, pitch, and asphaltite that are soluble in carbon disulfide, consist mainly of hydrocarbons, and are obtained from natural deposits or as residues from the distillation of crude petroleum or coal.

"Bituminous roof coating" means a coating that incorporates bitumens and that is labeled and formulated exclusively for roofing for the primary purpose of preventing water penetration.

"Bituminous roof primer" means a primer that incorporates bitumens and that is labeled and formulated exclusively for roofing and intended for the purpose of preparing a weathered or aged surface or improving adhesion of subsequent surface components.

"Bond breaker" means a coating labeled and formulated for application between layers of concrete to prevent a freshly poured top layer of concrete from bonding to the layer over which it is

poured.

"Calcimine recoaters" means a flat solvent borne coating formulated and recommended specifically for coating calcimine-painted ceilings and other calcimine-painted substrates.

"Coating" means a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes, and such materials include, but are not limited to, paints, varnishes, sealers, and stains.

"Colorant" means a concentrated pigment dispersion in water, solvent, or binder that is added to an architectural coating after packaging in sale units to produce the desired color.

"Concrete curing compound" means a coating labeled and formulated for application to freshly poured concrete to retard the evaporation of water and or harden or dustproof the surface of freshly poured concrete.

"Concrete/masonry sealer" means a clear or opaque coating that is labeled and formulated primarily for application to concrete and masonry surfaces to prevent penetration of water, provide resistance against abrasion, alkalis, acids, mildew, staining, or ultraviolet light, or harden or dustproof the surface of aged or cured concrete.

"Concrete surface retarder" means a mixture of retarding ingredients such as extender pigments, primary pigments, resin, and solvent that interact chemically with the cement to prevent hardening on the surface where the retarder is applied allowing the retarded mix of cement and sand at the surface to be washed away to create an exposed aggregate finish.

"Conjugated oil varnish" means a clear or semi-transparent wood coating, labeled as such, excluding lacquers or shellacs, based on a natural occurring conjugated vegetable oil (tung oil) and modified with other natural or synthetic resins; a minimum of 50% of the resin solids consisting of conjugated oil.

"Conversion varnish" means a clear acid coating with an alkyd or other resin blended with amino resins and supplied as a single component or two-component product.

"Department of Defense military technical data" means a specification that specifies design requirements, such as materials to be used, how a requirement is to be achieved, or how an item is to be fabricated or constructed.

"Driveway sealer" means a coating labeled and formulated for application to worn asphalt driveway surfaces to fill cracks, seal the surface to provide protection, or to restore or preserve the appearance.

"Dry fog coating" means a coating labeled and formulated only for spray application such that overspray droplets dry before subsequent contact with incidental surfaces in the vicinity of the surface coating activity.

"Faux finishing coating" means a coating labeled and formulated to meet one or more of the following criteria:

(1) A glaze or textured coating used to create artistic effects, including, but not limited to, dirt, suede, old age, smoke damage, and simulated marble and wood grain;

(2) A decorative coating used to create a metallic, iridescent, or pearlescent appearance and that contains at least 48 grams of pearlescent mica pigment or other iridescent pigment per liter of coating as applied (at least 0.4 pounds per gallon); or

(3) A decorative coating used to create a metallic appearance and that contains less than 48 grams of elemental metallic pigment per liter of coating as applied (less than 0.4 pounds per gallon); or

(4) A decorative coating used to create a metallic appearance and that contains greater than 48 grams of elemental metallic pigment per liter of coating as applied (greater than 0.4 pounds per gallon) and which requires a clear topcoat to prevent the degradation of the finish under normal use conditions; or

(5) A clear topcoat to seal and protect a faux finishing coating that meets the requirements of (1) through (4) of this definition, and these clear topcoats shall be sold and used solely as part of a faux finishing coating system.

"Fire-resistive coating" means a coating labeled and formulated to protect structural integrity

by increasing the fire endurance of interior or exterior steel and other structural materials. The Fire-Resistive coating category includes sprayed fire resistive materials and intumescent fire resistive coatings that are used to bring structural materials into compliance with federal, state, and local building code requirements. The fire-resistant coatings shall be tested in accordance with ASTM E119-08.

"Flat coating" means a coating that is not defined under any other definition in this rule and that registers gloss less than 15 on an 85 degree meter or less than 5 on a 60 degree meter according to ASTM D523-89 (1999).

"Floor coating" means an opaque coating that is labeled and formulated for application to flooring, including, but not limited to, decks, porches, steps, garage floors, and other horizontal surfaces that may be subject to foot traffic.

"Form-release compound" means a coating labeled and formulated for application to a concrete form to prevent the freshly poured concrete from bonding to the form which may consist of wood, metal, or some material other than concrete.

"Graphic arts coating or sign paint" means a coating labeled and formulated for hand-application by artists using brush, airbrush, or roller techniques to indoor and outdoor signs, excluding structural components, and murals including lettering enamels, poster colors, copy blockers, and bulletin enamels.

"High-temperature coating" means a high performance coating labeled and formulated for application to substrates exposed continuously or intermittently to temperatures above 204 degrees Celsius (400 degrees Fahrenheit).

"Impacted immersion coating" means a high performance maintenance coating formulated and recommended for application to steel structures subject to immersion in turbulent, debris-laden water. These coatings are specifically resistant to high-energy impact damage by floating ice or debris.

"Industrial maintenance coating" means a high performance architectural coating, including primers, sealers, undercoaters, intermediate coats, and topcoats, formulated for application to substrates, including floors exposed to one or more of the following extreme environmental conditions:

(1) Immersion in water, wastewater, or chemical solutions (aqueous and non-aqueous solutions), or chronic exposure of interior surfaces to moisture condensation;

(2) Acute or chronic exposure to corrosive, caustic or acidic agents, or to chemicals, chemical fumes, or chemical mixtures or solutions;

(3) Frequent exposure to temperatures above 121 degrees Celsius (250 degrees Fahrenheit);

(4) Frequent heavy abrasion, including mechanical wear and frequent scrubbing with industrial solvents, cleansers, or scouring agents; or

(5) Exterior exposure of metal structures and structural components.

"Low solids coating" means a coating containing 0.12 kilogram or less of solids per liter (1 pound or less of solids per gallon) of coating material as recommended for application by the manufacturer.

"Magnesite cement coating" means a coating labeled and formulated for application to magnesite cement decking to protect the magnesite cement substrate from erosion by water.

"Manufacturer's maximum thinning recommendation" means the maximum recommendation for thinning that is indicated on the label or lid of the coating container.

"Mastic texture coating" means a coating labeled and formulated to cover holes and minor cracks and to conceal surface irregularities, and is applied in a single coat of at least 10 mils (at least 0.010 inch) dry film thickness.

"Medium density fiberboard (MDF)" means a composite wood product, panel, molding, or other building material composed of cellulosic fibers, usually wood, made by dry forming and pressing of a resinated fiber mat.

"Metallic pigmented coating" means a coating that is labeled and formulated to provide a metallic appearance and must contain at least 48 grams of elemental metallic pigment (excluding zinc) per liter of coating as applied (at least 0.4 pounds per gallon), when tested in accordance with

SCAQMD Method 318-95, but does not include coatings applied to roofs, or zinc-rich primers.

"Multi-color coating" means a coating that is packaged in a single container and that is labeled and formulated to exhibits more than one color when applied in a single coat.

"Non-flat coating" means a coating that is not defined under any other definition in this rule and that registers a gloss of 15 or greater on an 85-degree meter and five or greater on a 60-degree meter according to ASTM D523-89 (1999).

"Non-flat/high-gloss coating" means a non-flat coating that registers a gloss of 70 or greater on a 60-degree meter according to ASTM D523-89 (1999).

"Nuclear coating" means a protective coating formulated and recommended to seal porous surfaces such as steel or concrete that otherwise would be subject to intrusion by radioactive materials. These coatings must be resistant to long-term cumulative radiation exposure according to ASTM Method 4082-02, relatively easy to decontaminate, and resistant to various chemicals to which the coatings are likely to be exposed according to ASTM Method D 3912-95 (2010).

"Particleboard" means a composite wood product panel, molding, or other building material composed of cellulosic material, usually wood, in the form of discrete particles, as distinguished from fibers, flakes, or strands, which are pressed together with resin.

"Pearlescent" means exhibiting various colors depending on the angles of illumination and viewing, as observed in mother-of-pearl.

"Plywood" means a panel product consisting of layers of wood veneers or composite core pressed together with resin and includes panel products made by either hot or cold pressing (with resin) veneers to a platform.

"Post-consumer coating" means a finished coatings generated by a business or consumer that have served their intended end uses, and are recovered from or otherwise diverted from the waste stream for the purpose of recycling.

"Pre-treatment wash primer" means a primer that contains a minimum of 0.5% acid, by weight, when tested in accordance with ASTM D1613-06, that is labeled and formulated for application directly to bare metal surfaces to provide corrosion resistance and to promote adhesion of subsequent topcoats.

"Primer, sealer, and undercoater" means a coating labeled and formulated to provide a firm bond between the substrate and the subsequent coatings, prevent subsequent coatings from being absorbed by the substrate, prevent harm to subsequent coatings by materials in the substrate, provide a smooth surface for the subsequent application of coatings, provide a clear finish coat to seal the substrate, or to block materials from penetrating into or leaching out of a substrate.

"Reactive penetrating sealer" means a clear or pigmented coating that is formulated for application to above-grade concrete and masonry substrates to provide protection from water and waterborne contaminants, including, but not limited to, alkalis, acids, and salts.

(1) Reactive penetrating sealers penetrate into concrete and masonry substrates and chemically react to form covalent bonds with naturally occurring minerals in the substrate.

(2) Reactive penetrating sealers line the pores of concrete and masonry substrates with a hydrophobic coating but do not form a surface film.

(3) Reactive penetrating sealers shall meet all of the following criteria:

(a) The reactive penetrating sealer must improve water repellency at least 80% after application on a concrete or masonry substrate, and this performance shall be verified on standardized test specimens in accordance with one or more of the following standards: ASTM C67-07, ASTM C97-02, or ASTM C140-06.

(b) The reactive penetrating sealer shall not reduce the water vapor transmission rate by more than 2% after application on a concrete or masonry substrate, and this performance must be verified on standardized test specimens, in accordance with ASTM E96/E96M-05.

(c) Products labeled and formulated for vehicular traffic surface chloride screening applications shall meet the performance criteria listed in the National Cooperative Highway Research Report 244 (1981).

"Reactive penetrating carbonate stone sealer" means a clear or pigmented coating that is

labeled and formulated for application to above-grade carbonate stone substrates to provide protection from water and waterborne contaminants, including but not limited to, alkalis acids, and salts and that penetrates into carbonate stone substrates and chemically reacts to form covalent bonds with naturally occurring minerals in the substrate. They must meet all of the following criteria:

(1) Improve water repellency at least 80% after application on a carbonate stone substrate. This performance shall be verified on standardized test specimens, in accordance with one or more of the following standards: ASTM C67-07, ASTM C97-02, or ASTM C140-06; and

(2) Not reduce the water vapor transmission rate by more than 10% after application on a carbonate stone substrate. This performance shall be verified on standardized test specimens in accordance with one or more of the following standards: ASTM E96/E96M-05.

"Recycled coating" means an architectural coating formulated such that it contains a minimum of 50% by volume post-consumer coating, with a maximum of 50% by volume secondary industrial materials or virgin materials.

"Residential" means areas where people reside or lodge, including, but not limited to, single and multiple family dwellings, condominiums, mobile homes, apartment complexes, motels, and hotels.

"Roof coating" means a non-bituminous coating labeled and formulated for application to roofs for the primary purpose of preventing water penetration, reflecting ultraviolet light, or reflecting solar radiation.

"Rust preventative coating" means a coating that is for metal substrates only and is formulated to prevent the corrosion of metal surfaces for direct-to-metal coating or a coating intended for application over rusty, previously coated surfaces but does not include coatings that are required to be applied as a topcoat over a primer or coatings that are intended for use on wood or any other nonmetallic surface.

"Secondary industrial materials" means products or by-products of the paint manufacturing process that are of known composition and have economic value but can no longer be used for their intended purpose.

"Semitransparent coating" means a coating that contains binders and colored pigments and is formulated to change the color of the surface but not conceal the grain pattern or texture.

"Shellac" means a clear or opaque coating formulated solely with the resinous secretions of the lac beetle (Laciffer lacca) and formulated to dry by evaporation without a chemical reaction.

"Shop application" means an application of a coating to a product or a component of a product in or on the premises of a factory or a shop as part of a manufacturing, production, or repairing process (e.g., original equipment manufacturing coatings).

"Solicit" means to require for use or to specify by written or oral contract.

"Specialty primer, sealer, and undercoater" means a coating that is formulated for application to a substrate to block water-soluble stains resulting from fire damage, smoke damage, or water damage.

"Stain" means a semi-transparent or opaque coating labeled and formulated to change the color of a surface but not conceal the grain pattern or texture.

"Stone consolidant" means a coating that is labeled and formulated for application to stone substrates to repair historical structures that have been damaged by weathering or other decay mechanisms.

(1) Stone consolidants must penetrate into stone substrates to create bonds between particles and consolidate deteriorated material.

(2) Stone consolidants must be specified and used in accordance with ASTM E2167-01.

"Swimming pool coating" means a coating labeled and formulated to coat the interior of swimming pools and to resist swimming pool chemicals.

"Thermoplastic rubber coating and mastic" means a coating or mastic formulated and recommended for application to roofing or other structural surfaces that incorporates no less than 40% by weight of thermoplastic rubbers in the total resin solids and may also contain other ingredients, including, but not limited to, fillers, pigments, and modifying resins.

"Tint base" means an architectural coating to which colorant is added after packaging in sale units to produce a desired color.

"Traffic marking coating" means a coating labeled and formulated for marking and striping streets, highways, or other traffic surfaces, including, but not limited to, curbs, berms, driveways, parking lots, sidewalks, and airport runways.

"Tub and tile refinish coating" means a clear or opaque coating that is labeled and formulated exclusively for refinishing the surface of a bathtub, shower, sink, or countertop and that meets the following criteria:

(1) Has a scratch hardness of 3H or harder and a gouge hardness of 4H or harder, determined on bonderite 1000, in accordance with ASTM D3363-05;

(2) Has a weight loss of 20 milligrams or less after 1,000 cycles, determined with CS-17 wheels on bonderite 1000, in accordance with ASTM D4060-07;

(3) Withstands 1,000 hours or more of exposure with few or no #8 blisters, determined on unscribed bonderite in accordance with ASTM D4585-99, and ASTM D714-02e1; and

(4) Has an adhesion rating of 4B or better after 24 hours of recovery, determined on unscribed bonderite in accordance with ASTM D4585-99 and ASTM D3359-02.

"Veneer" means thin sheets of wood peeled or sliced from logs for use in the manufacture of wood products such as plywood, laminated veneer lumber, or other products.

"Virgin Materials" means materials that contain no post-consumer coatings or secondary industrial materials.

"VOC actual" means the weight of VOC per volume of coating and applies to coatings in the low solids coatings category and it is calculated with the following equation:

VOC Actual = (Ws - Ww - Wec)/(Vm)

Where, VOC actual = the grams of VOC per liter of coating (also known as "Material VOC");

Ws = weight of volatiles, in grams;

Ww = weight of water, in grams;

Wec = weight of exempt compounds, in grams; and

Vm = volume of coating, in liters

"VOC content" means the weight of VOC per volume of coating and is VOC regulatory for all coatings except those in the low solids category.

(1) For coatings in the low solids category, the VOC Content is VOC actual.

(2) If the coating is a multi-component product, the VOC content is VOC regulatory as mixed or catalyzed.

(3) If the coating contains silanes, siloxanes, or other ingredients that generate ethanol or other VOCs during the curing process, the VOC content must include the VOCs emitted during curing.

(4) VOC content must include maximum amount of thinning solvent recommended by the manufacturer.

"VOC regulatory" means the weight of VOC per volume of coating, less the volume of water and exempt compounds. It is calculated with the following equation:

VOC Regulatory = (Ws - Ww - Wec)/(Vm - Vw - Vec)

Where, VOC regulatory = grams of VOC per liter of coating, less water and exempt compounds (also known as "Coating VOC");

Ws = weight of volatiles, in grams;

Ww = weight of water, in grams;

Wec = weight of exempt compounds, in grams;

Vm = volume of coating, in liters;

Vw = volume of water, in liters; and

Vec = volume of exempt compounds, in liters

VOC regulatory must include maximum amount of thinning solvent recommended by the manufacturer.

"Waterproofing membrane" means a clear or opaque coating that is labeled and formulated

for application to concrete and masonry surfaces to provide a seamless waterproofing membrane that prevents any penetration of liquid water into the substrate.

(1) Waterproofing membranes are intended for the following waterproofing applications: below-grade surfaces, between concrete slabs, inside tunnels, inside concrete planters, and under flooring materials.

(2) The waterproofing membrane category does not include topcoats that are included in the concrete/masonry sealer category (e.g., parking deck topcoats, pedestrian deck topcoats, etc.).

(3) Waterproofing Membranes shall:

(a) Be applied in a single coat of at least 25 mils (at least 0.025 inch) dry film thickness; and

(b) Meet or exceed the requirements contained in ASTM C836-06.

"Wood coatings" means coatings labeled and formulated for application to wood substrates only and include clear and semitransparent coatings: lacquers; varnishes; sanding sealers; penetrating oils; clear stains; wood conditioners used as undercoats; and wood sealers used as topcoats. The Wood Coatings category also includes the following opaque wood coatings: opaque lacquers, opaque sanding sealers, and opaque lacquer undercoaters but do not include clear sealers that are labeled and formulated for use on concrete/masonry surfaces or coatings intended for substrates other than wood.

"Wood preservative" means a coating labeled and formulated to protect exposed wood from decay or insect attack that is registered with the U.S. EPA under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code (U.S.C.) Section 136, et seq.).

"Wood substrate" means a substrate made of wood, particleboard, plywood, medium density fiberboard, rattan, wicker, bamboo, or composite products with exposed wood grain but does not include items comprised of simulated wood.

"Zinc-rich primer" means a coating that contains at least 65% metallic zinc powder or zinc dust by weight of total solids and is formulated for application to metal substrates to provide a firm bond between the substrate and subsequent applications of coatings and are intended for professional use only.

R307-361-4. Exemptions.

The coatings described in R307-361-4(1) through (3) are exempt from the requirements of R307-361.

(1) Any architectural coating that is supplied, sold, offered for sale, or manufactured for use outside of the counties in R307-361-2 or for shipment to other manufacturers for reformulation or repackaging.

(2) Any aerosol coating product.

(3) Any architectural coating that is sold in a container with a volume of one liter (1.057 quarts) or less, including kits containing containers of different colors, types or categories of coatings and two component products and including multiple containers of one liter or less that are packaged and shipped together with no intent or requirement to ultimately be sold as one unit.

(a) The exemption in R307-361-4(3) does not include bundling of containers one liter or less, which are sold together as a unit with the intent or requirement that they be combined into one container.

(b) The exemption in R307-361-4(3) does not include packaging from which the coating cannot be applied. This exemption does include multiple containers of one liter or less that are packaged and shipped together with no intent or requirement to ultimately sell as one unit.

(4) The requirements of R307-361-5 Table 1 do not apply to operations that are exclusively covered by Department of Defense military technical data and performed by a Department of Defense contractor and or on site at installations owned and or operated by the United States Armed Forces.

R307-361-5. Standards.

(1) Except as provided in R307-361-4, no person shall manufacture, blend, or repackage, supply, sell, or offer for sale within the counties in R307-361-2; or solicit for application or apply within those counties any architectural coating with a VOC content in excess of the corresponding

limit specified in Table 1.

TABLE 1

VOC Content Limit for Architectural and Industrial Maintenance Coatings

(Limits are expressed as VOC content, thinned to the manufacturer's maximum thinning recommendation, excluding any colorant added to tint bases.)

COATING CATEGORY	VOC Content Limit (grams/liter)
Flat coatings	50
Non-flat coatings	100
Non-flat/high-gloss coatings	150
Specialty Coatings	
Aluminum roofing	450
Basement Specialty Coatings	400
Bituminous Specialty Coatings	400
Bituminous roof coatings	270
Bituminous roof primers	350
Bond beakers	350
Calcimine recoaters	475
Concrete curing compounds	350
Concrete/masonary sealer	100
Concrete surface retarders	780
Conjugated oil varnish	450
Conversion varnish	725
Driveway sealers	50
Dry fog coatings	150
Faux finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Impacted Immersion Coatings	780
Industrial maintenance coatings	250
Low solids coatings	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	500
Multi-color coatings	250
Nuclear coatings	450
Pre-treatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealer	350
Reactive penetrating carbonate stone sealer	500

Recycled coatings	250
Roof coatings	250
Rust preventative coatings	250
Shellacs:	
Clear	730
Opaque	550
Specialty primers, sealers, and undercoaters	100
Stains	250
Stone consolidant	450
Swimming pool coatings	340
Thermoplastic rubber coatings and mastic	550
Traffic marking coatings	100
Tub and tile refinish	420
Waterproofing membranes	250
Wood coating	275
Wood Preservatives	350
Zinc-Rich Primer	340

(2) If a coating is recommended for use in more than one of the specialty coating categories listed in Table 1, the most restrictive (lowest) VOC content limit shall apply.

(a) This requirement applies to usage recommendations that appear anywhere on the coating container, anywhere on any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a manufacturer or anyone acting on their behalf.

(b) R307-361-5(2) does not apply to the following coating categories:

(i) Aluminum roof coatings

(ii) Bituminous roof primers

(iv) High temperature coatings

(v) Industrial maintenance coatings

(vi) Low-solids coatings

(vii) Metallic pigmented coatings

(viii) Pretreatment wash primers

(ix) Shellacs

(x) Specialty primers, sealers and undercoaters

(xi) Wood Coatings

(xii) Wood preservatives

(xiii) Zinc-rich primers

(xiv) Calcimine recoaters

(xv) Impacted immersion coatings

(xvi) Nuclear coatings

(xvii) Thermoplastic rubber coatings and mastic

(xviii) Concrete surface retarders

(xix) Conversion varnish

(3) Sell-through of coatings. A coating manufactured prior to January 1, 2015, may be sold, supplied, or offered for sale for up to three years after January 1, 2015.

(a) A coating manufactured before January 1, 2015, may be applied at any time.

(b) R307-361-5(3) does not apply to any coating that does not display the date or date code required by R307-361-6(1)(a).

(4) Painting practices. All architectural coating containers used when applying the contents therein to a surface directly from the container by pouring, siphoning, brushing, rolling, padding, ragging or other means, shall be closed when not in use. These architectural coating containers

include, but are not limited to, drums, buckets, cans, pails, trays or other application containers. Containers of any VOC-containing materials used for thinning and cleanup shall also be closed when not in use.

(5) Thinning. No person who applies or solicits the application of any architectural coating shall apply a coating that is thinned to exceed the applicable VOC limit specified in Table 1.

(6) Rust preventative coatings. No person shall apply or solicit the application of any rust preventative coating manufactured before January 1, 2015 for industrial use, unless such a rust preventative coating complies with the industrial maintenance coating VOC limit specified in Table 1.

(7) Coatings not listed in Table 1. For any coating that does not meet any of the definitions for the specialty coatings categories listed in Table 1, the VOC content limit shall be determined by classifying the coating as a flat, non-flat, or non-flat/high gloss coating, based on its gloss, as defined in R307-361-3 and the corresponding flat, non-flat, or non-flat/high gloss coating VOC limit in Table 1 shall apply.

R307-361-6. Container Labeling Requirements.

(1) Each manufacturer of any architectural coating subject to R307-361 shall display the information listed in R307-361-6(1)(a) through (c) on the coating container (or label) in which the coating is sold or distributed.

(a) Date Code.

(i) The date the coating was manufactured, or a date code representing the date, shall be indicated on the label, lid or bottom of the container.

(ii) If the manufacturer uses a date code for any coating, the manufacturer shall file an explanation of each code with the director upon request.

(b) Thinning Recommendations.

(i) A statement of the manufacturer's recommendation regarding thinning of the coating shall be indicated on the label or lid of the container.

(ii) This requirement does not apply to the thinning of architectural coatings with water.

(iii) If thinning of the coating prior to use is not necessary, the recommendation shall specify that the coating is to be applied without thinning.

(c) VOC Content.

(i) Each container of any coating subject to this rule shall display one of the following values, in grams of VOC per liter of coating:

(A) Maximum VOC content as determined from all potential product formulations;

(B) VOC content as determined from actual formulation data; or

(C) VOC content as determined using the test methods in R307-361-8.

(ii) If the manufacturer does not recommend thinning, the container shall display the VOC Content, as supplied.

(iii) If the manufacturer recommends thinning, the container shall display the VOC Content, including the maximum amount of thinning solvent recommended by the manufacturer.

(iv) If the coating is a multicomponent product, the container shall display the VOC content as mixed or catalyzed.

(v) If the coating contains silanes, siloxanes, or other ingredients that generate ethanol or other VOCs during the curing process, the VOC content shall include the VOCs emitted during curing.

(2) Faux finishing coatings. The labels of all clear topcoat faux finishing coatings shall prominently display the statement, "This product can only be sold or used as part of a faux finishing coating system."

(3) Industrial maintenance coatings. The label of all industrial maintenance coatings shall prominently display at least one of the following statements:

(a) "for industrial use only;"

(b) "for professional use only;" or

(c) "not for residential use" or "not intended for residential use."

(4) Rust preventative coatings. The labels of all rust preventative coatings shall prominently display the statement, "For metal substrates only."

(5) Non-flat/high-gloss coatings. The labels of all non-flat/high-gloss coatings shall prominently display the words "high gloss."

(6) Specialty primers, sealers and undercoaters. The labels of all specialty primers, sealers and undercoaters shall prominently display one or more of the following descriptions:

(a) "For blocking stains;"

(b) "For smoke-damaged substrates;"

(c) "For fire-damaged substrates;"

(d) "For water-damaged substrates;" or

(e) "For excessively chalky substrates."

(7) Reactive penetrating sealers. The labels of all reactive penetrating sealers shall prominently display the statement, "Reactive penetrating sealer."

(8) Reactive penetrating carbonate stone sealers. The labels of all reactive penetrating carbonate stone sealers shall prominently display the statement, "Reactive penetrating carbonate stone sealer."

(9) Stone consolidants. The labels of all stone consolidants shall prominently display the statement, "Stone consolidant -For professional use only."

(10) Wood coatings. The labels of all wood coatings shall prominently display the statement, "For wood substrates only."

(11) Zinc rich primers. The labels of all zinc rich primers shall prominently display one or more of the following descriptions:

(a) "For professional use only;"

(b) "For industrial use only;" or

(c) "Not for residential use" or "Not intended for residential use."

R307-361-7. Reporting Requirements.

(1) Within 180 days of written request from the director, the manufacturer shall provide the director with data concerning the distribution and sales of architectural coatings, including, but not limited to:

(a) The name and mailing address of the manufacturer;

(b) The name, address and telephone number of a contact person;

(c) The name of the coating product as it appears on the label and the applicable coating category;

(d) Whether the product is marketed for interior or exterior use or both;

(e) The number of gallons sold in counties listed in R307-361-2 in containers greater than one liter (1.057 quart) and equal to or less than one liter (1.057 quart);

(f) The VOC actual content and VOC regulatory content in grams per liter;

(i) If thinning is recommended, list the VOC actual content and VOC regulatory content after maximum recommended thinning.

(ii) If containers less than one liter have a different VOC content than containers greater than one liter, list separately.

(iii) If the coating is a multi-component product, provide the VOC content as mixed or catalyzed.

(g) The names and CAS numbers of the VOC constituents in the product;

(h) The names and CAS numbers of any compounds in the product specifically exempted from the VOC definition in R307-101;

(i) Whether the product is marketed as solvent-borne, waterborne, or 100% solids;

(j) Description of resin or binder in the product;

(k) whether the coating is a single-component or multi-component product;

(l) The density of the product in pounds per gallon;

(m) The percent by weight of: solids, all volatile materials, water, and any compounds in the product specifically exempted from the VOC definition in R307-101; and

(n) The percent by volume of: solids, water, and any compounds in the product specifically exempted from the VOC definition in R307-101.

R307-361-8. Test Methods.

(1) Determination of VOC content.

(a) For the purpose of determining compliance with the VOC content limits in Table 1, the VOC content of a coating shall be calculated by following the appropriate formula found in the definitions of VOC actual, VOC content, and VOC regulatory found in R307-361-3.

(b) The VOC content of a tint base shall be determined without colorant that is added after the tint base is manufactured.

(c) If the manufacturer does not recommend thinning, the VOC content shall be calculated for the product as supplied.

(d) If the manufacturer recommends thinning, the VOC content shall be calculated including the maximum amount of thinning solvent recommended by the manufacturer.

(e) If the coating is a multi-component product, the VOC content shall be calculated as mixed or catalyzed.

(f) The coating contains silanes, siloxanes, or other ingredients that generate ethanol or other VOC during the curing process, the VOC content shall include the VOCs emitted during curing.

(2) VOC content of coatings.

(a) To determine the VOC content of a coating, the manufacturer may use EPA Method 24, SCAQMD Method 304-91 (revised February1996), or an alternative method, formulation data, or any other reasonable means for predicting that the coating has been formulated as intended (e.g., quality assurance checks, recordkeeping).

(b) If there are any inconsistencies between the results of EPA Method 24 test and any other means for determining VOC content, the EPA Method 24 test results will govern.

(c) The exempt compounds content shall be determined by ASTM D 3960-05, SCAQMD Method 303-91 (Revised 1993), BAAQMD Method 43 (Revised 1996), or BAAQMD Method 41 (Revised 1995), as applicable.

(3) Methacrylate traffic marking coatings. Analysis of methacrylate multicomponent coatings used as traffic marking coatings shall be conducted according to a modification of EPA Method 24 (40 CFR 59, subpart D, Appendix A), which has not been approved for methacrylate multicomponent coatings used for purposes other than as traffic marking coatings or for other classes of multicomponent coatings.

(4) Flame spread index. The flame spread index of a fire-retardant coating shall be determined by ASTM E84-10, "Standard Test Method for Surface Burning Characteristics of Building Materials."

(5) Fire resistance rating. The fire resistance rating of a fire-resistive coating shall be determined by ASTM E119-08, "Standard Test Methods for Fire Tests of Building Construction and Materials."

(6) Gloss determination. The gloss of a coating shall be determined by ASTM D523-89 (1999), "Standard Test Method for Specular Gloss."

(7) Metal content of coatings. The metallic content of a coating shall be determined by SCAQMD Method 318-95, "Determination of Weight Percent Elemental Metal in Coatings by X-Ray Diffraction, SCAQMD Laboratory Methods of Analysis for Enforcement Samples."

(8) Acid content of coatings. The acid content of a coating shall be determined by ASTM D1613-06, "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer and Related Products."

(9) Drying times. The set-to-touch, dry-hard, dry-to-touch and dry-to-recoat times of a coating shall be determined by ASTM D1640-95 (1999), "Standard Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature," and the tack-free time of a quick-dry

enamel coating shall be determined by the Mechanical Test Method of ASTM D1640-95.

(10) Surface chalkiness. The chalkiness of a surface shall be determined by using ASTM D4214-07, "Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films."

(11) Exempt compounds-siloxanes. Exempt compounds that are cyclic, branched, or linear, completely methylated siloxanes, shall be analyzed as exempt compounds by methods referenced in ASTM D 3960-05, "Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings" or by BAAQMD Method 43, "Determination of Volatile Methylsiloxanes in Solvent-Based Coatings, Inks, and Related Materials," BAAQMD Manual of Procedures, Volume III, adopted November 6, 1996.

(12) Exempt compounds-parachlorobenzotrifluoride (PCBTF). The exempt compound PCBTF, shall be analyzed as an exempt compound by methods referenced in ASTM D 3960-05 "Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings" or by BAAQMD Method 41, "Determination of Volatile Organic Compounds in Solvent Based Coatings and Related Materials Containing Parachlorobenzotriflouride," BAAQMD Manual of Procedures, Volume III, adopted December 20, 1955.

(13) Tub and tile refinish coating adhesion. The adhesion of tub and tile coating shall be determined by ASTM D4585-99, "Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation" and ASTM D3359-02, "Standard Test Methods for Measuring Adhesion by Tape Test."

(14) Tub and tile refinish coating hardness. The hardness of tub and tile refinish coating shall be determined by ASTM D3363-05, "Standard Test Method for Film Hardness by Pencil Test."

(15) Tub and tile refinish coating abrasion resistance. Abrasion resistance of tub and tile refinish coating shall be analyzed by ASTM D4060-07, "Standard Test Methods for Abrasion Resistance of Organic Coatings by the Taber Abraser."

(16) Tub and tile refinish coating water resistance. Water resistance of tub and tile refinish coatings shall be determined by ASTM D4585-99, "Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation" and ASTM D714-02e1, "Standard Test Method for Evaluating Degree of Blistering of Paints."

(17) Waterproofing membrane. Waterproofing membrane shall be tested by ASTM C836-06, "Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course."

(18) Reactive penetrating sealer and reactive carbonate stone sealer water repellency. Reactive penetrating sealer and reactive carbonate stone sealer water repellency shall be analyzed by ASTM C67-07, "Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile;" ASTM C97-02, "Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone;" or ASTM C140-06, "Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units."

(19) Reactive penetrating sealer and reactive penetrating carbonate stone sealer water vapor transmission. Reactive penetrating sealer and reactive penetrating carbonate stone sealer water vapor transmission shall be analyzed ASTM E96/E96M-05, "Standard Test Method for Water Vapor Transmission of Materials."

(20) Reactive penetrating sealer -chloride screening applications. Reactive penetrating sealers shall be analyzed by National Cooperative Highway Research Report 244 (1981), "Concrete Sealers for the Protection of Bridge Structures."

(21) Stone consolidants. Stone consolidants shall be tested by using ASTM E2167-01, "Standard Guide for Selection and Use of Stone Consolidants."

(22) Radiation resistance -nuclear coatings. The radiation resistance of a nuclear coating shall be determined by ASTM D 4082-02, "Standard Test Method for Use in Light Water Nuclear Power Plants."

(23) Chemical resistance-nuclear coatings. The chemical resistance of nuclear coatings shall be determined by ASTM D3912-95 (2001), "Standard Test Method for Chemical Resistance of Coatings Used in Light Water Nuclear Power Plants."

R307-361-9. Compliance Schedule.

Persons subject to this rule shall be in compliance by January 1, 2015.

KEY: air pollution, emission controls, architectural coatings
Date of Enactment or Last Substantive Amendment: October 31, 2013
Notice of Continuation: October 4, 2018
Authorizing, and Implemented or Interpreted Law: 19-2-104(1); 19-2-101

ITEM 9

State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-063-23

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Harold Burge, Major Source Compliance Section Manager

DATE: August 28, 2023

SUBJECT: US Magnesium LLC – Administrative Settlement Agreement

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US Magnesium LLC (USM) operates a primary magnesium production facility in Rowley, Tooele County, Utah (Rowley Plant). Over the course of the last eight years, USM and the Utah Division of Air Quality (UDAQ or Division) have been litigating various claims for alleged environmental law violations at the Rowley Plant. The litigation first started at the administrative level and then moved to the state district court. USM filed two interlocutory appeals to the Utah Supreme Court regarding the district court judge's rulings, but both petitions were denied. The history of the notices of violations and various administrative and judicial actions is as follows:

- **August 27, 2015** – UDAQ issued a Notice of Violation and Order to Comply (NOV) to USM
- **September 15, 2015** – USM filed a Request for Agency Action (administrative action) challenging the NOV
- **August 30, 2017** – The Division and USM settled the administrative litigation and the Executive Director of UDEQ issued the final order (the order established the violations but left the penalty question for the district court to decide in accordance with applicable environmental statutes and rules)
- **September 1, 2017** – UDAQ filed a civil action in the Third District Court seeking penalties for the violations established in the Executive Director's order
- **February 19, 2018** – The court dismissed some of the Division's claims due to the statute of limitations (these claims were subject to the prior one-year statute of limitations)
- **March 2, 2018** – The Division issued a second NOV to USM that was not administratively challenged

- **July 18, 2019** – UDAQ filed a second civil case in the state district court for penalties based on the violations in the second NOV (this second case was consolidated into the September 1, 2017, case filed earlier for judicial efficiency)
- **May 8, 2020** – UDAQ filed a third case for penalties bypassing the NOV process (this case was also consolidated into the September 1, 2017, case for the same reason)[1]
- **November 16, 2021** – The Division issued a third NOV to USM
- **December 15, 2021** – USM challenged the third NOV administratively by filing a request for agency action;[2] no administrative law judge has been requested or appointed in that case
- **October 2021 to September 2022** – Several other alleged violations occurred that the parties agreed to resolve through this settlement without issuing a NOV

All alleged violations that the parties resolved through the Settlement Agreement presented to the Board are summarized in Attachment 1 (list of claims). Out of 30 resolved violations, only five violations—approximately 16% of all alleged violations—have more significant consequences and impact on the environment. These are exceedances of emission limits during the stack tests and have been designated as Category A violations with the corresponding higher penalties per event. The remaining 25 violations (or approximately 84% of all alleged violations) are reporting, paperwork, or late stack test violations (where most of the tests were conducted just a few days later than required). These violations were designated as Category B or C, as provided for in the penalty policy, depending on their importance to the environment and other factors (for example, the number of days a stack test was late).

The parties agreed to settle all these alleged violations considering litigation resources, agency resources, litigation risk, the complexity and novelty of the issues raised in litigation, chances of potential success on appeal, length of time, and other factors commonly considered in settlements. In coming to this agreement, UDAQ also followed statutory and regulatory guidance (penalty policy Utah Admin. Code R307-130) on penalties. USM agreed to a total stipulated penalty of $430,900.00 to settle the alleged violations. The penalty shall be paid in quarterly installments of $53,862.50 until paid in full.

The parties have expended considerable efforts to achieve the settlement. As with any settlement, neither side will receive everything it wants. Recognizing this is the nature of a settlement, Utah Code § 19-2-107(2)(b)(viii) grants express authority to the UDAQ Director to "*settle or compromise* a civil action initiated by the division to compel compliance with this chapter…." (emphasis added). The UDAQ Director has exercised his authority to settle this matter under this provision.

USM elected to deposit eighty percent of the total penalty into the Environmental Mitigation and Response Fund (the Fund) as authorized by Utah Code § 19-1-603. Money from the Fund goes towards environmental mitigation actions, environmental response actions, site closures, and cleanups. It may also be disbursed to other state agencies and tribes for similar activities. The Executive Director of the UDEQ (the fiduciary of the Fund) has disbursed money from the Funds towards many environmentally significant projects. The latest one is assisting the Uintah School District in replacing ten diesel school buses on its fleet with electric buses and building supporting electrical charging infrastructure. Similar environmental mitigation projects and initiatives will be funded with the portion of the penalty deposited into the Fund by USM. The Executive Director plans to spend these dollars on projects in the North Wasatch Front.

Once the Settlement Agreement is approved and signed by the UDAQ Director, all litigation will be dismissed with prejudice within 30 days of the effective date. UDAQ Director will also stop expending

[1] All three judicial cases are referred to as the "Consolidated Case" in the Settlement Agreement and in Attachment 1 (list of claims).
[2] This case is referred to as the "Administrative Case" in the Settlement Agreement and in Attachment 1 (list of claims).

funds on litigation-related expenses such as discovery software and stop diverting staff resources on this matter. If the settlement is not approved, the litigation will restart and involve considerable time and effort by both sides to complete discovery, prepare expert reports, file and argue summary judgment motions, and then take the case to trial. The trial will be complex and require extensive factual and expert witness testimony over the course of several days. It is almost certain there would be an appeal to resolve as well.

The Division provides this settlement to the Board as required by Utah Code § 19-2-104(3)(b)(i) because the penalty exceeds $25,000. A copy of the settlement agreement with Attachment 1 listing resolved claims is also provided. The UDAQ will withhold any further action on this case until the Board approves the settlement.

Recommendation: Staff recommends that the Board approve the settlement agreement.

SETTLEMENT AGREEMENT

RECITALS

This Settlement Agreement (Agreement) is entered into between the Utah Division of Air Quality (UDAQ), the division within the Utah Department of Environmental Quality, the Director of the UDAQ in his individual capacity, the Utah Department of Environmental Quality (UDEQ), and the Executive Director of the UDEQ in her individual capacity (referred to collectively as the State) and US Magnesium LLC (referred to as USM) under the Utah Air Conservation Act, Utah Code §§ 19-2-101 through 19-2-305 (the Act). For purposes of this Agreement, the State and USM shall be referred to collectively as the Parties.

1. Executive Director of UDEQ's Authority

UDEQ's Executive Director is authorized to issue orders to enforce state laws and rules established by UDEQ under Section 19-1-202(2)(a) of the Utah Code. The UDEQ and the Executive Director of the UDEQ are parties to this Agreement because it resolves claims alleged in *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.) (consolidated), where the Executive Director of the UDEQ and the UDEQ are parties. The Executive Director issued a final order on August 30, 2017 approving and adopting the stipulation entered into by the Parties in the administrative litigation that became the basis of the state district court litigation in case number 170301376.

2. UDAQ's Authority

UDAQ has the authority to administer the Act, issue orders, and exercise all incidental powers necessary to carry out the purposes of the Act, including settlement. Utah Code § 19-2-107(2)(b)(ix).

3. USM

USM is a Delaware limited liability company registered with the Utah Department of Commerce, Utah Division of Corporations and Commercial Code at 238 North 2200 West in Salt Lake City, Utah 84116. USM operates a primary magnesium production facility in Rowley, Tooele County, Utah, (Rowley Plant) producing magnesium metal from the waters of the Great Salt Lake, and is subject to the requirements of the Clean Air Act, the Act, the Utah Air Quality Rules (Utah Administrative Code Rules R307-101 through R307-842), and Title V Operating Permit 4500030003 (last revised on January 22, 2021) (the Permit).[1]

4. Administrative Proceedings and Civil Litigation in the Third District Court

On August 27, 2015, UDAQ issued a Notice of Violation and Order to Comply DAQC-1049-15 (August 2015 NOV) to USM alleging violations of Rule R307-415 of the Utah Administrative Code and the conditions of the Permit at USM's Rowley Plant. The August 2015 NOV required compliance with the applicable provisions of the Act, the Utah Air Quality Rules, and the Permit. USM challenged the August 2015 NOV by filing a request for agency action on September 15, 2015 that started an administrative proceeding before the Executive Director of UDEQ. The Parties settled this administrative litigation, which resulted in the Executive Director's final order on August 30, 2017 that dismissed the administrative case with prejudice and entered certain findings on the violations alleged in the August 2015 NOV.

On September 1, 2017, the State filed a civil action in the Third District Court seeking penalties under Section 19-2-115 of the Utah Code for the violations established in the Executive

[1] Some alleged violations resolved in this Agreement occurred while USM was subject to prior revisions of this Permit dated February 6, 2015 and December 12, 2018. For purposes of this Agreement, the Parties cite the most current version of the Permit but understand that the prior versions would govern the alleged violations that occurred prior to the most current revision on January 22, 2021.

Director's final order (Consolidated Case). *See Utah v. U.S. Magnesium*, Civil No. 170301376. The court fully or partially dismissed certain claims with prejudice based on the statute of limitations by the order entered on February 19, 2018. *See* Stipulated Order Granting US Magnesium's Partial Mot. to Dismiss, *Utah v. U.S. Magnesium*, Civil No. 170301376 (Feb. 19, 2018). The remaining claims are subject to this Agreement.

On March 2, 2018, UDAQ issued another Notice of Violation and Order to Comply DAQC-139-18 (March 2018 NOV) to USM alleging violations of Rule R307-415 of the Utah Administrative Code and the conditions of the Permit at USM's Rowley Plant. The March 2018 NOV required compliance with the applicable provisions of the Act, the Utah Air Quality Rules, and the Permit. USM did not challenge this NOV administratively. The State then filed a second civil case in the Third District Court on July 18, 2019, alleging that the violations in the March 2018 NOV were established by failure to contest and seeking civil penalties under Section 19-2-115 of the Utah Code. This second case was later consolidated into the Consolidated Case. *See* Ruling and Order, *Utah v. U.S. Magnesium*, Civil No. 170301376 (Nov. 4, 2019).

On May 8, 2020, UDAQ filed a third civil case against USM seeking to establish violations of the Act, the Utah Air Quality Rules, and the Permit and penalties under Section 19-2-115 of the Utah Code. This third case was also later consolidated into the Consolidated Case. *See* Ruling and Order Granting Mot. to Consolidate, *Utah v. U.S. Magnesium*, Civil No. 170301376 (July 8, 2020). All the active claims in the Consolidated Case are listed in Attachment 1 to this Agreement, List of Claims Subject to the Settlement Agreement, Rows 2-18.

5. Request for Agency Action and Pending Administrative Claims

On November 16, 2021, UDAQ issued a Notice of Violation and Order to Comply DAQC-1230-21 (November 2021 NOV) to USM alleging violations of Rule R307-415 of the Utah Administrative Code and the conditions of the Permit at USM's Rowley Plant. USM filed a request for agency action challenging this NOV on December 15, 2021. Neither party requested an appointment of an Administrative Law Judge and there is no active administrative litigation in this proceeding. This proceeding is referred to as Administrative Case in this Agreement. Claims included in this pending Administrative Case are listed in Attachment 1, Rows 19-23.

6. Other Alleged Violations

There are several alleged violations that occurred from October 2021 to September 2022. UDAQ has not issued a Notice of Violation and Order to Comply for these violations because the Parties are resolving these alleged violations through this Agreement. These alleged violations are listed in Attachment 1, Rows 24-31.

7. Settlement Negotiations

The Parties engaged in a series of settlement discussions throughout the course of litigation and administrative enforcement actions and were able to reach an agreement. The Parties agree that the best way to resolve the claims listed in Attachment 1 pending in the Consolidated Case, the Administrative Case, and before the agency is to enter into this Agreement.

8. Purpose

The purpose of this Agreement is to settle all the claims listed in Attachment 1 and to resolve the Consolidated Case and the Administrative Case. Nothing in this Agreement constitutes the Parties' admission of any liability, wrongdoing, or violation of the law.

9. Mutual Interest

The Parties believe that it is in their mutual best interest to execute this Agreement and to settle all allegations made in the Consolidated Case, the Administrative Case, and potential alleged violations for which no NOV has yet been issued listed in Attachment 1.

AGREEMENT

Without adjudication of any factual or legal issue and to settle all claims in the Consolidated Case, the Administrative Case, and potential alleged violations for which no NOV has yet been issued listed in Attachment 1, the Parties agree to the following:

10. USM agrees to a total stipulated penalty of $430,900.00 to settle the alleged violations listed in Attachment 1. This penalty shall be paid as provided below.

a. Civil Penalty Paid to the State. USM shall pay $430,900.00 of the total civil penalty in quarterly installments in the amount of $53,862.50 each with the first installment due within thirty (30) days of the effective date of this Agreement. The effective date of this Agreement shall mark the beginning of the first quarter. Each subsequent installment payment shall be due within thirty (30) days from the beginning of the next quarter. For example, if this Agreement becomes effective on October 1, 2023, USM's first installment payment shall be due by October 31, 2023. In this example, the second quarter will begin on January 1, 2024 with the second

installment payment due by January 31, 2024. USM shall make the payments by wire transfer or ACH transfer payable to the State of Utah. The first quarter payment and $32,317.50 of the second quarter payment shall be paid to the State of Utah (a total of $86,180.00 or 20% of the total stipulated penalty). The remaining $21,545.00 of the second quarter payment and the remaining third through eighth quarters' payments shall be deposited into the Environmental Mitigation Fund as per paragraph 10.b below (a total of $344,720.00 or 80% of the total stipulated penalty). If the payments are not timely made, additional penalties at the rate of $1,000.00 a day shall accrue, and the State may enforce this Agreement through a civil action in the state district court.

b. **Deposit into Environmental Mitigation Fund.** USM elects to deposit 80% of the $430,900.00 into the Environmental Mitigation and Response Fund as authorized by Section 19-1-603(3) of the Utah Code (the Fund Deposit). The payments shall be made in accordance with paragraph 10.a. The Fund Deposit shall be fully used and is not returnable to USM. The Fund Deposit shall go towards environmental mitigation actions, environmental response actions, site closures, and cleanups under Section 19-1-604(2) of the Utah Code. The Fund Deposit may also be disbursed to other state agencies for similar activities under Section 19-1-604(4) of the Utah Code.

11. The Parties agree to file a stipulation and order to dismiss with prejudice the litigation in the Consolidated Case and the Administrative Case within thirty (30) days of the effective date of this Agreement.

12. None of the provisions of this Agreement shall be considered admissions by the State or USM and shall not be used by any third party related or unrelated to this Agreement for purposes other than determining the basis of this Agreement. This Agreement resolves all liability and claims arising from or relating to the Consolidated Case, the Administrative Case, and all other claims listed in Attachment 1 as identified above in this Agreement.

13. The Parties forever release and waive the claims resolved and settled in this Agreement, which includes the claims identified in paragraphs 4-6 above and Attachment 1.

14. All notices, requests, demands, and other communications under this Agreement shall be in writing and shall be given by (i) an established express delivery service that maintains delivery records, (ii) hand delivery, (iii) certified or registered mail, postage prepaid, return receipt requested, or (iv) electronic mail, to the Parties at the following addresses, or at such other addresses as the Parties may designate by written notice in the following manner:

The State

Bryce C. Bird
Utah Division of Air Quality
P.O. Box 144870
Salt Lake City, UT 84114-4870
bbird@utah.gov

With a copy to:

Marina V. Thomas
P.O. Box 140873
Salt Lake City, UT 84114-0873
marinathomas@agutah.gov

USM

Ron Thayer
President
US Magnesium LLC

238 North 2200 West
Salt Lake City, UT 84116

With a copy to:

Michael Zody
Parsons Behle & Latimer
201 S. Main St., 1800
Salt Lake City, UT 84111
mzody@parsonsbehle.com

15. Successors and Assigns

All the rights and obligations of the Parties under this Agreement shall be binding on and inure to the benefit of their permitted successors.

16. Entire Agreement

This Agreement, which includes all recitals and terms, constitutes the entire agreement between the Parties related to the subject matter of this Agreement, and incorporates all prior correspondence, communications, or agreements between the Parties relating to the subject matter of this Agreement, and cannot be altered except in writing signed by all Parties.

17. Authority to Execute

Each person executing this Agreement individually and personally represents and warrants that he or she is duly authorized to execute and deliver the same on behalf of the entity for which he or she is signing, and that all corporate and/or legislative authority and approvals have been obtained, and that this Agreement is a binding obligation on the Parties.

18. Effective Date

This Agreement is effective on the date when the last party signs the Agreement.

This Agreement shall be executed as follows: counterparts.

Agreed:

Date: _____

Bryce C. Bird
Director, Utah Division of Air Quality
For: UDAQ

Agreed:

Date: _____

Kimberly D. Shelley
Executive Director, Utah Department of
Environmental Quality
For: UDEQ

Agreed:

Ron Thayer

Date: 8/28/23

Ron Thayer
President
For: USM

Attachment 1

1	**Title V Permit Condition**	**Description of the Claimed Violation**	**Case**	**Violation Class**	**Amount Per Event**	**Number of Events**
2	Condition II.B.8.a.1	Failure to test Melt Reactor chlorine emissions annually in 2014 (testing was 108 days late)	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$7,000	15
3	Condition II.B.8.d.1	Failure to test Melt Reactor dioxin/furan emissions every 30 months by Sept. 20, 2014 (testing was 146 days late)	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$7,000	20
4	Condition I.K	Failure to certify monthly chlorine emission reports by responsible official prior to December 2014	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$2,000	3
5	Condition II.B.20.a.2	Failure to keep record of Fire Pump operating hours prior to November 2014	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$3,900	3
6	Condition I.S.2.a	Failure to report deviations from Title V Permit in 6-month monitoring report dated October 2, 2014 (failure to test Melt Reactor chlorine emissions; failure to test Melt Reactor dioxin/furan emissions; failure to certify monthly chlorine reports; failure to keep record of Fire Pump operating hours	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$3,900	1
7	Condition I.S.2.c	Failure to submit deviation reports for failure to test Melt Reactor chlorine emissions; failure to test Melt Reactor dioxin/furan emissions; failure to certify monthly chlorine reports; failure to keep record of Fire Pump Operating hours	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$3,900	1
8	Condition I.S.2.a	Failure to submit a Title V six-month monitoring report for the period covering October 1, 2014 through March 3, 2015	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$3,900	1
19	Condition II.B.3.c	Exceedance of the 05/06 Scrubber PM10 emission concentration limit of no greater than 0.016 grain/dscf during March 3, 2015 stack test	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	A	$10,000	1

10	Condition II.B.8.b	Exceedance of the Melt Reactor HCl emission limit of no greater than 7.2 lb/hr during stack test on March 2, 2015	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	A	$10,000	1
11	Condition II.B.9.c	Exceedance of the EOG Stack chlorine emissions limit of no greater than 26 lb/hr during the stack test on February 24-27, 2015	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	A	$10,000	1
12	Condition II.B.5.b	Exceedance of the Spray Dryer 03 TSP emission limit of no greater than 100 lb/hr during March 22, 2018 stack test	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	A	$10,000	1
13	Condition II.B.8.b	Exceedance of the Melt Reactor HCl emission limits of no greater than 7.2 lb/hr during the stack test on March 21, 2018	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	A	$10,000	1
14	Condition II.B.3.c.1(a)	Failure to test 05/06 Bin Stack Scrubber PM10 emissions every 30 months (late stack test - 52 days late)	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	B	$7,000	7
15	Condition II.B.5.a.1(a)	Failure to test Spray Dryer 02 HCl emissions annually (late stack test - 1 day late)	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	C	$2,000	1
16	Condition II.B.5.b.1(a)	Failure to test Spray Dryer 02 TSP emissions annually (late stack test - 1 day late)	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	C	$2,000	1
17	Condition II.B.5.a.1(a)	Failure to test Spray Dryer 03 HCl emissions annually (late stack test - 1 day late)	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	C	$2,000	1
18	Condition II.B.5.b.1(a)	Failure to test Spray Dryer 03 TSP emissions annually (late stack test - 1 day late)	Consolidated Case: *Utah v. U.S. Magnesium*, Civil No. 170301376 (3rd Dist. Ct.)	C	$2,000	1
19	Condition II.B.3.b.1(a)	Failure to test 05/06 Bin Stack Scrubber HCl emissions annually (late stack test - 2 days late)	Administrative Case (Request for Agency Action) Challenging NOV DAQC-1230-21 (Nov. 16, 2021)	C	$2,000	1
20	Condition II.B.5.a.1(a)	Failure to test Spray Dryer 01 & 02 HCl emissions annually (late stack test - 4	Administrative Case (Request for Agency Action)	C	$2,000	1

		days late for SD 01 and 1 day late for SD 02)	Challenging NOV DAQC-1230-21 (Nov. 16, 2021)			
21	Condition II.B.5.b.1(a)	Failure to test Spray Dryer 01 & 02 TSP emissions annually (4 days late for SD 01 and 1 day late for SD 02)	Administrative Case (Request for Agency Action) Challenging NOV DAQC-1230-21 (Nov. 16, 2021)	C	$2,000	1
22	Condition II.B.8.b.1(a)	Failure to test Melt Reactor chlorine emissions annually (late stack test - 1 day late)	Administrative Case (Request for Agency Action) Challenging NOV DAQC-1230-21 (Nov. 16, 2021)	C	$2.000	1
23	Condition I.S.2	Failure to report deviations in the Title V 6-month monitoring report dated May 17, 2021 (late stack tests for 05/06 Bin Stack scrubber HCl emission; Spray Dryer 01 & 02 HCl and TSP emissions, and Melt Reactor chlorine emissions)	Administrative Case (Request for Agency Action) Challenging NOV DAQC-1230-21 (Nov. 16, 2021)	B	$3,900	1
24	Condition II.B.3.b.1(a)	Failure to test 05/06 Bin Stack Scrubber HCl emissions annually (late stack test - 8 days late)	Violations Documented, but no NOV	C	$2,000	1
25	Condition II.B.5.a.1(a)	Failure to test Spray Dryer 01, 02, & 03 HCl emissions annually (late stack test - 7 days late for SD 01, 10 days late for SD 02, 11 days late for SD 03)	Violations Documented, but no NOV	C	$2,000	1
26	Condition II.B.5.b.1(a)	Failure to test Spray Dryer 01, 02, & 03 TSP emissions annually (7 days late for SD 01, 10 day late for SD 02, 11 day late for SD 03)	Violations Documented, but no NOV	C	$2,000	1
27	Condition II.B.8.b.1(a)	Failure to test Melt Reactor chlorine emissions annually (late stack test - 11 days late)	Violations Documented, but no NOV	C	$2,000	1
28	Condition I.S.2.a	Failure to report deviations from Title V Permit in 6-month monitoring report dated June 28, 2022 (failure to test timely for violations in rows 24 through 27)	Violations Documented, but no NOV	B	$3,900	1

29	Condition I.S.2.c	Failure to submit deviation reports for violations in rows 24 through 27)	Violations Documented, but no NOV	B	$3,900	1
30	Condition I.L.1.c	Failure to identify deviations in the Title V Annual Compliance Certification dated September 30, 2021 for failure conduct the following stack tests within one year (365 days): 05/06 Bin Cl emissions, SD 01 & 02 HCl and TSP emissions, Melt Reactor Cl2 emissions	Violations Documented, but no NOV	B	$3,900	1
31	Condition I.L.1.c	Failure to identify deviations in the Title V Annual Compliance Certification dated September 28, 2022 for failure to conduct the following stack tests within one year (365 days): 05/06 Bin HCl emissions, SD 01, 02 & 03 HCl emissions, SD 01 TSP emissions, Melt Reactor Cl2 emissions	Violations Documented, but no NOV	B	$3,900	1

ITEM 10

Air Toxics

State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQA-442-23

M E M O R A N D U M

TO: Air Quality Board

FROM: Bryce C. Bird, Executive Secretary

DATE: August 3, 2023

SUBJECT: Air Toxics, Lead-Based Paint, and Asbestos (ATLAS) Section Compliance Activities – July 2023

Asbestos Demolition/Renovation NESHAP Inspections	21
Asbestos AHERA Inspections	15
Asbestos State Rules Only Inspections	1
Asbestos Notification Forms Accepted	153
Asbestos Telephone Calls	301
Asbestos Individuals Certifications Approved	76
Asbestos Company Certifications/Recertifications	3/3
Asbestos Alternate Work Practices Approved	2
Lead-Based Paint (LBP) Inspections	1
LBP Notification Forms Approved	2
LBP Telephone Calls	46
LBP Letters Prepared and Mailed	0
LBP Courses Reviewed/Approved	0
LBP Course Audits	2
LBP Individual Certifications Approved	7

LBP Firm Certifications	8
Notices of Violation Sent	1
Compliance Advisories Sent	7
Warning Letters Sent	5
Settlement Agreements Finalized	1

Penalties Agreed to:

All Clear Environmental/Derek McDonald	$2,812.50

Compliance

State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQC-827-23

M E M O R A N D U M

TO: Air Quality Board

FROM: Bryce C. Bird, Executive Secretary

DATE: August 7, 2023

SUBJECT: Compliance Activities – July 2023

ACTIVITIES:

Activity	Monthly Total	36-Month Average
Inspections	77	56
On-Site Stack Test & CEM Audits	6	4
Stack Test & RATA Report Reviews	40	33
Emission Report Reviews	9	16
Temporary Relocation Request Reviews	5	7
Fugitive Dust Control Plan Reviews	109	134
Soil Remediation Report Reviews	1	1
Open Burn Permits Issued	0	0
Miscellaneous Inspections[1]	17	19
Complaints Received	39	16
Wood Burning Complaints Received	0	1
Breakdown Reports Received	2	1
Compliance Actions Resulting from a Breakdown	0	0
VOC Inspections	0	0
Warning Letters Issued	4	2
Notices of Violation Issued	0	0
Compliance Advisories Issued	3	4
No Further Action Letters Issued	0	2
Settlement Agreements Reached	1	2
Penalties Assessed	$1,500.00	$114,804.11

[1]Miscellaneous inspections include, e.g., surveillance, complaint, on-site training, dust patrol, smoke patrol, open burning, etc.

SETTLEMENT AGREEMENTS:

Party	Amount
Interstate Brick	$1,500.00

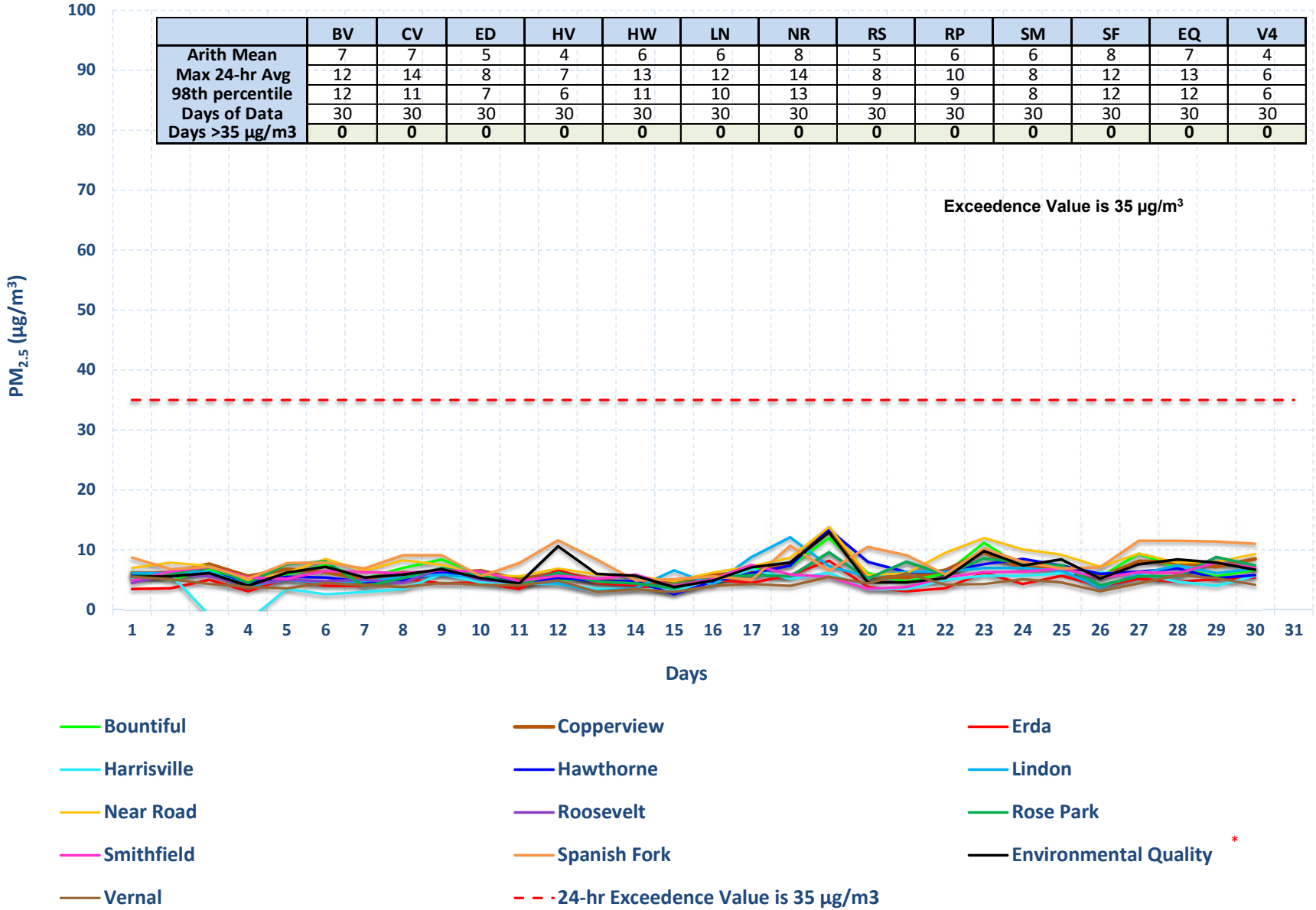
UNRESOLVED NOTICES OF VIOLATION:

Party	Date Issued
US Magnesium (in litigation)	08/27/2015
US Magnesium (in litigation)	03/02/2018
Citation Oil and Gas (in administrative litigation)	01/15/2020
Ovintiv Production Inc.	07/14/2020
Uinta Wax Operating (formerly CH4 Finley)	07/24/2020
US Magnesium (in administrative litigation)	11/16/2021
Finley Resources	09/15/2022
Paradox Midstream (claim filed with bankruptcy court)	06/06/2023

Air Monitoring

Utah 24-Hr $PM_{2.5}$ Data June 2023

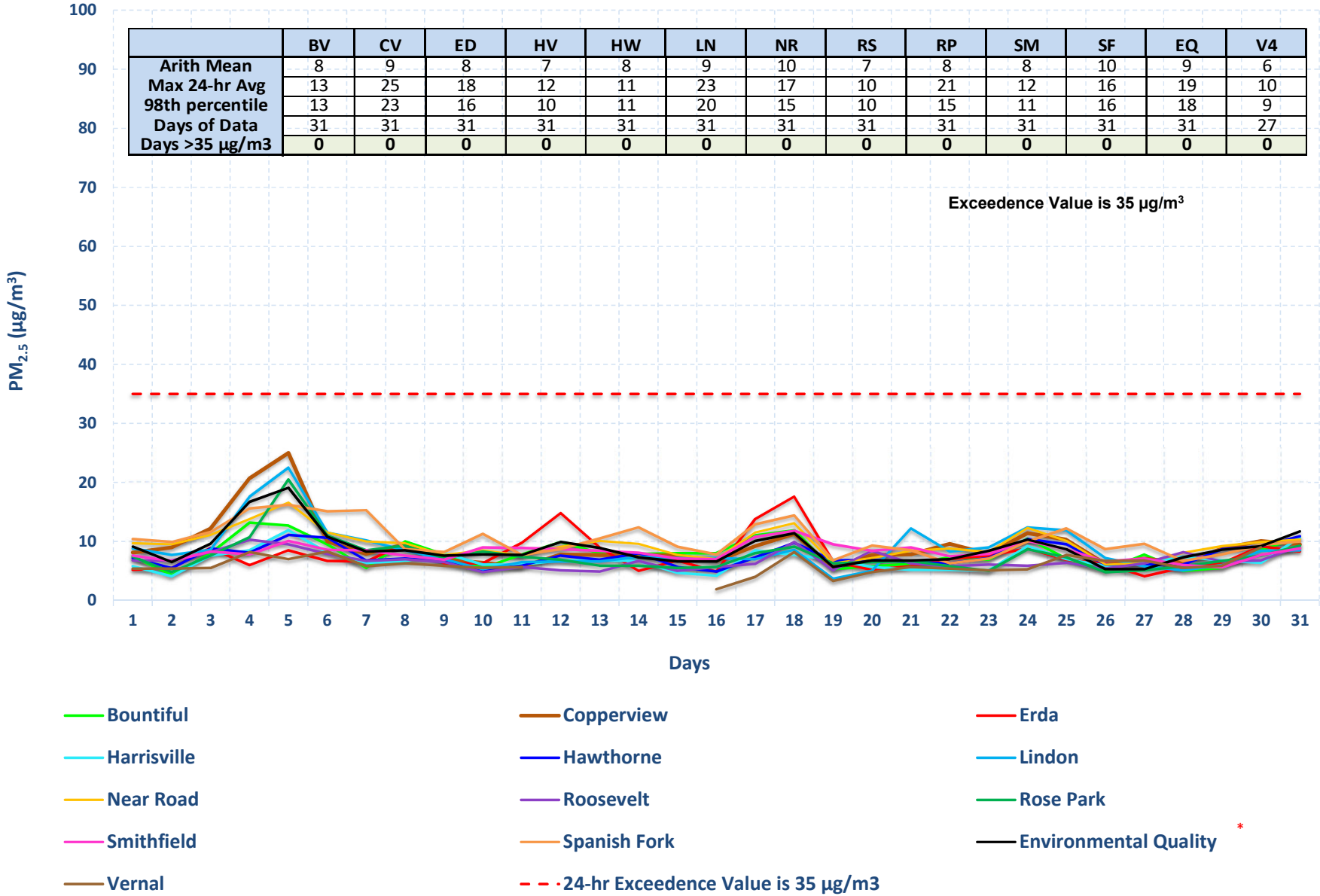
	BV	CV	ED	HV	HW	LN	NR	RS	RP	SM	SF	EQ	V4
Arith Mean	7	7	5	4	6	6	8	5	6	6	8	7	4
Max 24-hr Avg	12	14	8	7	13	12	14	8	10	8	12	13	6
98th percentile	12	11	7	6	11	10	13	9	9	8	12	12	6
Days of Data	30	30	30	30	30	30	30	30	30	30	30	30	30
Days >35 µg/m3	0	0	0	0	0	0	0	0	0	0	0	0	0



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)

Utah 24-Hr $PM_{2.5}$ Data July 2023

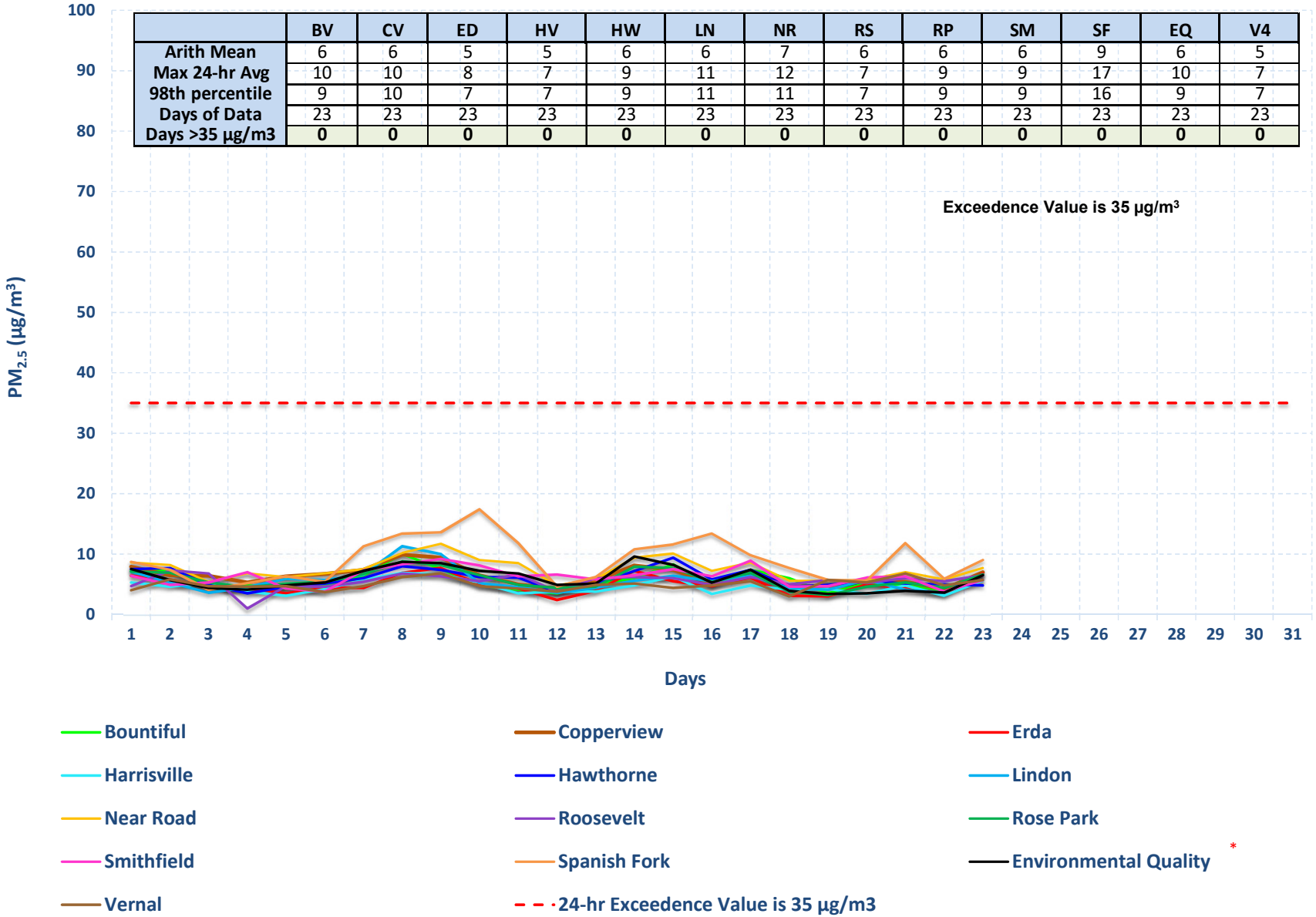
	BV	CV	ED	HV	HW	LN	NR	RS	RP	SM	SF	EQ	V4
Arith Mean	8	9	8	7	8	9	10	7	8	8	10	9	6
Max 24-hr Avg	13	25	18	12	11	23	17	10	21	12	16	19	10
98th percentile	13	23	16	10	11	20	15	10	15	11	16	18	9
Days of Data	31	31	31	31	31	31	31	31	31	31	31	31	27
Days >35 µg/m3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)

Utah 24-Hr $PM_{2.5}$ Data August 2023

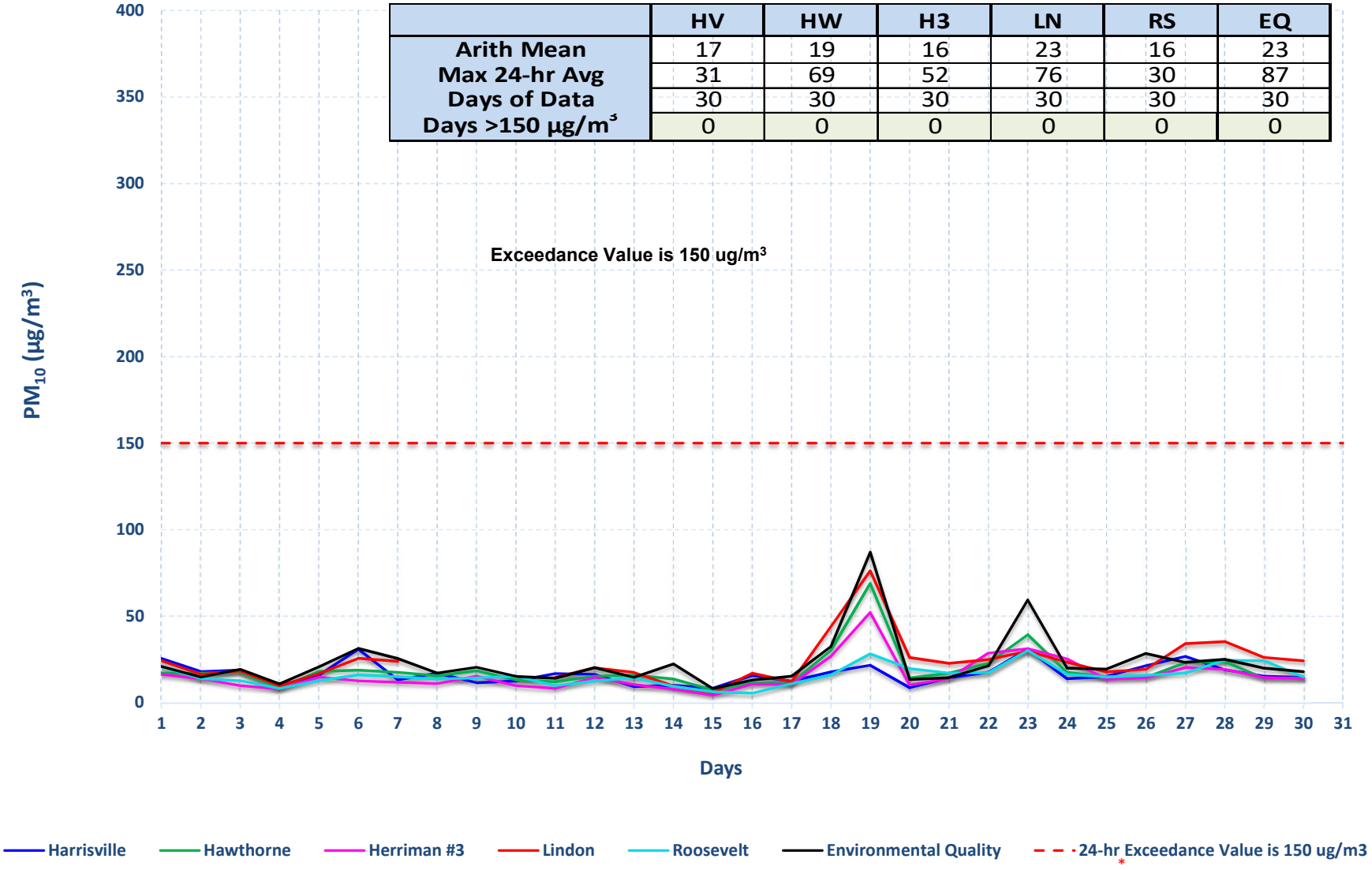
	BV	CV	ED	HV	HW	LN	NR	RS	RP	SM	SF	EQ	V4
Arith Mean	6	6	5	5	6	6	7	6	6	6	9	6	5
Max 24-hr Avg	10	10	8	7	9	11	12	7	9	9	17	10	7
98th percentile	9	10	7	7	9	11	11	7	9	9	16	9	7
Days of Data	23	23	23	23	23	23	23	23	23	23	23	23	23
Days >35 µg/m3	0	0	0	0	0	0	0	0	0	0	0	0	0



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)

Utah 24-hr PM_{10} Data June 2023

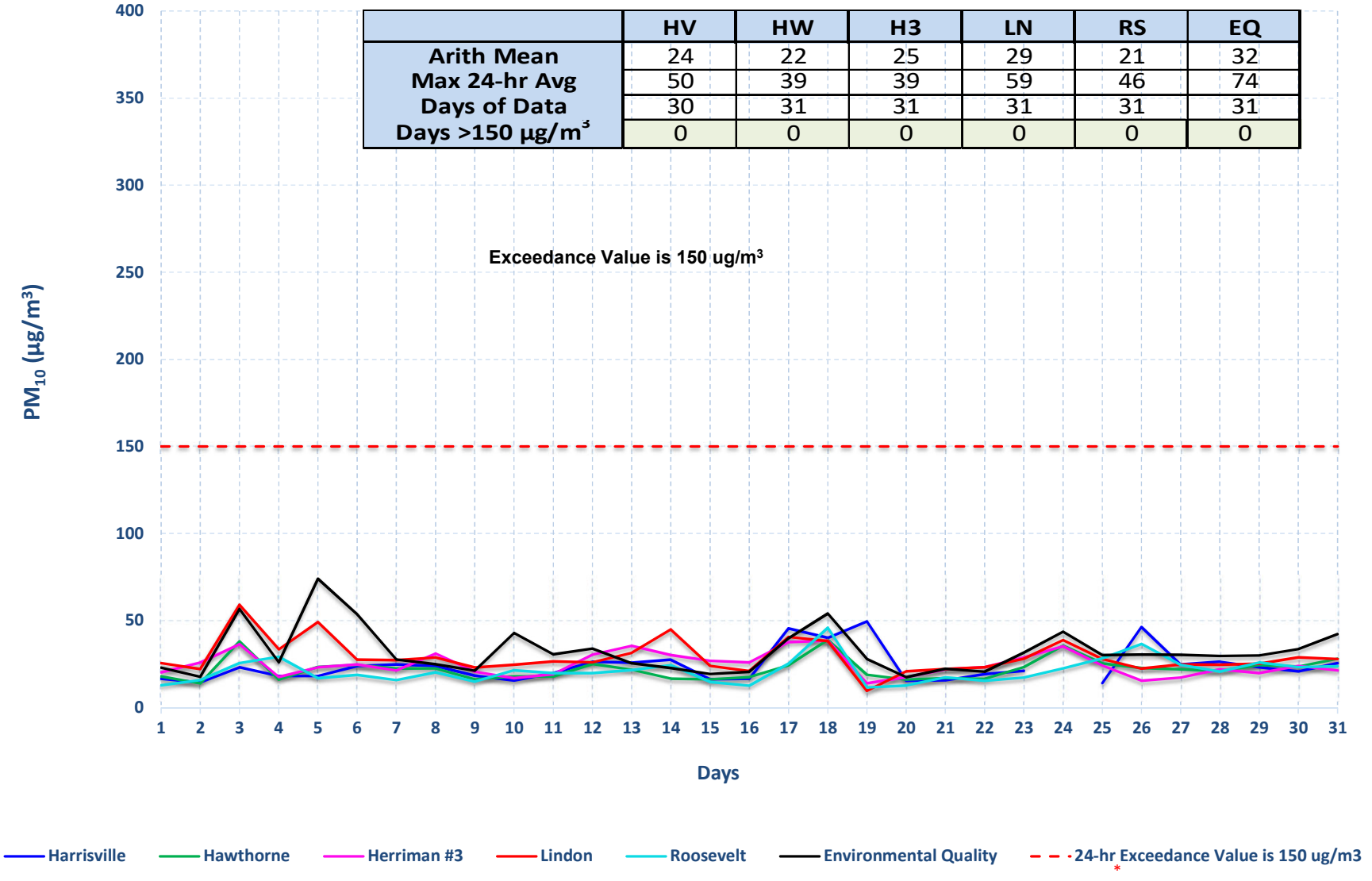
	HV	HW	H3	LN	RS	EQ
Arith Mean	17	19	16	23	16	23
Max 24-hr Avg	31	69	52	76	30	87
Days of Data	30	30	30	30	30	30
Days >150 µg/m³	0	0	0	0	0	0



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)

Utah 24-hr PM_{10} Data July 2023

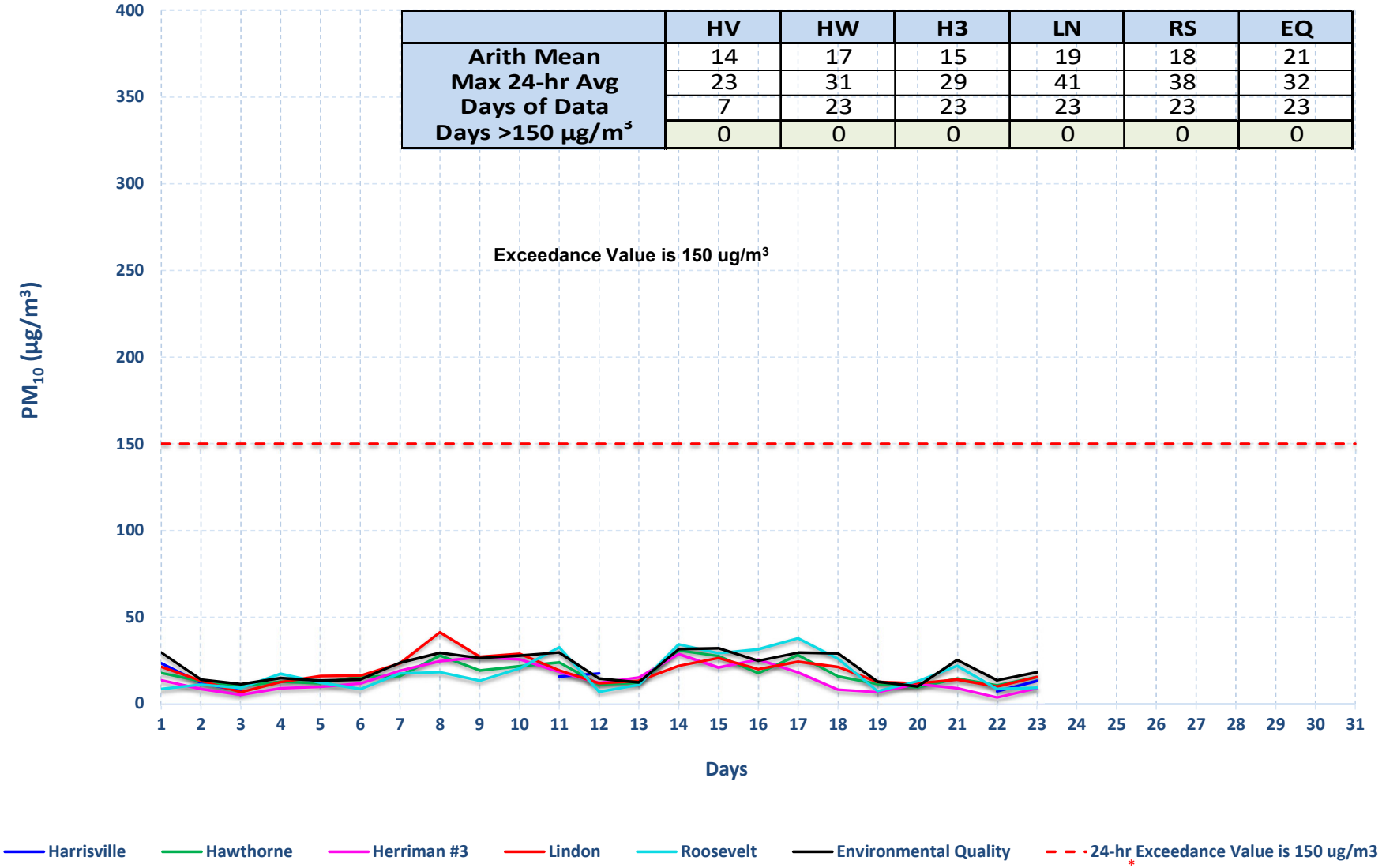
	HV	HW	H3	LN	RS	EQ
Arith Mean	24	22	25	29	21	32
Max 24-hr Avg	50	39	39	59	46	74
Days of Data	30	31	31	31	31	31
Days >150 µg/m³	0	0	0	0	0	0



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)

Utah 24-hr PM_{10} Data August 2023

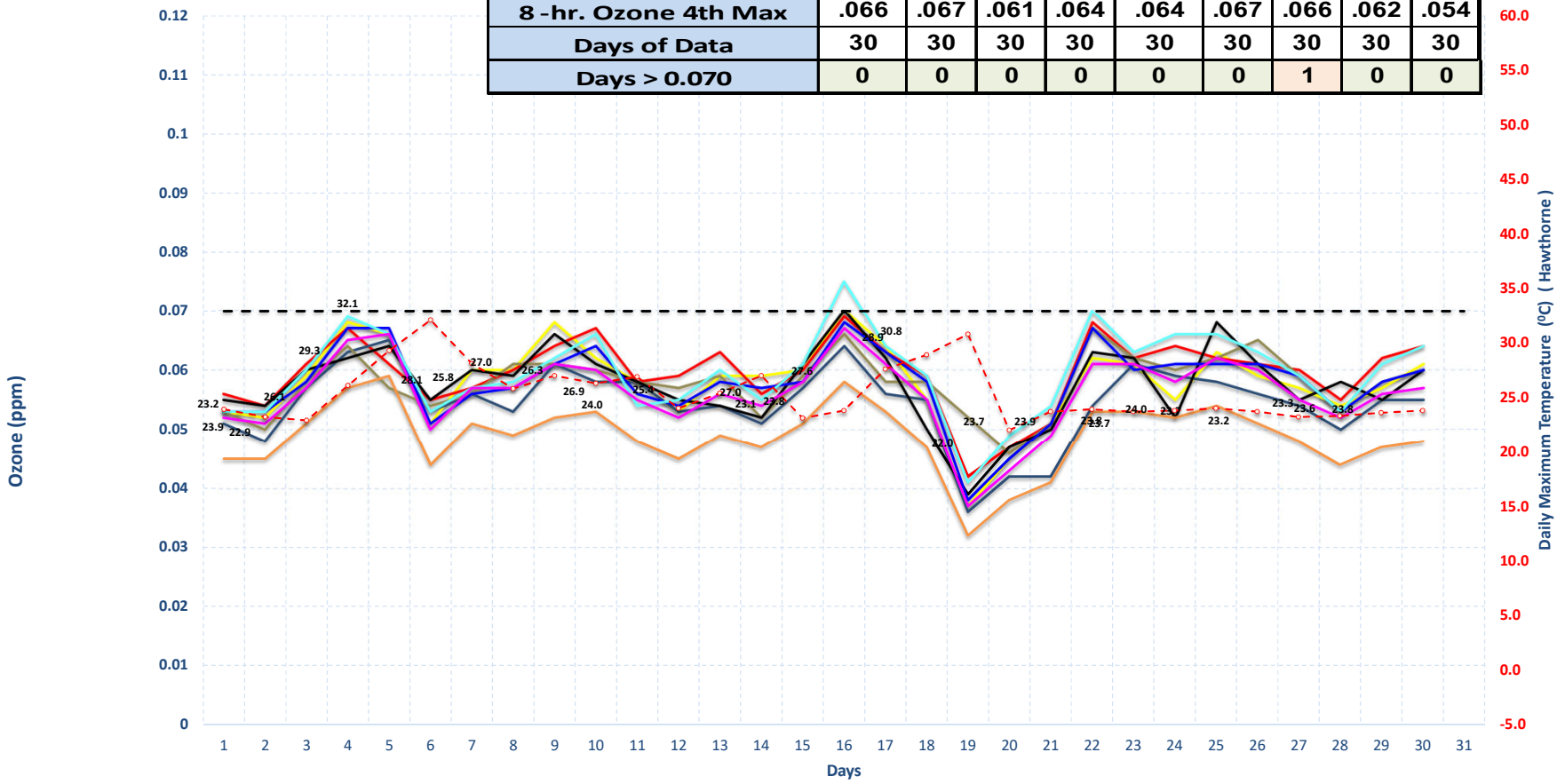
	HV	HW	H3	LN	RS	EQ
Arith Mean	14	17	15	19	18	21
Max 24-hr Avg	23	31	29	41	38	32
Days of Data	7	23	23	23	23	23
Days >150 µg/m³	0	0	0	0	0	0



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)

Highest 8-hr Ozone Concentration & Daily Maximum Temperature June 2023

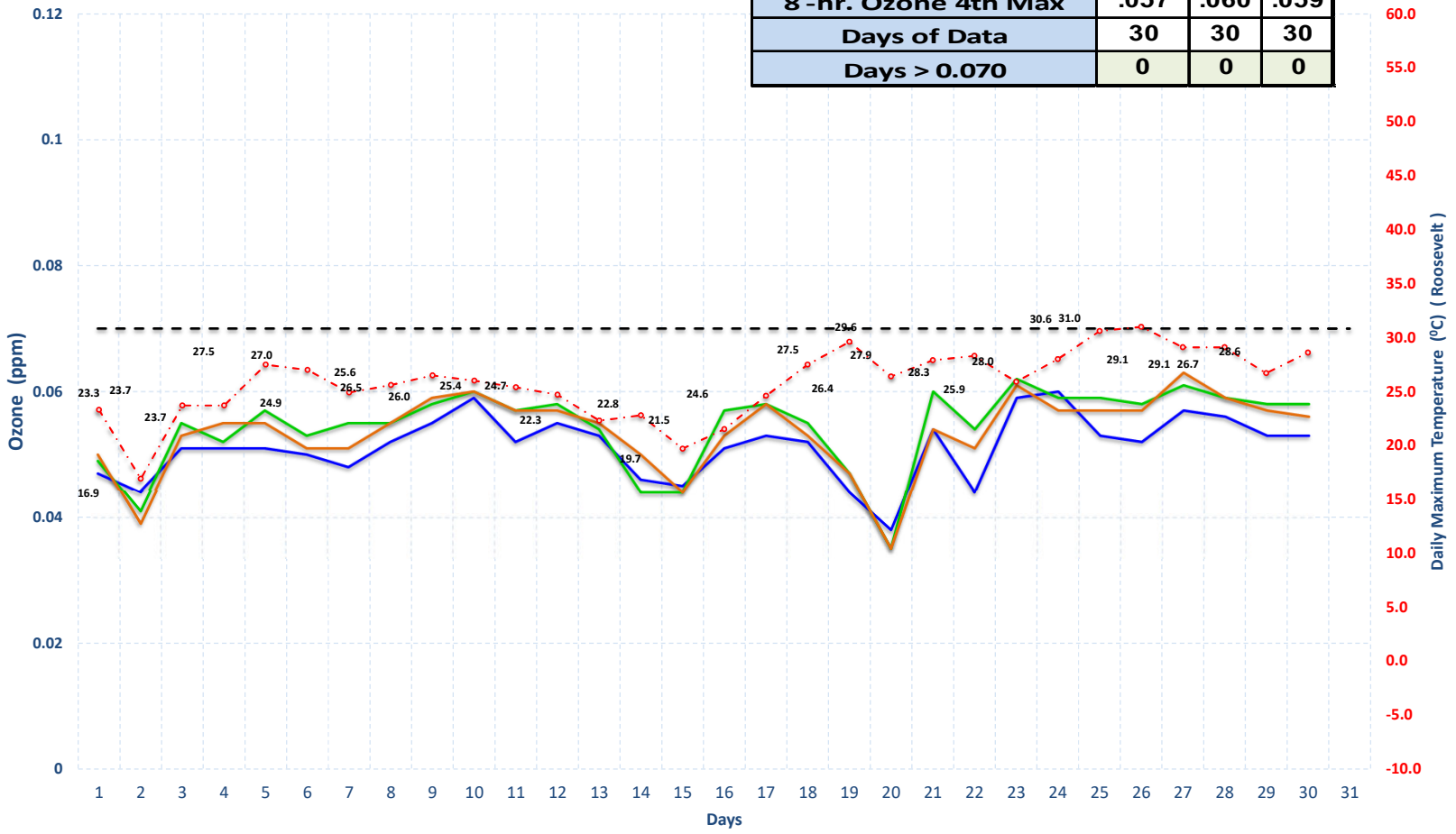
	BV	CV	ED	H3	HV	HW	NR	RP	EQ
Arith Mean	.058	.060	.055	.058	.058	.058	.060	.056	.049
8 -hr. Ozone 4th Max	.066	.067	.061	.064	.064	.067	.066	.062	.054
Days of Data	30	30	30	30	30	30	30	30	30
Days > 0.070	0	0	0	0	0	0	1	0	0



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)
** Controlling Monitor

Highest 8-hr Ozone Concentration & Daily Maximum Temperature June 2023

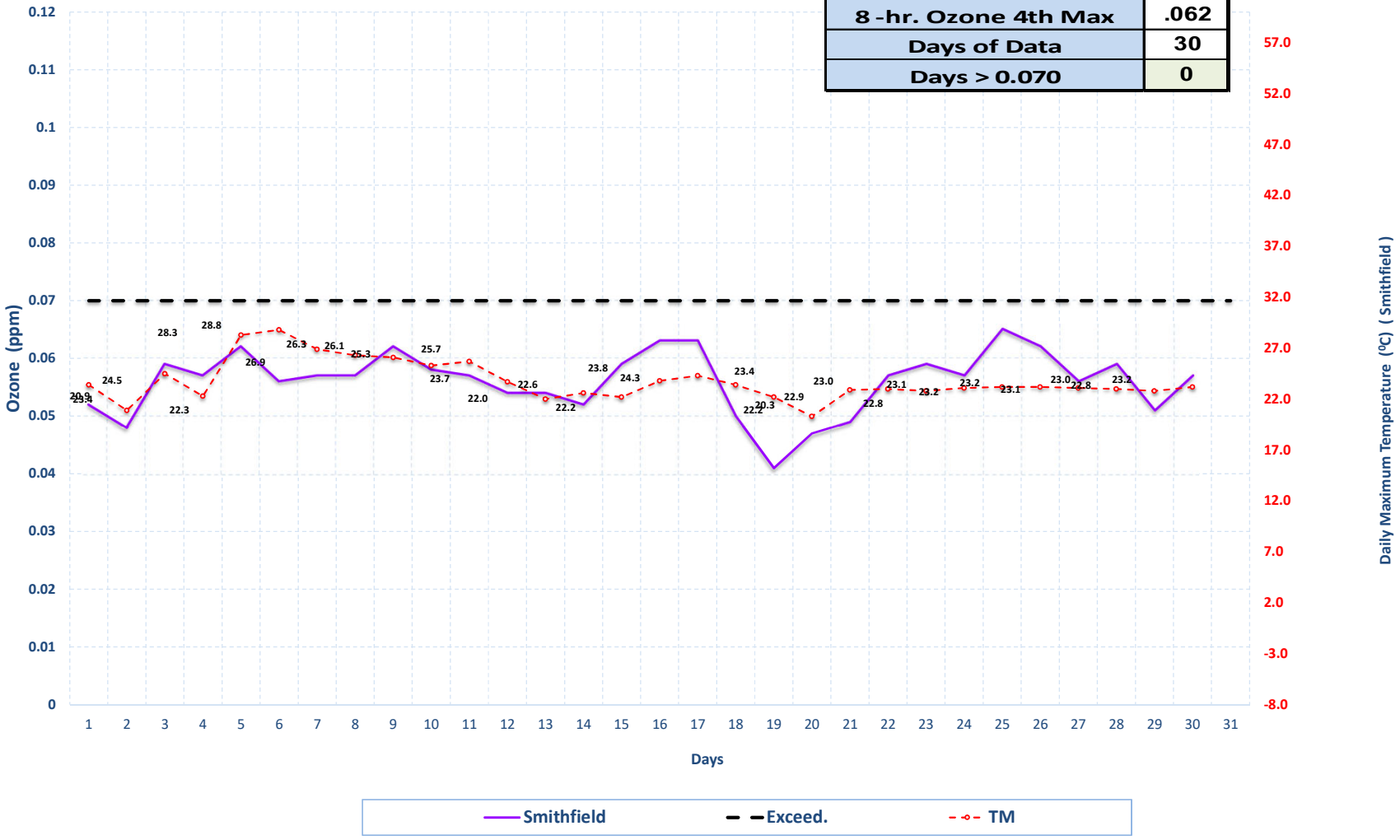
	P2	RS	V4
Arith Mean	.051	.054	.054
8 -hr. Ozone 4th Max	.057	.060	.059
Days of Data	30	30	30
Days > 0.070	0	0	0



Price #2 — Roosevelt — Vernal #4 — Exceed. — TM

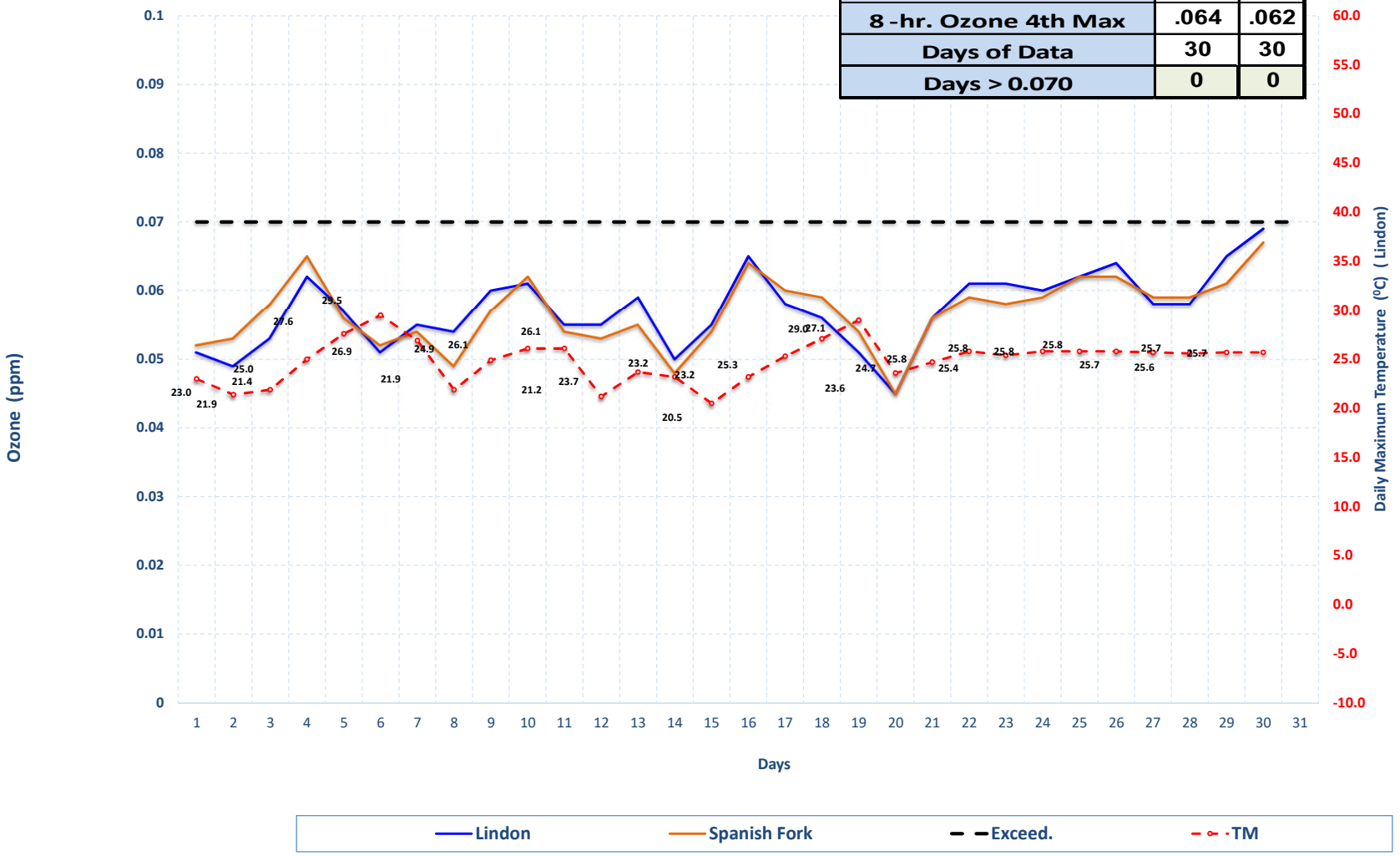
Highest 8-hr Ozone Concentration & Daily Maximum Temperature June 2023

	SM
Arith Mean	.056
8 -hr. Ozone 4th Max	.062
Days of Data	30
Days > 0.070	0



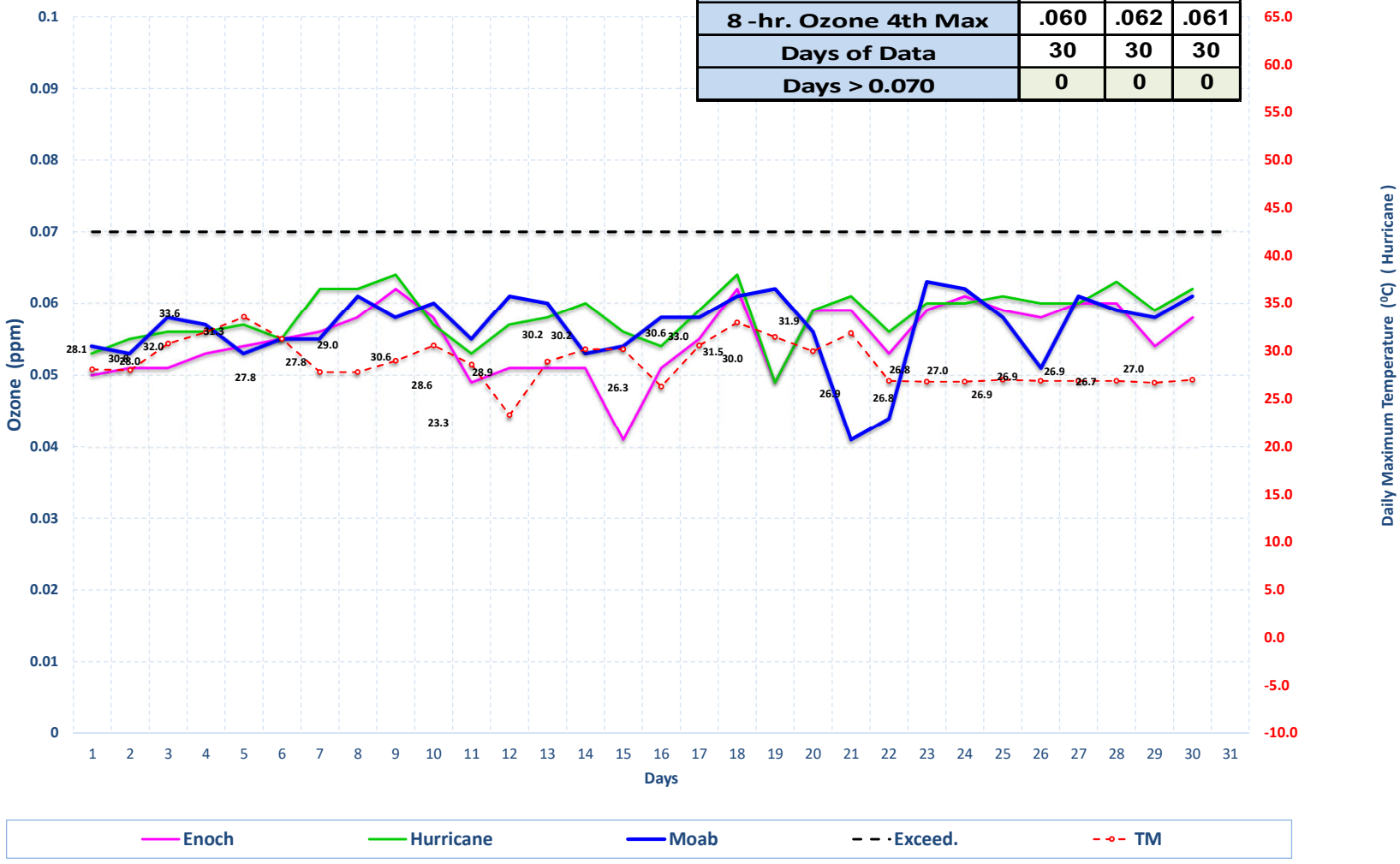
Highest 8-hr Ozone Concentration & Daily Maximum Temperature June 2023

	LN	SF
Arith Mean	.057	.057
8 -hr. Ozone 4th Max	.064	.062
Days of Data	30	30
Days > 0.070	0	0



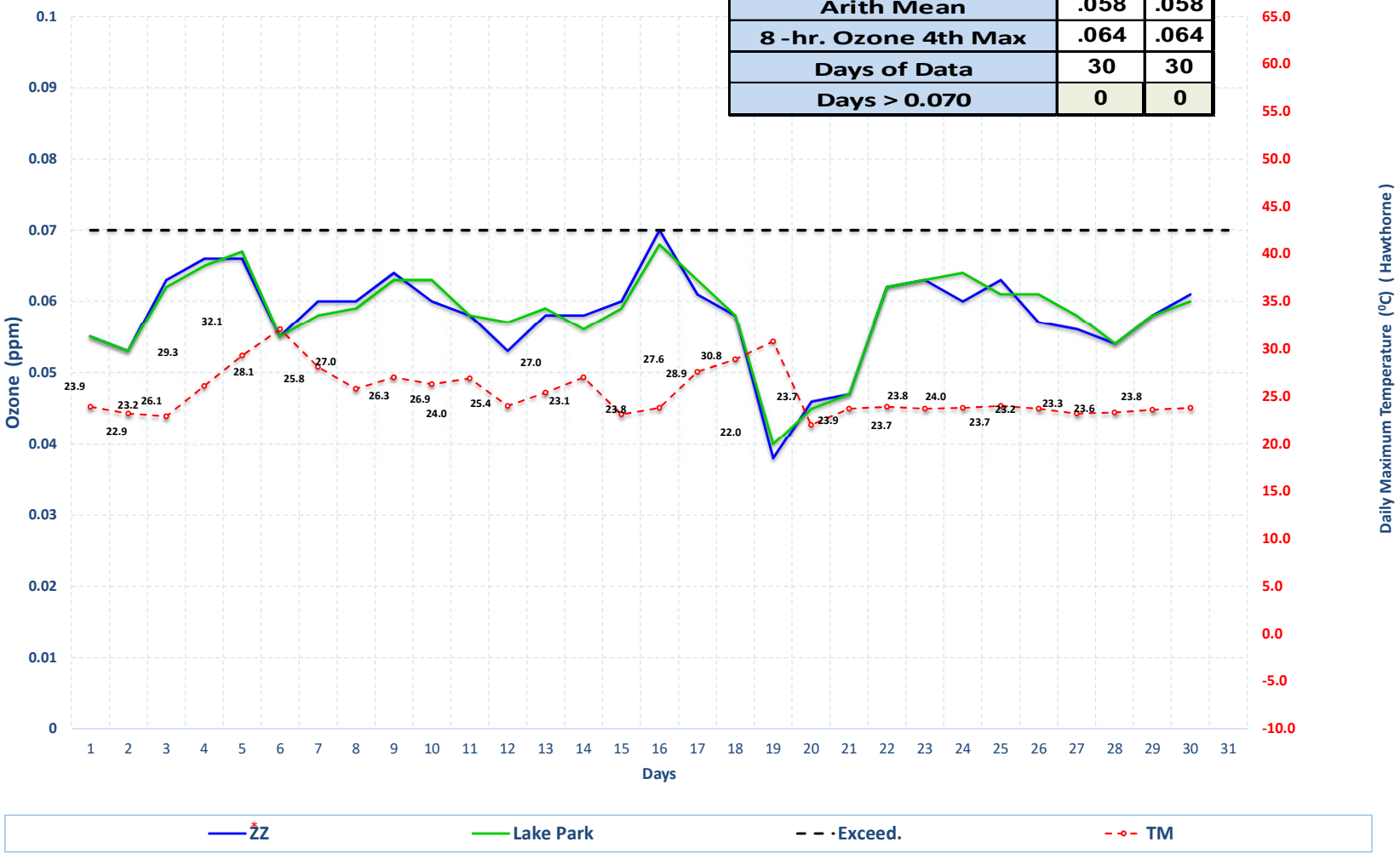
Highest 8-hr Ozone Concentration & Daily Maximum Temperature June 2023

	EN	HC	M7
Arith Mean	.055	.058	.057
8 -hr. Ozone 4th Max	.060	.062	.061
Days of Data	30	30	30
Days > 0.070	0	0	0



Highest 8-hr Ozone Concentration & Daily Maximum Temperature June 2023
Stations monitoring the Inland Port development

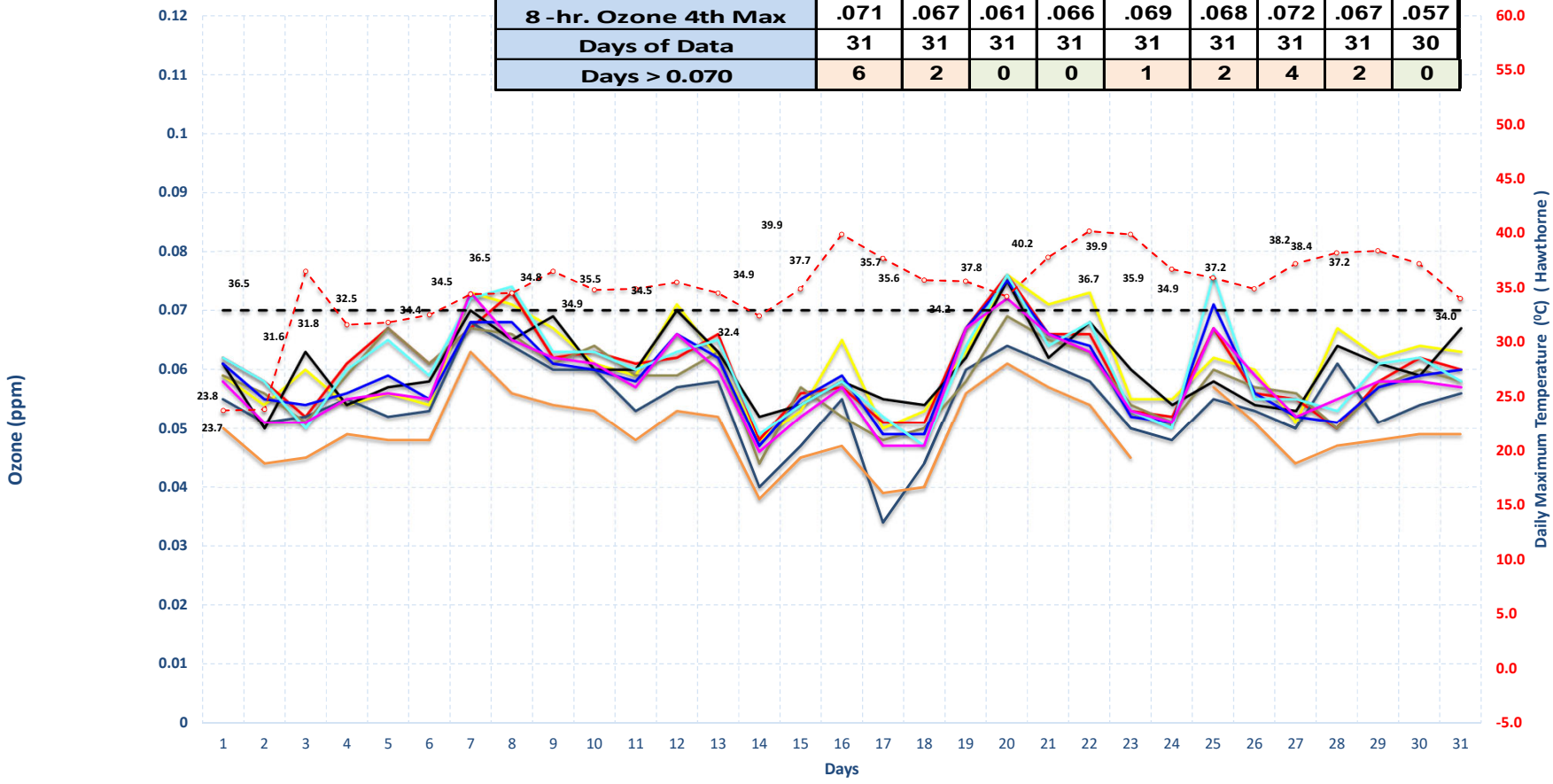
	ZZ	LP
Arith Mean	.058	.058
8 -hr. Ozone 4th Max	.064	.064
Days of Data	30	30
Days > 0.070	0	0



* **ZZ** is located at the New Utah State Prison (1480 North 8000 West, SLC).
This site was previously named **IP**

Highest 8-hr Ozone Concentration & Daily Maximum Temperature July 2023

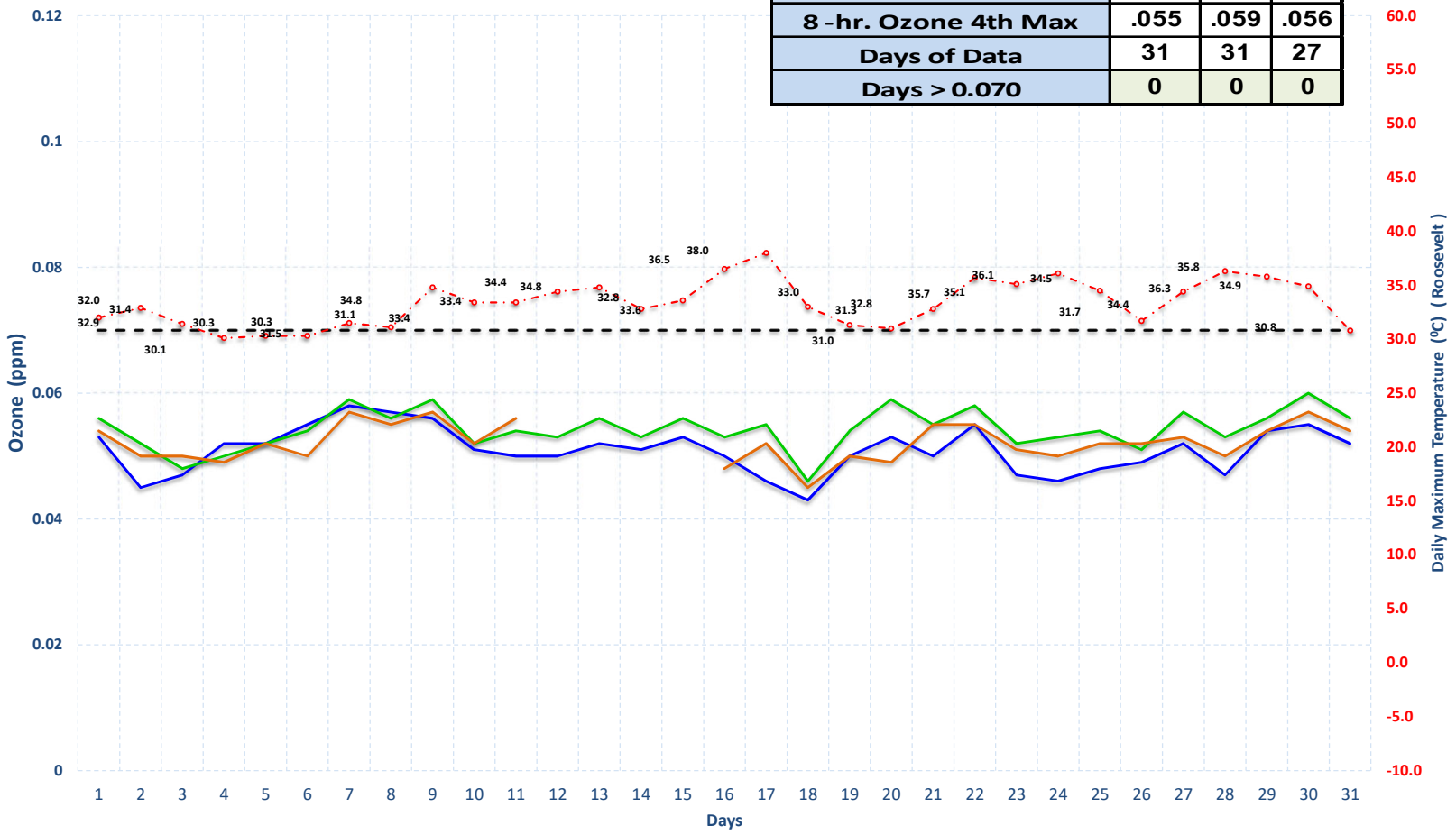
	BV	CV	ED	H3	HV	HW	NR	RP	EQ
Arith Mean	.061	.060	.054	.058	.060	.059	.060	.058	.050
8-hr. Ozone 4th Max	.071	.067	.061	.066	.069	.068	.072	.067	.057
Days of Data	31	31	31	31	31	31	31	31	30
Days > 0.070	6	2	0	0	1	2	4	2	0



* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)
** Controlling Monitor

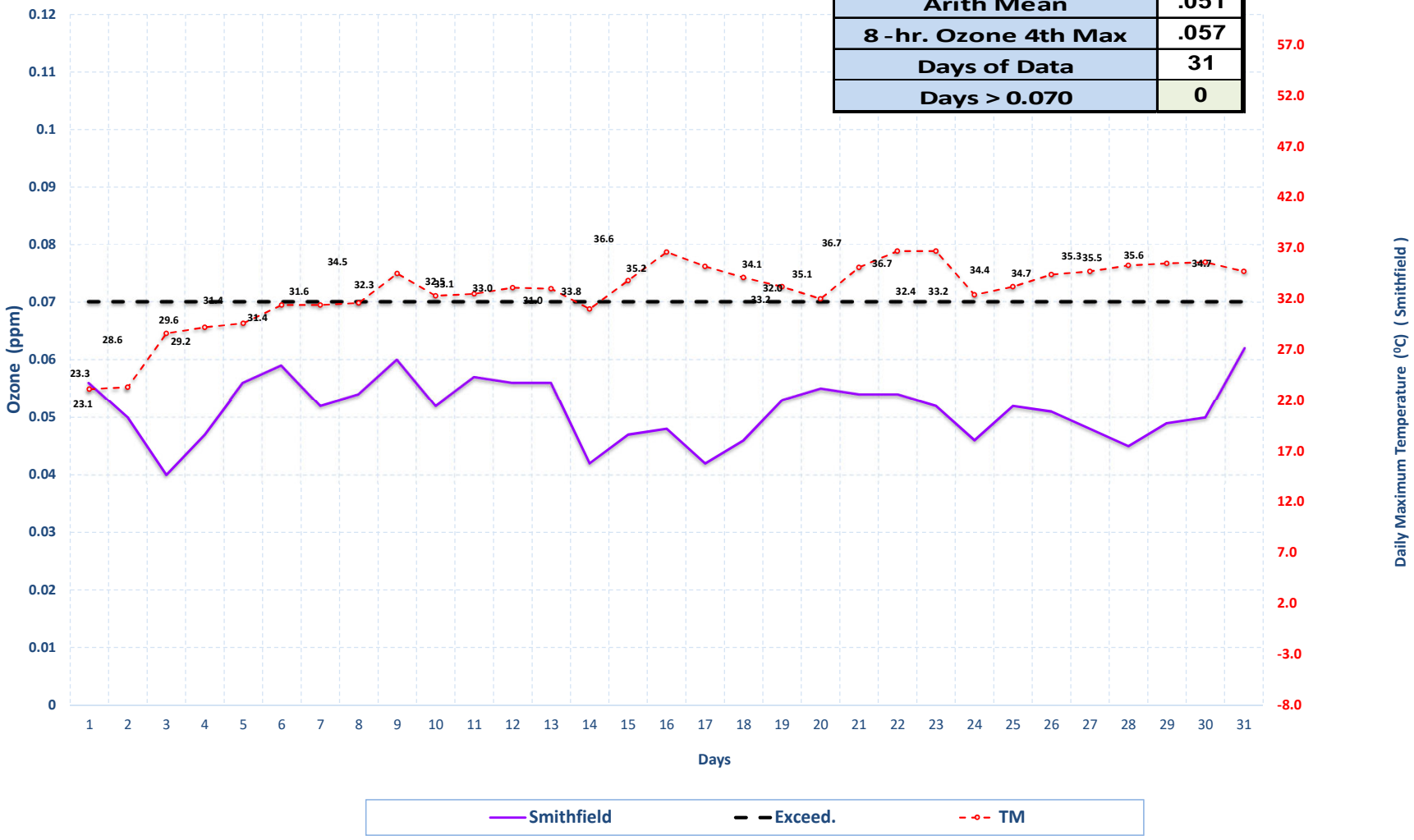
Highest 8-hr Ozone Concentration & Daily Maximum Temperature July 2023

	P2	RS	V4
Arith Mean	.051	.054	.052
8 -hr. Ozone 4th Max	.055	.059	.056
Days of Data	31	31	27
Days > 0.070	0	0	0



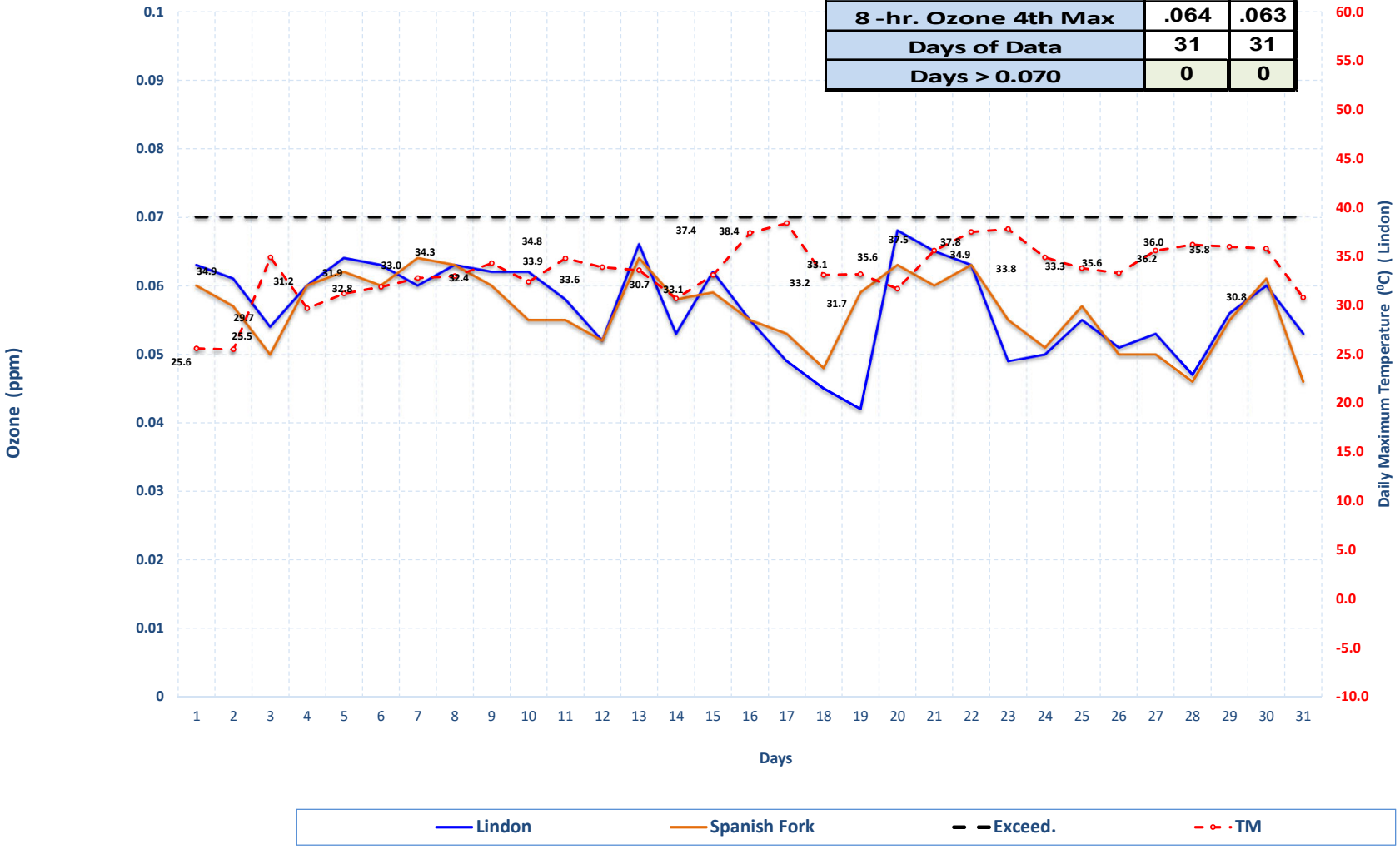
Highest 8-hr Ozone Concentration & Daily Maximum Temperature July 2023

	SM
Arith Mean	.051
8 -hr. Ozone 4th Max	.057
Days of Data	31
Days > 0.070	0



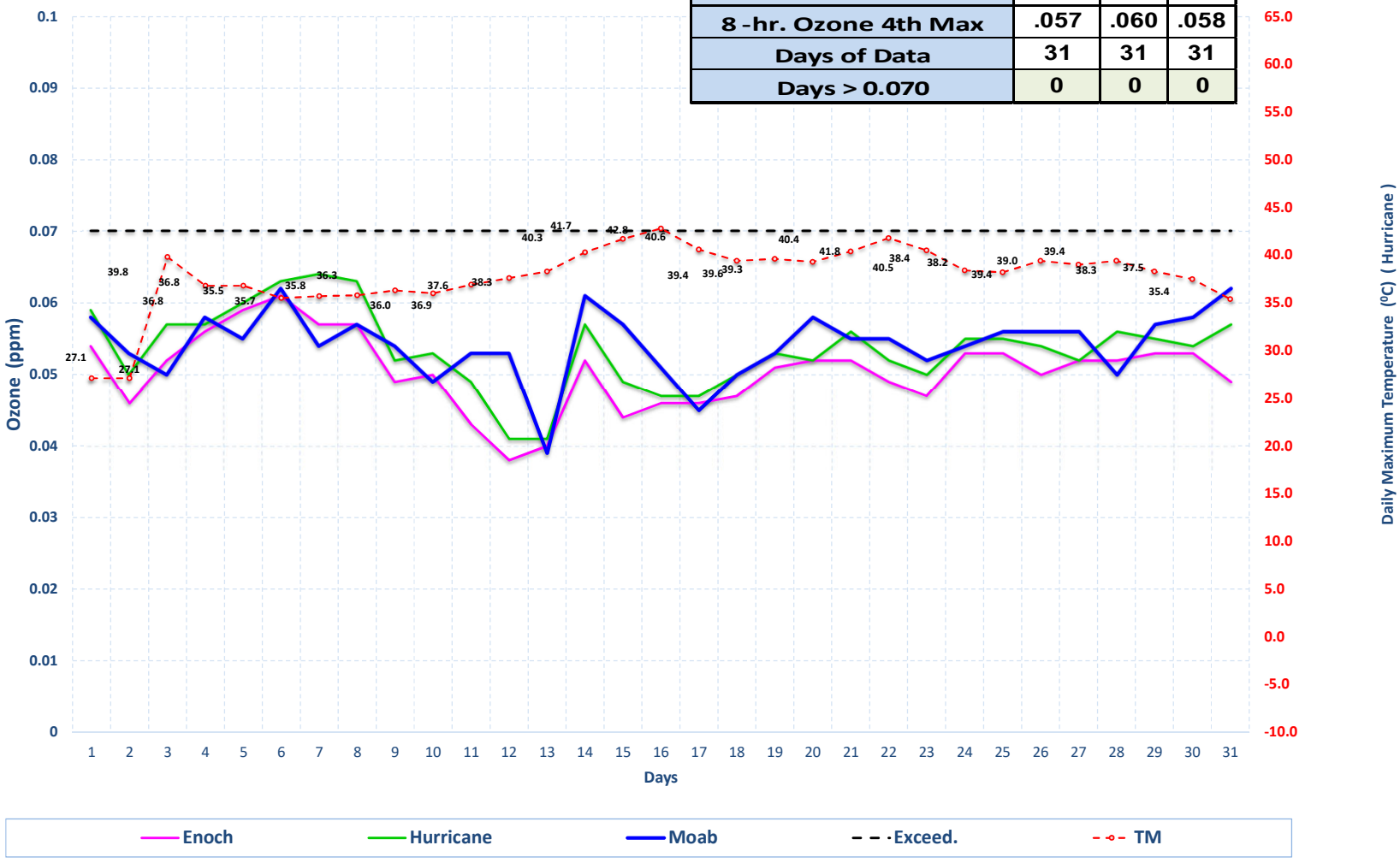
Highest 8-hr Ozone Concentration & Daily Maximum Temperature July 2023

	LN	SF
Arith Mean	.057	.056
8 -hr. Ozone 4th Max	.064	.063
Days of Data	31	31
Days > 0.070	0	0



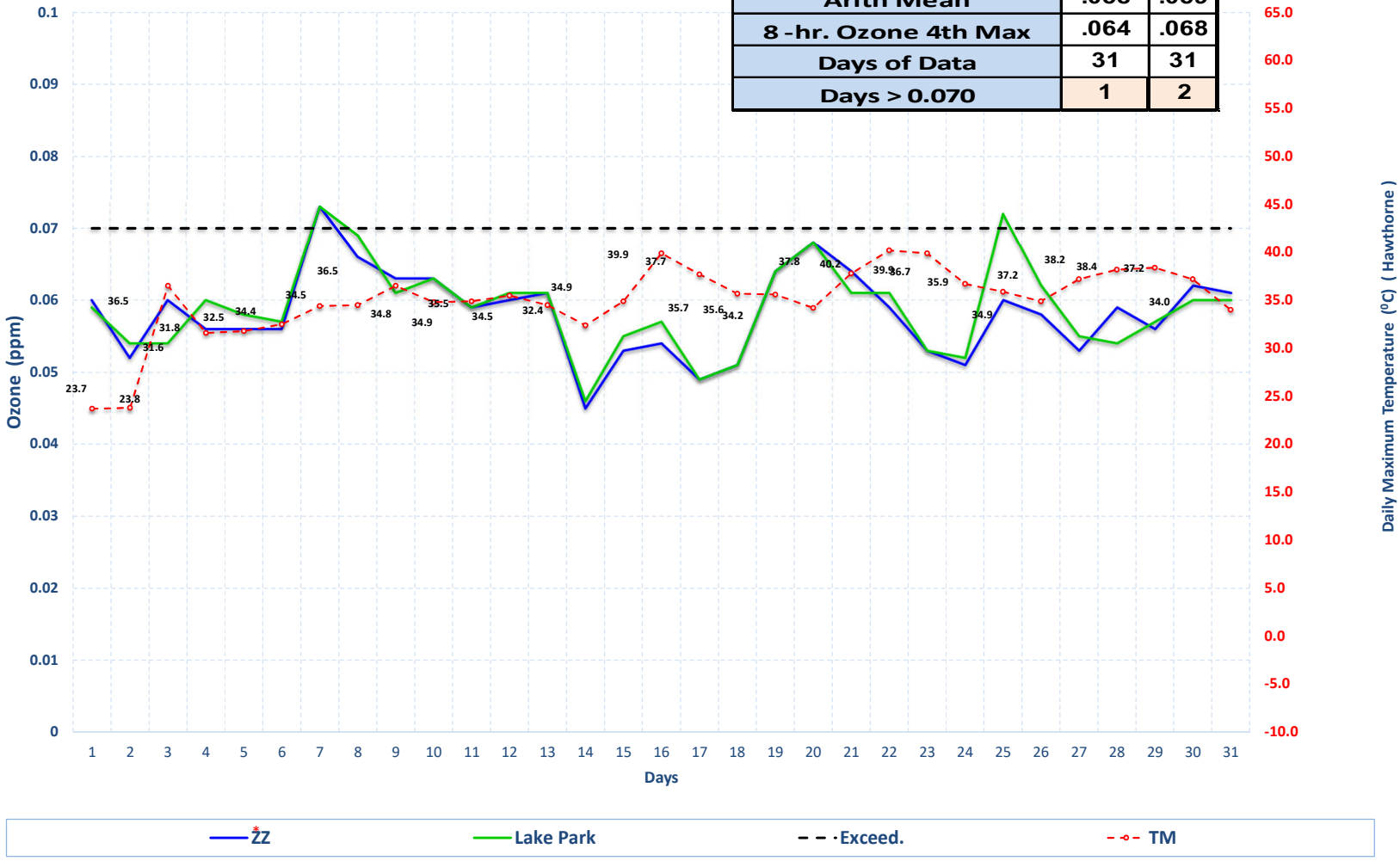
Highest 8-hr Ozone Concentration & Daily Maximum Temperature July 2023

	EN	HC	M7
Arith Mean	.050	.054	.054
8 -hr. Ozone 4th Max	.057	.060	.058
Days of Data	31	31	31
Days > 0.070	0	0	0



Highest 8-hr Ozone Concentration & Daily Maximum Temperature July 2023
Stations monitoring the Inland Port development

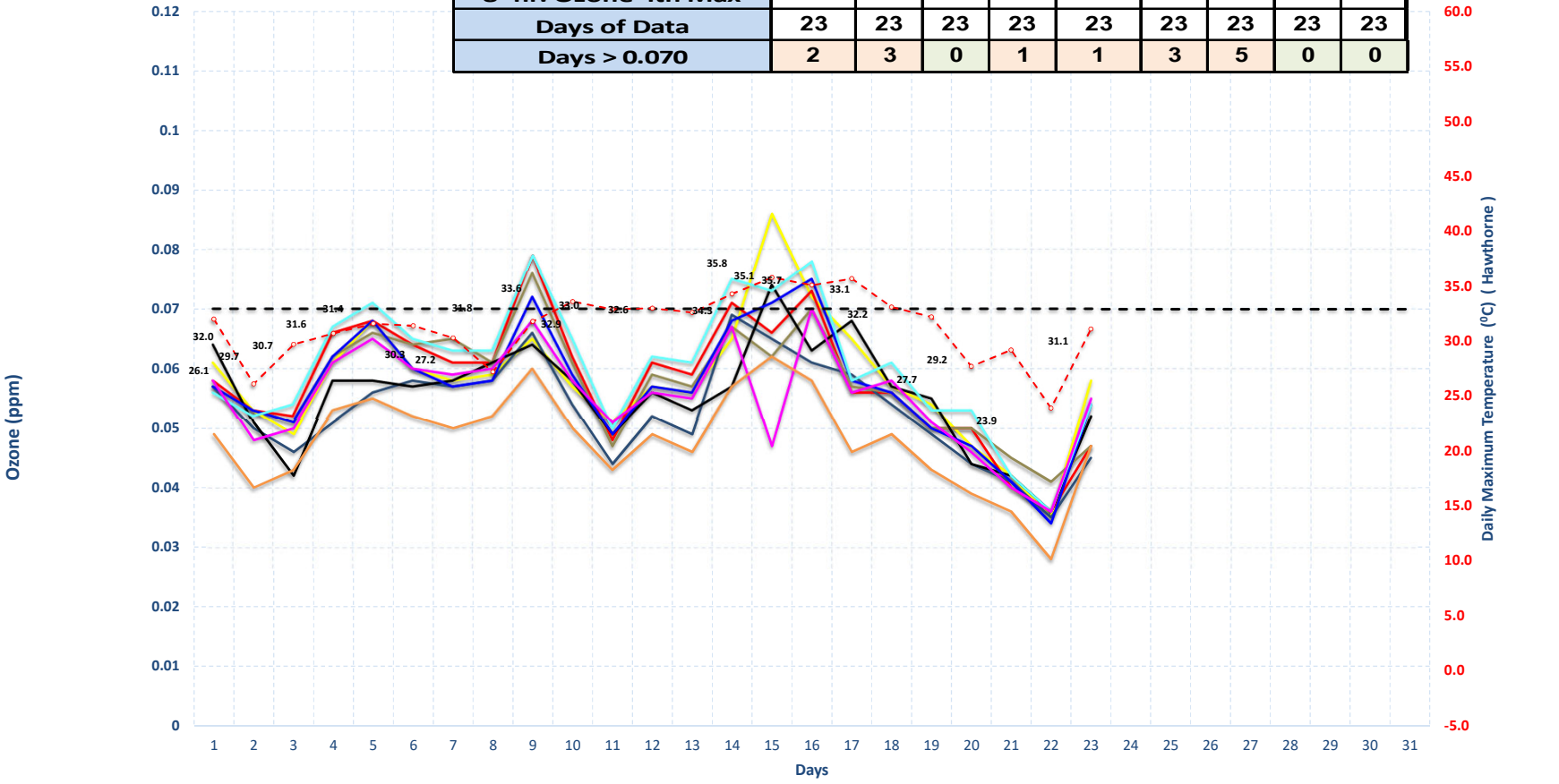
	ZZ	LP
Arith Mean	.058	.059
8 -hr. Ozone 4th Max	.064	.068
Days of Data	31	31
Days > 0.070	1	2



* **ZZ** is located at the New Utah State Prison (1480 North 8000 West, SLC).
This site was previously named **IP**

Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2023

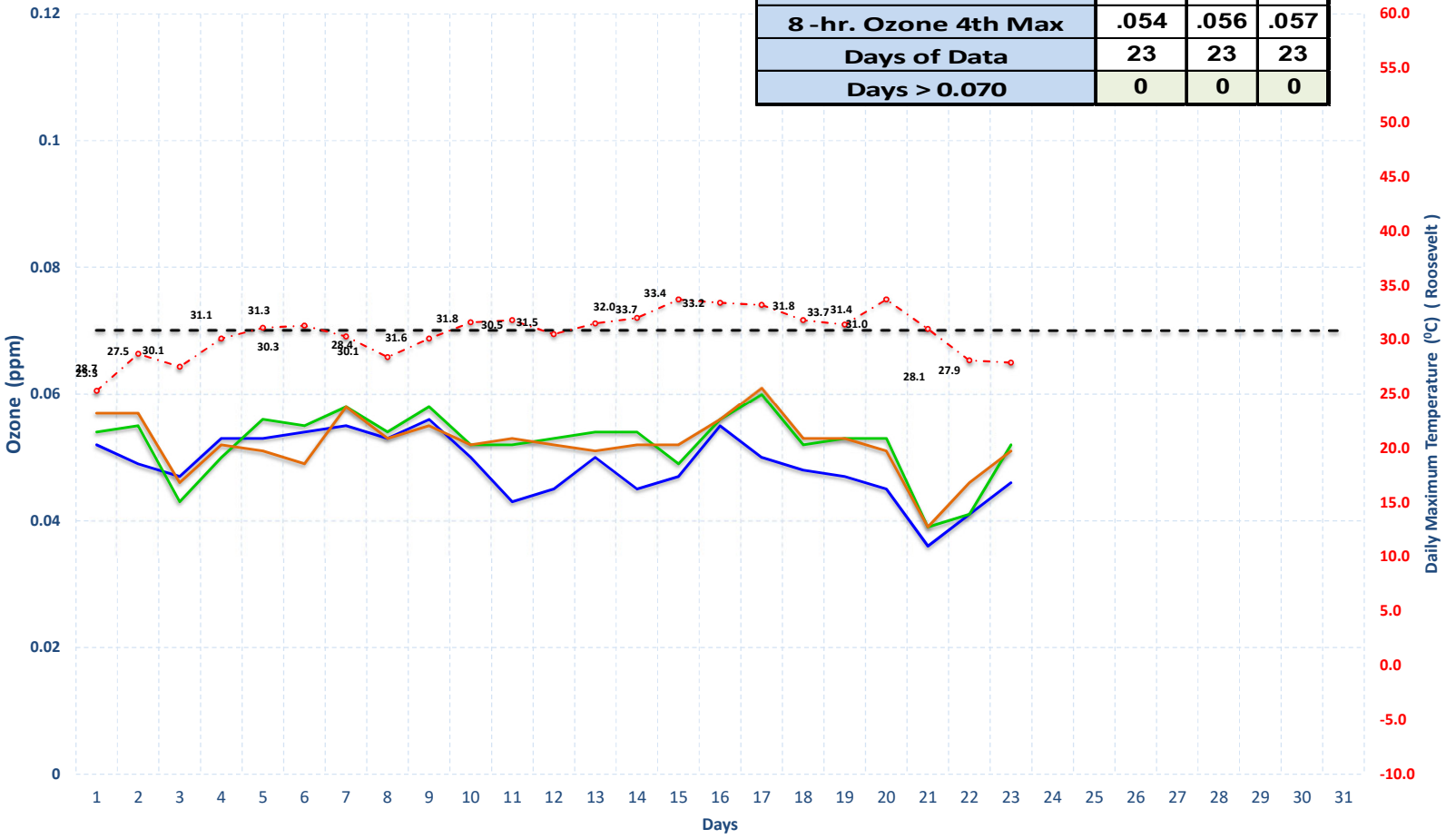
	BV	CV	ED	H3	HV	HW	NR	RP	EQ
Arith Mean	.058	.058	.053	.058	.056	.057	.060	.055	.048
8 -hr. Ozone 4th Max	.065	.068	.061	.066	.064	.068	.073	.065	.057
Days of Data	23	23	23	23	23	23	23	23	23
Days > 0.070	2	3	0	1	1	3	5	0	0



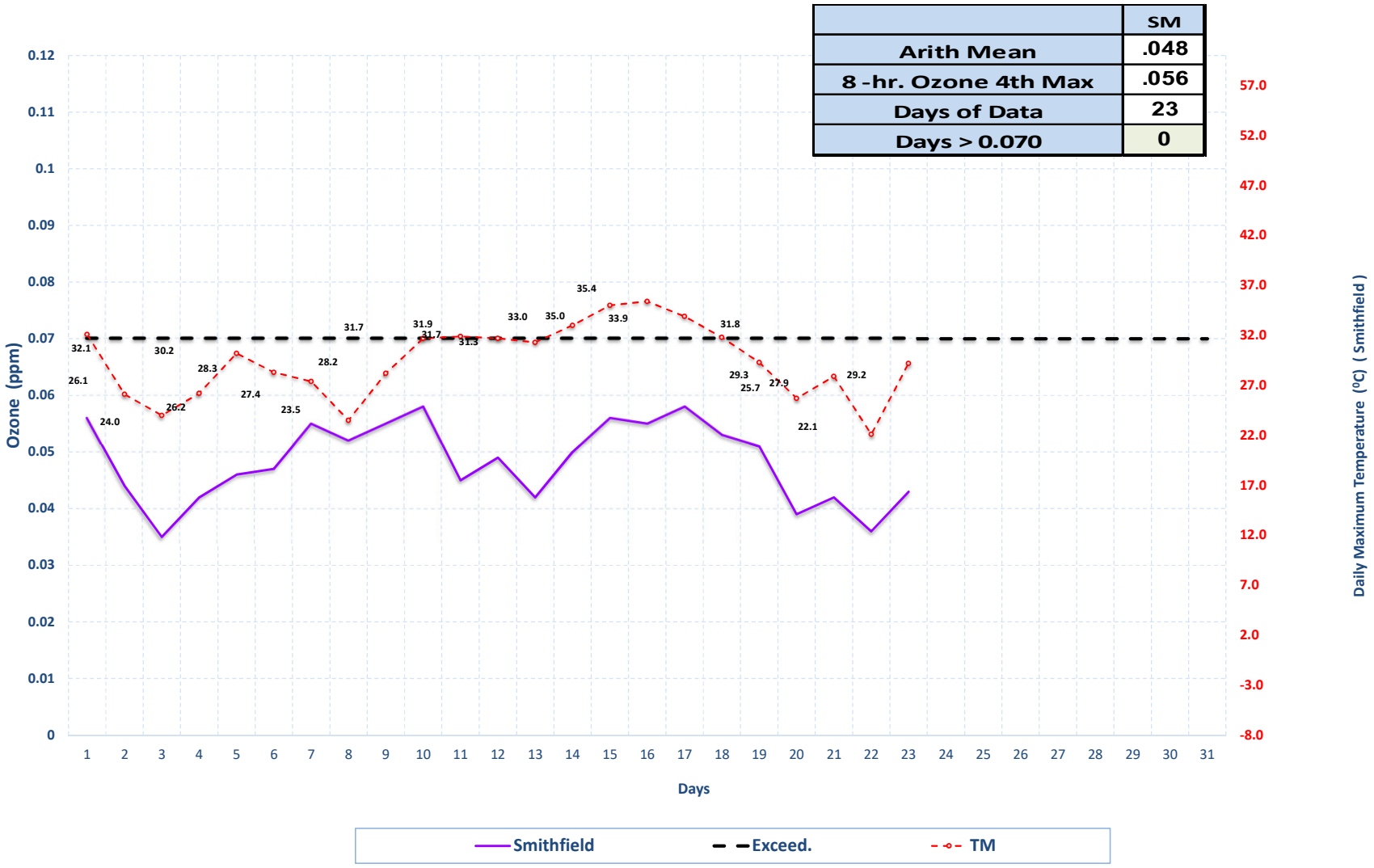
* Environmental Quality (**EQ**) previously named Technical Support Center (**TSC**)
** Controlling Monitor

Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2023

	P2	RS	V4
Arith Mean	.049	.052	.052
8 -hr. Ozone 4th Max	.054	.056	.057
Days of Data	23	23	23
Days > 0.070	0	0	0

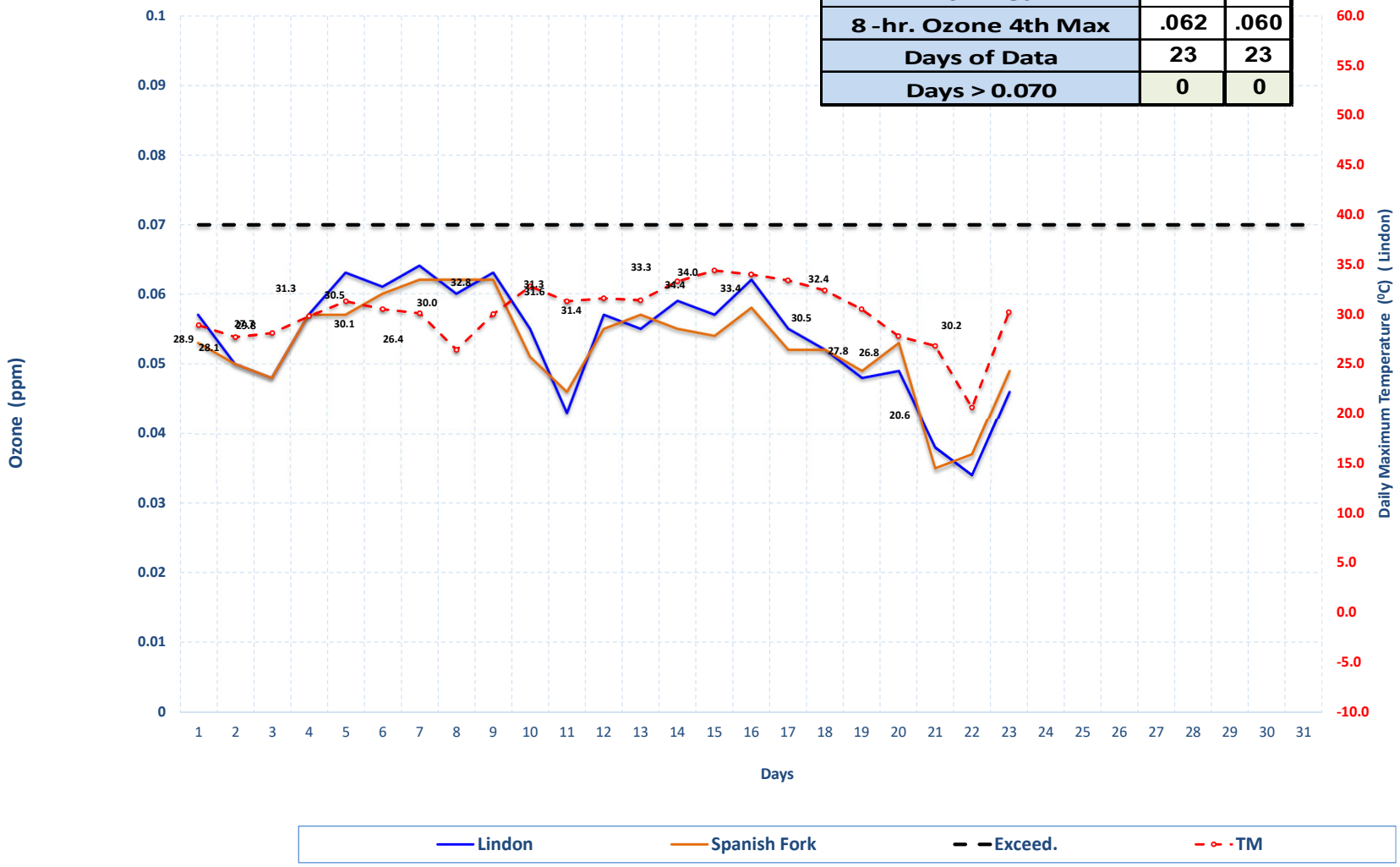


Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2023



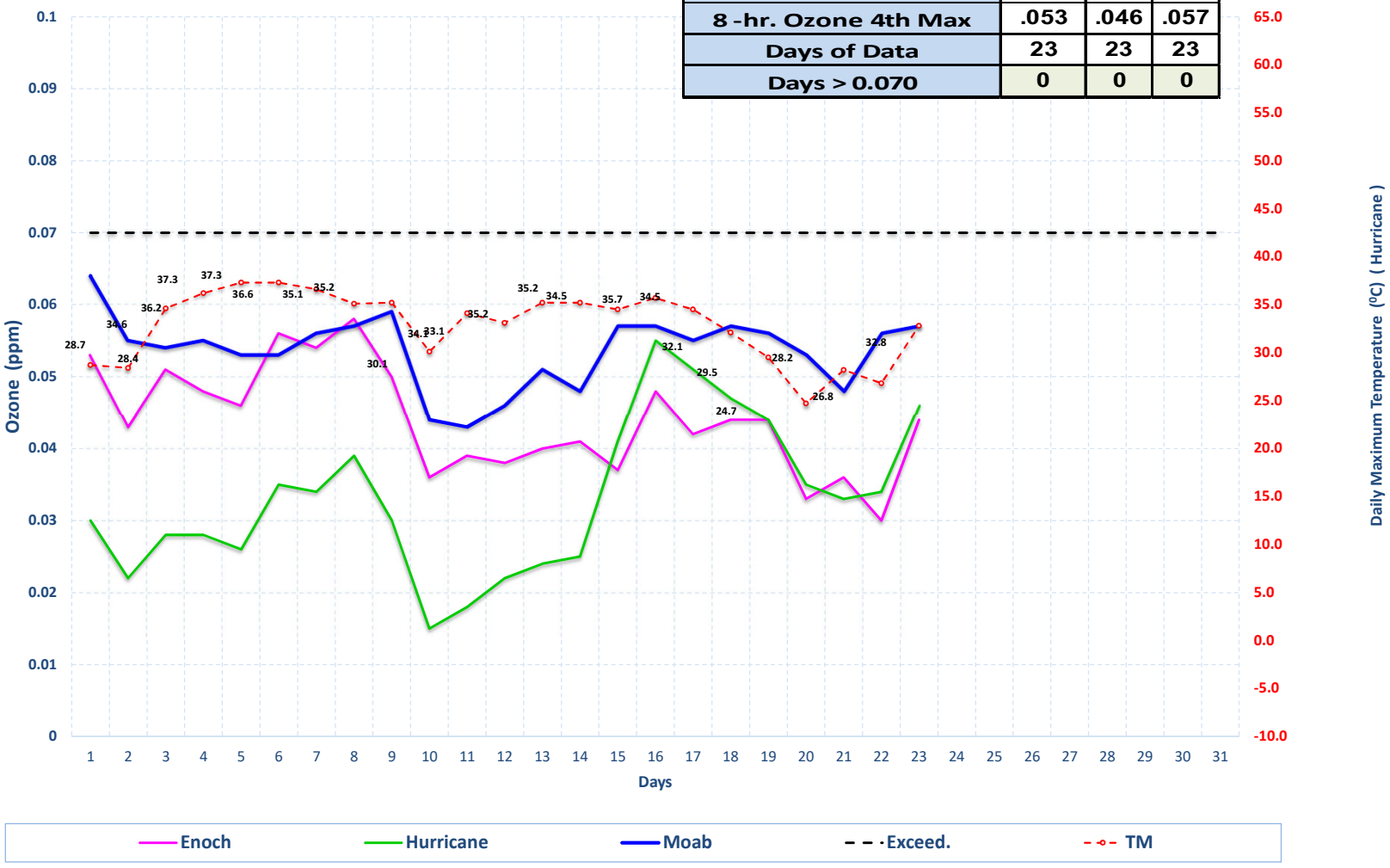
Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2023

	LN	SF
Arith Mean	.054	.053
8 -hr. Ozone 4th Max	.062	.060
Days of Data	23	23
Days > 0.070	0	0



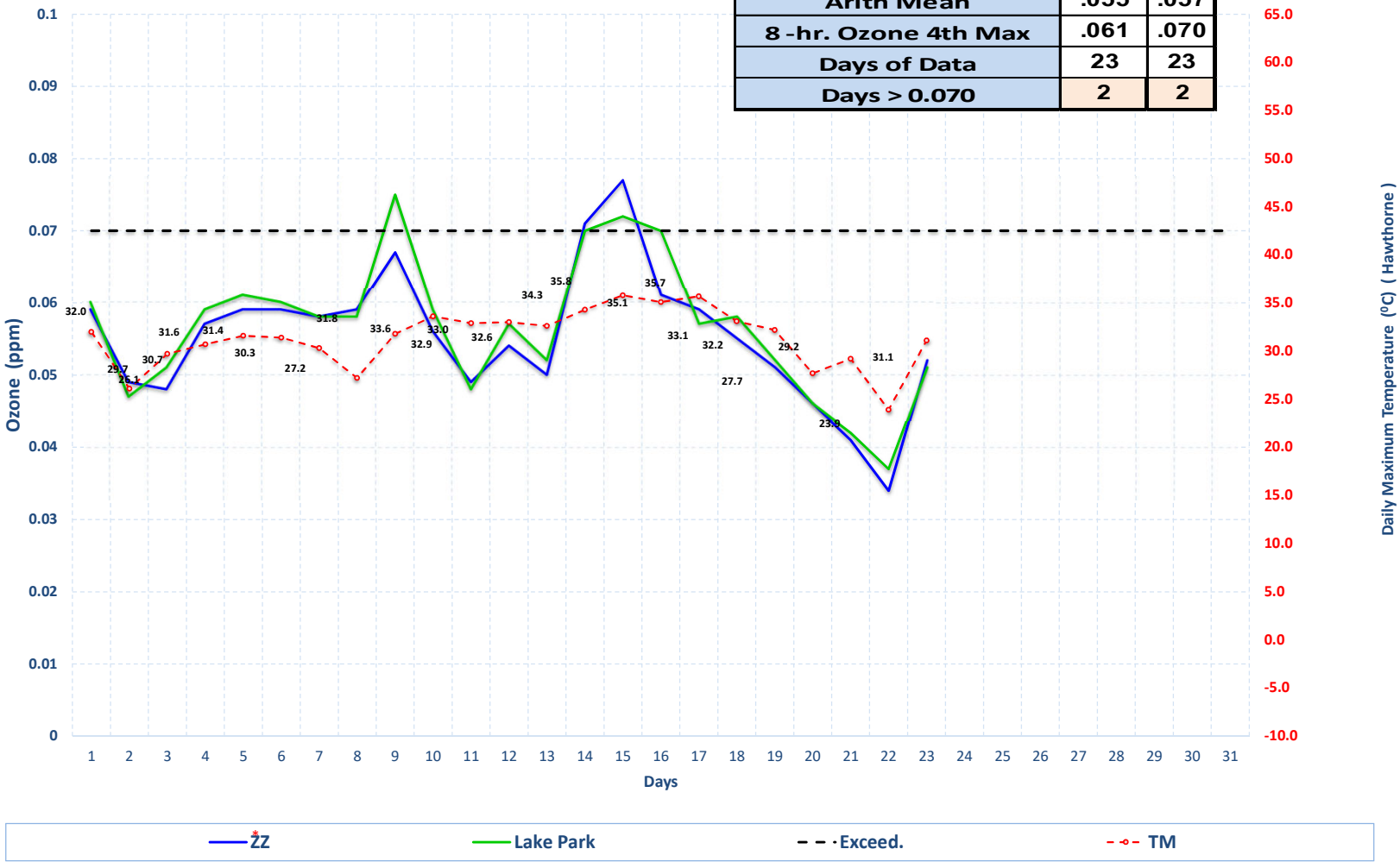
Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2023

	EN	HC	M7
Arith Mean	.044	.033	.054
8 -hr. Ozone 4th Max	.053	.046	.057
Days of Data	23	23	23
Days > 0.070	0	0	0



Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2023
Stations monitoring the Inland Port development

	ZZ	LP
Arith Mean	.055	.057
8 -hr. Ozone 4th Max	.061	.070
Days of Data	23	23
Days > 0.070	2	2



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