



State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Tim Davis
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-007-26

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

THROUGH: Jazmine Lopez, Rules Coordinator

FROM: Sheila Vance, Environmental Scientist

DATE: March 17, 2026

SUBJECT: PROPOSE FOR PUBLIC COMMENT: Amend Section R307-110-13 to incorporate Utah State Implementation Plan Section IX, Control Measures for Area and Point Sources, Part D, Ozone; Section IX.D.13.a, 2020 Uinta Basin Periodic Inventory Report and Section IX.D.13.b, 2023 Uinta Basin Periodic Inventory Report.

Per the Clean Air Act (CAA), marginal ozone nonattainment areas are required to submit periodic emission inventories as part of their State Implementation Plan (SIP) to track progress in reducing emissions until the area is redesignated to attainment.¹ These inventories, required under CAA § 182(a)(3)(A), must be submitted every three years following the initial base year inventory until the area is redesignated to attainment. The Uinta Basin (UB) was designated as a marginal ozone nonattainment area (NAA) in August 2018.² The required base-year emission inventory for 2017 was submitted to and approved by EPA.³ The Utah Division of Air Quality has completed the required periodic emission inventories for the years 2020 and 2023. These periodic emission inventories are required to be incorporated into Utah State Implementation Plan,⁴ Section IX, Control Measures for Area and Point Sources, Part D, Ozone through Rule R307-110-13.

¹ 40 CFR 51.1315(b)

² Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards; 83 FR 25776; EPA-HQ-OAR-2017-0548; FRL-9977-72-OAR.

³ Approval and Promulgation of Implementation Plans; Utah; 2017 Base Year Inventories for the 2015 8-Hour Ozone National Ambient Air Quality Standard for the Uinta Basin, Northern Wasatch Front and Southern Wasatch Front Nonattainment Areas, 2021-14195 (86 FR 35404).

⁴ 40 CFR Part 52 Subpart A

In March 2023, the state of Utah requested that EPA extend the attainment date for the UB NAA by a second year, at which time the area had a monitored design value that met attainment. In December 2024, EPA denied the request and reclassified the area to moderate nonattainment.⁵ In February 2025, the state of Utah requested that EPA reconsider their December 2024 decision and filed in court a request for a stay of the decision. EPA agreed to reconsider the December 2024 decision and a judicial stay was granted. These decisions leave the UB NAA in a marginal NAA status currently and all CAA requirements for a marginal NAA remain in place. The CAA requires states to comply with all required SIP elements to be eligible for a second one-year extension.⁶ Therefore, these required periodic emission inventories must be incorporated into our SIP to support EPA's reconsideration of our second one-year extension request that they are currently evaluating.

Recommendation: Staff recommend the Board approve the amendment to Section R307-110-13, Section IX, Control Measures for Area and Point Sources, Part D, Ozone; Utah State Implementation Plan, Section IX.D.13.a, 2020 Uinta Basin Periodic Inventory Report and Section IX.D.13.b, 2023 Uinta Basin Periodic Inventory Report, for a 30-day public comment period.

⁵ Denial of Request for Attainment Date Extension, Finding of Failure to Attain, and Reclassification of an Area in Utah to Moderate for the 2015 Ozone National Ambient Air Quality Standard; 89 FR 101483; EPA-R08-OAR-2024-0001; FRL-12469-01-R8

⁶ Clean Air Act 181(a)(5); 40 CFR 51.1307

State of Utah
Administrative Rule Analysis
Revised May 2025

NOTICE OF SUBSTANTIVE CHANGE

TYPE OF FILING: Amendment

Rule or section number:

R307-110-13

Filing ID: OFFICE USE ONLY

Date of previous publication (only for CPRs):

Agency Information

1. Title catchline:	Environmental Quality, Air Quality	
Building:	Multi-Agency State Office Building	
Street address:	195 N 1950 W	
City, state:	Salt Lake City, UT	
Mailing address:	PO Box 144820	
City, state and zip:	Salt Lake City, UT 84114-4820	
Contact persons:		
Name:	Phone:	Email:
Sheila Vance	801-518-3132	svance@utah.gov
Jazmine Lopez	801-536-4050	jazminelopez@utah.gov

Please address questions regarding information on this notice to the persons listed above.

General Information

2. Rule or section catchline:	
R307-110-13. Section IX, Control Measures for Area and Point Sources, Part D, Ozone.	
3. Are any changes in this filing because of state legislative action?	Changes are not because of legislative action.
If yes, any bill number and session:	
4. Purpose of the new rule or reason for the change:	
The State of Utah is required to submit periodic emission inventories for marginal ozone nonattainment areas to the Environmental Protection Agency as part of the Clean Air Act (CAA) requirements (Section 182(a)(3)(A)). The first periodic emission inventory for the Uinta Basin nonattainment area (NAA) was completed and submitted for the year 2017. This amendment incorporates the periodic inventories for the years 2020 and 2023 into Utah's State Implementation Plan (SIP) and as such we are proposing to amend Section R307-110-13 Section IX, Control Measures for Area and Point Sources, Part D, Ozone to change the Board adoption date to the anticipated date of the amended plan.	
5. Summary of the new rule or change:	
This proposed rule amendment incorporates the required periodic emission inventory reports for the years 2020 and 2023 for the Uinta Basin NAA into the Utah SIP as required by the CAA. Pursuant to Section 182(a)(3) of the CAA, this inventory includes a comprehensive accounting of actual VOC and NOX emissions from the following source categories: point, area, on-road mobile, non-road mobile, and oil and gas sources. Section R307-110-13 Section IX, Control Measures for Area and Point Sources, Part D, Ozone is being amended to change the Board adoption date to the anticipated date of the amended plan.	

Fiscal Information

6. Provide an estimate and written explanation of the aggregate anticipated cost or savings to:	
A. State budget:	
This rule change does not have any impact on the state budget as the change reflects work already completed by the Division of Air Quality as part of staff's required workload. This rule change does not alter current regulations or practices.	
B. Local governments:	
This rule change does not have any impact on local government budgets as this rule requires no action by local governments.	
C. Small businesses ("small business" means a business employing 1-49 persons):	
This rule change does not have any impact on small businesses as this rule requires no action by small businesses.	

D. Non-small businesses ("non-small business" means a business employing 50 or more persons):

This rule change does not have any impact on non-small businesses as this rule requires no action by non-small businesses.

E. Persons other than small businesses, non-small businesses, 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**):

This rule change does not impact persons other than small businesses, non-small businesses, state or local government entities as this rule requires no action by persons other than small businesses, non-small businesses, state or local government entities.

F. Compliance costs for affected persons:

There are no compliance costs associated with this rule change, the change is editorial to incorporate already prepared reports into our SIP. This rule change does not alter current regulations or practices.

G. Regulatory Impact Summary Table (This table includes only fiscal impacts the agency was able to measure. If the agency could not estimate an impact, it is excluded from this table but described in boxes A through F.)

Regulatory Impact Summary Table					
Fiscal Cost	FY2026	FY2027	FY2028	FY2029	FY2030
State Budget	\$0	\$0	\$0	\$0	\$0
Local Governments	\$0	\$0	\$0	\$0	\$0
Small Businesses	\$0	\$0	\$0	\$0	\$0
Non-Small Businesses	\$0	\$0	\$0	\$0	\$0
Other Persons	\$0	\$0	\$0	\$0	\$0
Total Fiscal Cost	\$0	\$0	\$0	\$0	\$0
Fiscal Benefits	FY2026	FY2027	FY2028	FY2029	FY2030
State Budget	\$0	\$0	\$0	\$0	\$0
Local Governments	\$0	\$0	\$0	\$0	\$0
Small Businesses	\$0	\$0	\$0	\$0	\$0
Non-Small Businesses	\$0	\$0	\$0	\$0	\$0
Other Persons	\$0	\$0	\$0	\$0	\$0
Total Fiscal Benefits	\$0	\$0	\$0	\$0	\$0
Net Fiscal Benefits	\$0	\$0	\$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, Tim Davis, has reviewed and approved this regulatory impact analysis.

Citation Information

7. 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:

Section 19-2-104	42 U.S.C. 85 Part D Section 7511a	

Incorporation by Reference Information

8. Incorporation by Reference (if this rule incorporates more than two items by reference, please include additional tables):

A. This rule adds or updates the following title of material incorporated by reference (a copy of the material 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 Section IX, Control Measures for Area and Point Sources, Part D, Ozone.
Publisher	Division of Air Quality, Utah Department of Environmental Quality
Issue Date	July 1, 2026
Issue or Version	

B. This rule adds or updates the following title of material incorporated by reference (a copy of the material 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

9. The public may submit written or oral comments to the agency identified in box 1.

A. Comments will be accepted until: 05/15/2026

B. A public hearing (optional) will be held (The public may request a hearing by submitting a written request to the agency, as outlined in Section 63G-3-302 and Rule R15-1.):

Date:	Time (hh:mm AM/PM):	Place (physical address or URL):
05/13/2026	02:00PM - 03:00PM	A public hearing is set for May 13, 2026. Further details may be found below. The hearing will be cancelled should no request for one be made by May 11, 2026, at 10 AM MT. The final status of the public hearing will be posted on May 11, 2026, after 10 AM MT. The status of the public hearing may be checked at the following website location under the corresponding rule. https://deq.utah.gov/public-notices-archive/air-quality-rule-plan-changes-open-public-comment Interested Persons can participate in person or electronically, via the internet. In Person: MASOB 195 N. 1950 W. Salt Lake City, UT, 84116, First Floor, Air Quality Board Room Virtual Attendance: Time zone: America/Denver Google Meet joining info: Video call link: meet.google.com/brq-boro-amh Or dial: (US) +1 470-222-7694 PIN: 642 227 764#

To the agency: If more than one hearing is planned to take place, continue to add rows.

10. This rule change MAY become effective on: 07/01/2026

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 Sections 63G-3-301, 63G-3-302, 63G-3-303, and 63G-3-402. The office may return incomplete forms to the agency, 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:	03/10/2026
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R307. Environmental Quality, Air Quality.

R307-110. General Requirements: State Implementation Plan.

R307-110-13. Section IX, Control Measures for Area and Point Sources, Part D, Ozone.

The Utah State Implementation Plan, Section IX, Control Measures for Area and Point Sources, Part D, Ozone, as most recently amended by the Utah Air Quality Board on ~~November 6, 2024~~ **July 1, 2026**, pursuant to Section 19-2-104, is incorporated by reference and made a part of Rule R307-110.

KEY: air pollution, PM10, PM2.5, ozone

Date of Last Change: ~~July 2, 2025~~ 2026

Notice of Continuation: December 1, 2021

Authorizing, and Implemented or Interpreted Law: 19-2-104

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UTAH STATE IMPLEMENTATION PLAN
**Section IX, Part D, Ozone; 2020 Uinta
Basin Periodic Inventory Report**
SECTION IX.D.13.a



Section IX.D.13.a 2020 Uinta Basin Marginal Ozone Periodic Inventory Report

IX.D.13.a.i Introduction

On October 26, 2015, the Environmental Protection Agency (EPA) promulgated revisions to the National Ambient Air Quality Standards (NAAQS) for ground-level ozone. EPA amended the primary and secondary ozone standards, lowering the threshold from 75 parts per billion (ppb) to 70 ppb, as determined by the three-year average of the annual fourth-highest daily eight-hour average concentration.¹ On August 3, 2018, EPA designated the Uinta Basin as a marginal ozone nonattainment area (NAA) based on the 2014-2016 design value and other relevant data.²

Ozone production is a year-round occurrence, though it is typically most prevalent during the summer months. However, under certain conditions, elevated ozone levels can also occur during the winter. The Uinta Basin is a rural region in northeastern Utah with a relatively small population, yet is a significant producer and transporter of crude oil. The Uinta Basin's unique geography and weather patterns combined with substantial emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) from oil and gas production leads to occasional episodes of elevated ozone levels. These ozone events typically occur during the winter months, when cold air inversions trap emissions within the basin. Under these conditions, snow-covered ground and sunlight provide the ultraviolet radiation and radiant energy necessary for VOCs and NO_x to react and form ozone.

Two years after the initial NAA designation, in August 2020, the Utah Division of Air Quality (the Division) submitted a 2017 base-year inventory reflecting a comprehensive, accurate, and current inventory of actual emissions from all sources as required by the Emission Inventory Requirements in 40 CFR 51.1315.³ EPA approved the 2017 inventory on August 5, 2021.⁴ Following the base-year inventory submission, the Division is required to compile a revised

¹ National Ambient Air Quality Standards for Ozone; 80 FR 65292; EPA-HQ-OAR-2008-0699, FRL-9933-18-OAR.

² Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards; 83 FR 25776; EPA-HQ-OAR-2017-0548; FRL-9977-72-OAR.

³ Emissions Inventory requirements, 40 CFR 51.1315, <https://www.ecfr.gov/current/title-40/section-51.1315>.

⁴ Approval and Promulgation of Implementation Plans; Utah; 2017 Base Year Inventories for the 2015 8-Hour Ozone National Ambient Air Quality Standard for the Uinta Basin, Northern Wasatch Front and Southern Wasatch Front Nonattainment Areas, 2021-14195 (86 FR 35404).

periodic inventory every 3-year period until the area is redesignated to attainment.⁵ This report fulfills the periodic inventory submission for 2020.

IX.D.13.a.ii Geographic and Nonattainment Area

The Uinta Basin lies in the northeast corner of Utah and is bound on the north by the Uinta Mountains, on the south by the Tavaputs Plateau, on the west by the Wasatch Range, and on the east by elevated terrain that separates it from Piceance Basin in Colorado. Duchesne and Uintah counties occupy most of the Basin, and the Uintah and Ouray Reservation covers a significant portion of basin lands.

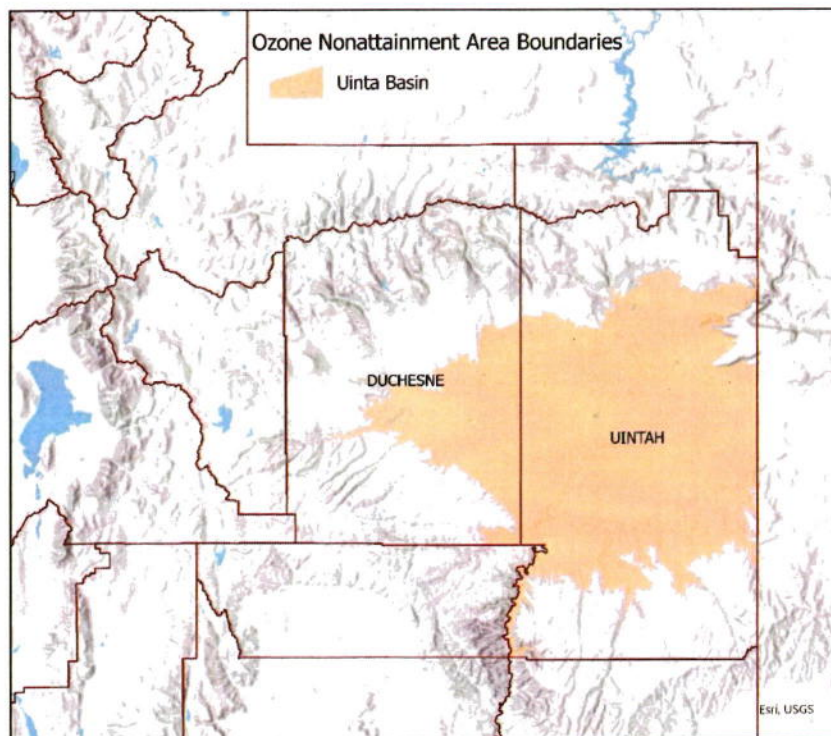


Figure 1: Uinta Basin Ozone Nonattainment Area Map

The marginal nonattainment designation applies to parts of Uintah and Duchesne Counties below a contiguous, external perimeter of 6,250-foot elevation. Energy production areas are scattered over federal, state, and tribal lands. The compliance and permitting jurisdiction varies depending

⁵ Ozone Plan Submission and Requirements, CAA Section 182(a)(3)(A).

on land ownership.

IX.D.13.a.iii Ozone Season Day Emissions and Temporal and Spatial Allocation

Periodic emissions inventories are required to be submitted in tons per day (TPD) for a typical weekday during the ozone season.⁶ In this case, it's a typical winter ozone Wednesday. Emissions are calculated for area and mobile sources on a county-by-county basis. The raw inventory data is entered into an emissions processing model and assigned a geographic location referred to as the grid cell. The point source emissions are assigned to their geographic location. To report emissions specific to the NAA, the Division uses a Geographic Information System description for each area to retrieve the respective emissions data after it has been gridded into the model.

The Division used 2020 National Emissions Inventory (NEI)⁷ data (except for the Oil and Gas sector) prepared by EPA and processed using Sparse Matrix Operator Kernel Emissions (SMOKE) v5.0 emissions processing software to prepare this inventory in order to normalize all emissions into TPD and to extract inventories specific to the NAA. The SMOKE model used the annual, county-wide emissions inventories from 2020 NEI and reformulated them for use in the air quality model. The reformulation includes temporal and spatial processing. Temporal processing converts emissions from annual to daily and hourly values. Spatial processing locates emissions from the county to specific grid cells within the modeling domain. Details of each source category processing for SMOKE run is included in the SMOKE Technical Support Document (TSD) attached to this submission.

IX.D.13.a.iv Emissions Inventory

Pursuant to Section 182(a)(3) of the Clean Air Act (CAA), this inventory includes a comprehensive accounting of actual VOC and NO_x emissions from the following source categories: point, area, on-road mobile, non-road mobile, and oil and gas sources. The inventoried pollutants include NO_x, VOCs, and carbon monoxide (CO). NO_x and VOCs are the

⁶ Emissions Inventory Requirements 40 CFR 51.1315(c), [https://www.ecfr.gov/current/title-40/part-51/section-51.1315#p-51.1315\(c\)](https://www.ecfr.gov/current/title-40/part-51/section-51.1315#p-51.1315(c)).

⁷ 2020 NEI data, <https://gaftp.epa.gov/Air/emismod/2020/2020emissions/>

only pollutants required by the implementation rule⁸, but CO is an important pollutant for modeling purposes and is therefore included in this inventory. This inventory represents emissions from state land only in the Uinta Basin NAA.

The Division does not include wildfire and biogenic emissions (emissions from natural sources such as vegetation) in the periodic emissions inventory submission because the inventory is limited to anthropogenic emissions and these source categories are neither required nor appropriate for inclusion under the Air Emissions Reporting Requirements (AERR). The Emissions Inventory Guidance Section 3.5.1 states, “Since the periodic inventory requirement in the CAA does not specify the degree of detail required for the periodic inventory, EPA has defined the necessary components through the AERR.”⁹

According to 40 CFR 51.15(b)(4) of the AERR, states are not required to report wildfire emissions¹⁰, as wildfires are considered natural or unpredictable events and are classified as “events” rather than emissions representative of a typical ozone work weekday. EPA develops national wildfire emissions inventories, and the Division lacks the year-specific meteorological modeling necessary to accurately temporalize wildfire emissions for the inventory year.

Additionally, the AERR was amended in 2008 to explicitly remove state reporting requirements for biogenic emissions¹¹, with EPA instead estimating these emissions using land-use and meteorological data. Biogenic emissions are highly dependent on year-specific meteorological conditions, and the Division has not conducted photochemical modeling for the inventory year. Available EPA biogenic and wildfire datasets are only provided at coarse spatial and temporal resolutions (county-level or 12-km grids and monthly averages), which are not compatible with the Division’s high-resolution, post-SMOKE inventory approach or its NAA-specific summaries for a typical ozone work weekday.

In 2020, oil and gas production activity in the Uinta Basin was drastically affected by the COVID-19 pandemic, which caused an unprecedented collapse in transportation demand and a corresponding crash in crude oil price. This market disruption led operators to substantially halt production and temporarily shut-in oil wells. Reduced activity associated with the oil and gas

⁸ Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area State Implementation Plan Requirements; 83 FR 62998; EPA-HQ-OAR-2016-0202, FRL-9986-53-OAR.

⁹ Emissions Inventory Guidance, https://www.epa.gov/sites/default/files/2016-12/documents/2016_ei_guidance_for_naaqs.pdf.

¹⁰ Wildfire Emissions Reporting, 40 CFR 51.15(b)(4), [https://www.ecfr.gov/current/title-40/part-51#p-51.15\(b\)\(4\)](https://www.ecfr.gov/current/title-40/part-51#p-51.15(b)(4)).

¹¹ Biogenic Emissions Reporting, <https://www.federalregister.gov/d/E8-29737/p-155>.

production resulted in a temporary drop in emissions in the basin. For this reason, 2020 represents an anomalous year driven by exceptional market and pandemic-related conditions and should not be used as a representative for typical production levels or emissions in the Uinta Basin. Additionally, the updated emissions factors and improved methodology that were developed since the 2017 base-year, were never retrospectively applied to update the 2020 inventory. For these reasons, only the 2020 inventory is reported with no comparison to the 2017 base year marginal inventory.

Table 1: 2020 Emissions Inventory in Ton Per Day for state Lands within the Uinta Basin NAA

	2020		
Sectors	NO _x	VOC	CO
Area Source	0.53	3.71	4.52
On-road Mobile	2.43	0.91	11.97
Non-road Mobile	0.20	0.16	2.24
Point Source	1.96	0.27	0.25
Oil & Gas	8.58	29.07	8.87
Total	13.70	34.13	27.85

IX.D.13.a.v Emissions Source Categories

1. Area Source

Area sources include emissions estimates for sources which individually are too small in magnitude to report as point sources. Significant examples include residential heating, commercial combustion, asphalt paving, and commercial and consumer solvent use. Area source emissions were calculated by county on a tons per year (TPY) basis using inputs provided in the

1 Wagon Wheel workbook “2020NEI_WW_SL_Input_Template_Submittals.xlsx”.¹² The Wagon
2 Wheel is an EPA tool developed in 2017 and updated in 2020 for the NEI reporting purposes.
3 Refer to the 2020 NEI TSD for nonpoint sources for specifics.¹³ Additionally, residential wood
4 combustion, livestock waste, and locomotive emissions are also included in the area source
5 inventory preparation. Respective TSDs are also included with this submittal.^{14 15 16 17}

7 2. Point Source

9 Point sources include emissions estimates for larger sources that are located at fixed, stationary
10 locations. Examples include large industrial facilities and electrical power plants. Point source
11 emissions are represented as the 2020 actual emissions from the source-reported numbers in the
12 Division’s State and Local Emissions Inventory System (SLEIS) database¹⁸. SLEIS contains
13 extensive quality assurance/ quality control guardrails that guide point sources as they submit
14 their data. Division staff then conduct another quality control check. This data is then reported to
15 EPA in preparation to build the NEI. Missing emissions values are gap-filled with EPA data
16 where available. The Division used the source-reported information from SLEIS to filter out
17 major point sources from the 2020 NEI in preparation for this marginal inventory.

18
19 Any source that has the potential to emit greater than or equal to 100 TPY of NO_x or VOC in
20 Utah is included in the point source inventory. There were four major point sources in the Uinta

¹² 2020 NEI Wagon Wheel Input Template,

https://gaftp.epa.gov/air/nei/2020/doc/supporting_data/nonpoint/Wagon%20Wheel%202020%20v7%20Final%20-%20SLT%20Inputs.zip.

¹³ 2020 National Emissions Inventory Technical Support Document: Nonpoint Overview,

www.epa.gov/system/files/documents/2023-03/NEI2020_TSD_Section6_Nonpoint_Overview.pdf.

¹⁴ 2020 National Emissions Inventory Technical Support Document: Fuel Combustion – Residential Heating - Wood,

www.epa.gov/system/files/documents/2023-03/NEI2020_TSD_Section27_RWC.pdf.

¹⁵ 2020 National Emissions Inventory Technical Support Document: Agriculture – Livestock Waste,

www.epa.gov/system/files/documents/2023-03/NEI2020_TSD_Section10_AgLivestockWaste.pdf.

¹⁶ 2020 National Emissions Inventory Technical Support Document: Locomotives,

www.epa.gov/system/files/documents/2023-03/NEI2020_TSD_Section12_Locomotives.pdf.

¹⁷ An error was made in the Solvent Controls Template, which was subsequently incorporated into the 2020 Wagon Wheel Workbook. Instead of 20,461.68 tons of statewide VOC emissions, only 13,184.02 tons were reported in the 2020 NEI, resulting in a difference of 7,277.66 tons. Utah notified EPA of this error and subsequently made corrections to the solvent sector. The Division used the updated dataset to prepare the 2020 periodic marginal inventory submission. Full data for all sectors, including the corrected solvent data, are available on the State of Utah 2020 Statewide Emissions Inventory page. At the time this inventory was prepared, the 2020 NEI database had not been updated.

¹⁸ Utah Division of Air Quality SLEIS, <https://sleis.deq.utah.gov/>.

Basin NAA in 2020, with one additional source added in 2023. These major point sources operate under approval orders issued by the Division that establish enforceable operating requirements and include source-specific conditions designed to limit and control emissions. A map of all major point sources in the Uinta Basin with grid cells overlaid on the NAA is provided in Figure 2. The 2020 statewide emissions inventories can be accessed at the Division's inventory webpage.¹⁹

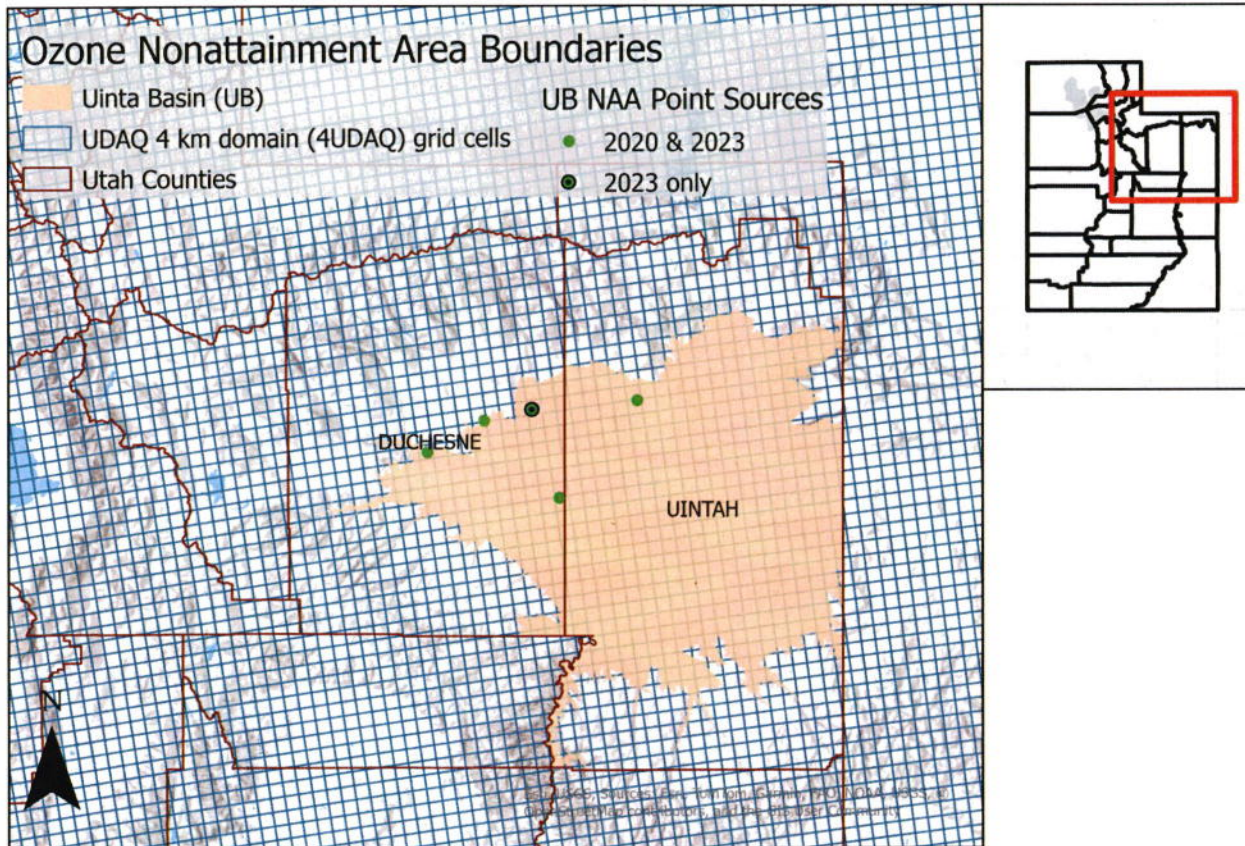


Figure 2: Map of the nonattainment area with an overlaid grid and the locations of point-source facilities

3. On-Road and Non-Road Mobile Sources

The mobile on-road sources include passenger vehicles, motorcycles, light-duty trucks, heavy-

¹⁹ 2020 Statewide Emissions Inventory, <https://deq.utah.gov/air-quality/2020statewide-emissions-inventories>.

duty trucks, and buses. Sources that are included under the non-road category are construction equipment, engines used in recreational activities, and portable industrial, commercial, and agricultural engines. Statewide emissions inventories were developed by EPA using an air quality modeling platform for air toxics and criteria air pollutants that represent the year 2020.²⁰ The platform is based on the 2020 NEI which was published in April 2023 along with other data specific to the year 2020 by running MOVES3.²¹ EPA uses default inputs to run the model if sufficient quality data is not available. The Division used the 2020 NEI data and processed it through SMOKE to calculate TPD emissions from the on-road and non-road mobile sector. Refer to the attached 2020 NEI TSD for on-road²² mobile sources and non-road²³ mobile sources for specific inventory preparation details.

4. Oil and Gas Sources

The 2020 NEI was not used to calculate emissions from the oil and gas sector. The NEI combines emissions from federal, state, and tribal lands, which would be difficult to separate and could result in inaccurate post-SMOKE emissions estimates for sources located on state land only.

Oil and gas source emissions are tabulated using a combination of the Division's individual inventory workbooks²⁴ submitted by oil and gas sources that provide throughputs and emissions as well as summations from data sources which include EPA/NOMAD (Nonpoint Methods Advisory group) oil and gas tool outputs. These emissions are reported to EPA via the Emissions Inventory System database. Missing emissions values are gap-filled with EPA data where available. Refer to the attached Oil and Gas TSD for specifics.

²⁰ Technical Support Document (TSD): Preparation of Emissions Inventories for the 2020 North American Emissions Modeling Platform,
www.epa.gov/system/files/documents/2024-10/2020_emismod_tsd_dec2023_508.pdf.

²¹ MOVES, www.epa.gov/moves.

²² 2020 National Emissions Inventory Technical Support Document: On-Road Mobile,
www.epa.gov/system/files/documents/2023-01/NEI2020_TSD_Section5_Onroad_0.pdf.

²³ 2020 National Emissions Inventory Technical Support Document: Nonroad Mobile Sources,
www.epa.gov/system/files/documents/2023-01/NEI2020_TSD_Section4_Nonroad.pdf.

²⁴ Oil and Gas Emissions Inventory Workbook,
<https://deq.utah.gov/air-quality/statewide-oil-gas-emissions-inventory>.

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UTAH STATE IMPLEMENTATION PLAN
**Section IX, Part D, Ozone; 2023 Uinta
Basin Periodic Inventory Report**

SECTION IX.D.13.b

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Section IX.D.13.b 2023 Uinta Basin Marginal Ozone Periodic Inventory Report

IX.D.13.b.i Introduction

On October 26, 2015, the Environmental Protection Agency (EPA) promulgated revisions to the National Ambient Air Quality Standards (NAAQS) for ground-level ozone. EPA amended the primary and secondary ozone standards, lowering the threshold from 75 parts per billion (ppb) to 70 ppb, as determined by the three-year average of the annual fourth-highest daily eight-hour average concentration.¹ On August 3, 2018, EPA designated the Uinta Basin as a marginal ozone nonattainment area (NAA) based on the 2014-2016 design value and other relevant data.²

Ozone production is a year-round occurrence, though it is typically most prevalent during the summer months. However, under certain conditions, elevated ozone levels can also occur during the winter. The Uinta Basin is a rural region in northeastern Utah with a relatively small population, yet is a significant producer and transporter of crude oil. The Uinta Basin's unique geography and weather patterns combined with substantial emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) from oil and gas production leads to occasional episodes of elevated ozone levels. These ozone events typically occur during the winter months, when cold air inversions trap emissions within the basin. Under these conditions, snow-covered ground and sunlight provide the ultraviolet radiation and radiant energy necessary for VOCs and NO_x to react and form ozone.

Two years after the initial NAA designation, in August 2020, the Utah Division of Air Quality (the Division) submitted a 2017 base-year inventory reflecting a comprehensive, accurate, and current inventory of actual emissions from all sources as required by the Emission Inventory Requirements in 40 CFR 51.1315.³ EPA approved the 2017 inventory on August 5, 2021.⁴ Following the base-year inventory submission, the Division is required to compile a revised

¹ National Ambient Air Quality Standards for Ozone; 80 FR 65292; EPA-HQ-OAR-2008-0699, FRL-9933-18-OAR.

² Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards; 83 FR 25776; EPA-HQ-OAR-2017-0548; FRL-9977-72-OAR.

³ Emissions Inventory requirements, 40 CFR 51.1315, <https://www.ecfr.gov/current/title-40/section-51.1315>.

⁴ Approval and Promulgation of Implementation Plans; Utah; 2017 Base Year Inventories for the 2015 8-Hour Ozone National Ambient Air Quality Standard for the Uinta Basin, Northern Wasatch Front and Southern Wasatch Front Nonattainment Areas, 2021-14195 (86 FR 35404).

periodic inventory every 3-year period until the area is redesignated to attainment.⁵ This report fulfills the periodic inventory submission for 2023.

IX.D.13.b.ii Geographic and Nonattainment Area

The Uinta Basin lies in the northeast corner of Utah and is bound on the north by the Uinta Mountains, on the south by the Tavaputs Plateau, on the west by the Wasatch Range, and on the east by elevated terrain that separates it from Piceance Basin in Colorado. Duchesne and Uintah counties occupy most of the Basin, and the Uintah and Ouray Reservation covers a significant portion of basin lands.

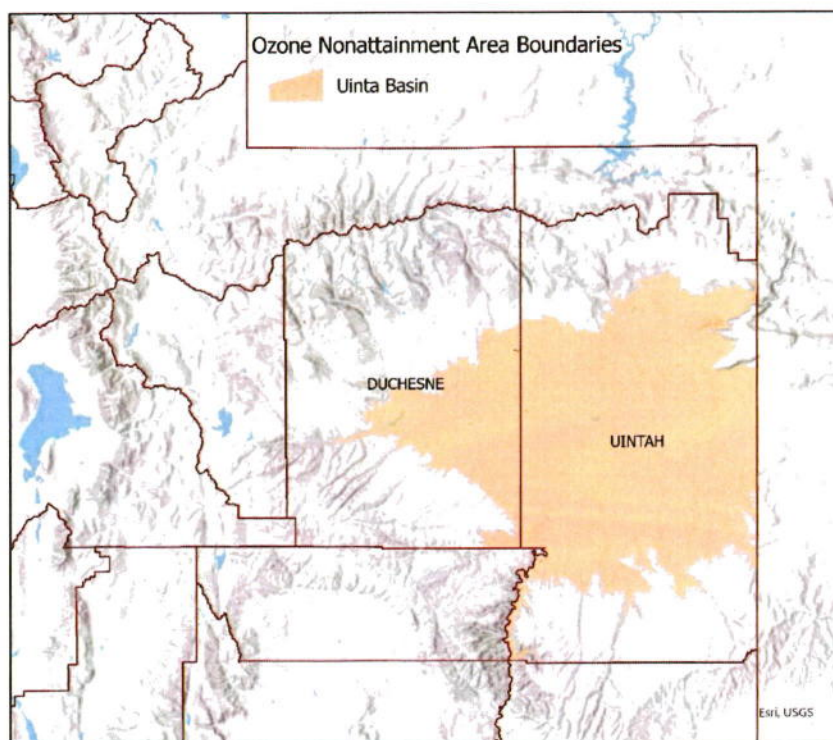


Figure 1: Uinta Basin Ozone Nonattainment Area Map

The marginal nonattainment designation applies to parts of Uintah and Duchesne Counties below a contiguous, external perimeter of 6,250-foot elevation. Energy production areas are scattered over federal, state, and tribal lands. The compliance and permitting jurisdiction varies depending on land ownership.

⁵ Ozone Plan Submission and Requirements, CAA Section 182(a)(3)(A).

IX.D.13.b.iii Ozone Season Day Emissions and Temporal and Spatial Allocation

Periodic emissions inventories are required to be submitted in tons per day (TPD) for a typical weekday during the ozone season.⁶ In this case, it's a typical winter ozone Wednesday. Emissions are calculated for area and mobile sources on a county-by-county basis. The raw inventory data is entered into an emissions processing model and assigned a geographic location referred to as the grid cell. The point source emissions are assigned to their geographic location. To report emissions specific to the NAA, the Division uses a Geographic Information System description for each area to retrieve the respective emissions data after it has been gridded into the model.

The Division prepared the source-specific inventories and processed using the Sparse Matrix Operator Kernel Emissions (SMOKE) v5.0 emissions processing software to prepare this inventory in order to normalize all emissions into TPD and to extract inventories specific to the NAA. SMOKE inventory reformulation includes temporal and spatial processing. Temporal processing converts emissions from annual to daily and hourly values. Spatial processing locates emissions from the county to specific grid cells within the modeling domain. Details of each source category processing for the SMOKE run is included in the SMOKE Technical Support Document (TSD) attached to this submission.

IX.D.13.b.iv Emissions Inventory

Pursuant to Section 182(a)(3) of the Clean Air Act (CAA), this inventory includes a comprehensive accounting of actual VOC and NO_x emissions from the following source categories: point, area, on-road mobile, non-road mobile, and oil and gas sources. The inventoried pollutants include NO_x, VOCs, and carbon monoxide (CO). NO_x and VOCs are the only pollutants required by the implementation rule⁷, but CO is an important pollutant for modeling purposes and is therefore included in this inventory. This inventory represents emissions from state land only in the Uinta Basin NAA.

The Division does not include wildfire and biogenic emissions (emissions from natural sources

⁶ Emissions Inventory Requirements 40 CFR 51.1315(c), [https://www.ecfr.gov/current/title-40/part-51/section-51.1315#p-51.1315\(c\)](https://www.ecfr.gov/current/title-40/part-51/section-51.1315#p-51.1315(c)).

⁷ Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area State Implementation Plan Requirements; 83 FR 62998; EPA-HQ-OAR-2016-0202, FRL-9986-53-OAR.

such as vegetation) in the periodic emissions inventory submission because the inventory is limited to anthropogenic emissions and these source categories are neither required nor appropriate for inclusion under the Air Emissions Reporting Requirements (AERR). The Emissions Inventory Guidance Section 3.5.1 states, “Since the periodic inventory requirement in the CAA does not specify the degree of detail required for the periodic inventory, EPA has defined the necessary components through the AERR.”⁸

According to 40 CFR 51.15(b)(4) of the AERR, states are not required to report wildfire emissions⁹, as wildfires are considered natural or unpredictable events and are classified as “events” rather than emissions representative of a typical ozone work weekday. EPA develops national wildfire emissions inventories, and the Division lacks the year-specific meteorological modeling necessary to accurately temporalize wildfire emissions for the inventory year.

Additionally, the AERR was amended in 2008 to explicitly remove state reporting requirements for biogenic emissions¹⁰, with EPA instead estimating these emissions using land-use and meteorological data. Biogenic emissions are highly dependent on year-specific meteorological conditions, and the Division has not conducted photochemical modeling for the inventory year. Available EPA biogenic and wildfire datasets are only provided at coarse spatial and temporal resolutions (county-level or 12-km grids and monthly averages), which are not compatible with the Division’s high-resolution, post-SMOKE inventory approach or its NAA-specific summaries for a typical ozone work weekday.

Comparing the periodic inventories for each 3-year period can be useful to understand emissions trends. As described in the periodic marginal emission inventory submitted for 2020 the values reported for that year are considered an anomaly due to impacts of the COVID-19 pandemic and an unusually high amount of oil and gas wells being shut-in due to decreased demand and falling prices.¹¹ Emission inventory methodology also changes as processes are improved, and makes direct year to year comparison difficult.

For this periodic inventory, Table 1 provides a comparison between the original 2017 periodic inventory that was approved by EPA, the updated 2017 inventory, and the 2023 periodic inventory to demonstrate a like-to-like comparison between 2017 and 2023. The formation of ozone in the Uinta Basin during wintertime is a unique phenomenon and as such many studies

⁸ Emissions Inventory Guidance, https://www.epa.gov/sites/default/files/2016-12/documents/2016_ei_guidance_for_naaqs.pdf.

⁹ Wildfire Emissions Reporting, 40 CFR 51.15(b)(4), [https://www.ecfr.gov/current/title-40/part-51#p-51.15\(b\)\(4\)](https://www.ecfr.gov/current/title-40/part-51#p-51.15(b)(4)).

¹⁰ Biogenic Emissions Reporting, <https://www.federalregister.gov/d/E8-29737/p-155>.

¹¹ Uinta Basin Periodic Marginal Inventory, 2020.

1 have been completed to better understand the chemistry of ozone formation and to increase the
2 accuracy of the emissions inventory. These updates were made to aid in potential photochemical
3 modeling and to develop effective regulatory strategies to reduce ozone precursor emissions. As
4 a result of these studies several updates to the 2017 oil and gas inventory were made since the
5 original 2017 periodic inventory was submitted.

6
7 The significant updates include adjustments made based upon the Uinta Basin VOC Composition
8 Study¹², Produced Water Disposal Facilities Emission Factors¹³ and the Uinta Basin Engine
9 Study.¹⁴ With these updates there was a significant increase in VOCs and CO and a decrease in
10 NOx from the original 2017 periodic inventory. The increase in VOCs was due to a more
11 accurate VOC emission factor that was applied to the oil and gas tank emissions and two-stroke
12 pump jack engines. The CO increase was due to a larger pumpjack engine emission factor. The
13 decrease in NOx was due to the engine study results.

14
15 When comparing the actual emissions numbers between 2017-updated and 2023, there are no
16 significant changes in the source categories except oil and gas, which is the largest source of
17 emissions in the basin. There are a reduction of VOCs and an increase in NOx and CO. The 33%
18 decrease in VOC emissions are most likely attributed to a decrease in two-stroke pump-jack
19 engines, increased oversight by compliance inspectors, and the fact that the majority of new
20 production in the Uinta Basin is accomplished with horizontal drilling technology that allows for
21 multiple well heads on a single location and requires stringent controls. NOx and CO are emitted
22 during fuel combustion. The small increase in NOx between 2017 and 2023 is likely attributable
23 to the larger engines or generators needed to support the increase in well completions for the
24 multi-well pads in 2023. While NOx increased slightly, CO decreased over the same period,
25 suggesting improved combustion efficiency. From an ozone formation perspective, NOx
26 increased slightly, and VOC decreased significantly, therefore ozone formation should be down.
27 It should be noted that the below periodic emission inventory numbers are for sources under state
28 jurisdiction in the Uinta Basin NAA only. It is challenging to make comparisons in emission
29 trends for the NAA absent the emission inventory numbers from sources under EPA and tribal
30 jurisdictions.

31
32

¹² Uinta Basin VOC Composition Study Impacts on the 2017 Oil and Gas Emissions Inventory <https://lf-public.deq.utah.gov/WebLink/ElectronicFile.aspx?docid=386291&eqdocs=DAQ-2021-004302>.

¹³ Produced Water Disposal Facilities Emission Factors & Their Impact on the 2017 Oil and Gas Emissions Inventory <https://lf-public.deq.utah.gov/WebLink/ElectronicFile.aspx?docid=386288&eqdocs=DAQ-2020-016022>.

¹⁴ Uinta Basin Engine Study and Data Collection Impact on Emission Factors for the Oil and Gas Emission Inventory <https://lf-public.deq.utah.gov/WebLink/ElectronicFile.aspx?docid=648201&eqdocs=DAQ-2026-000439>.

Table 1: Emissions Inventory in Tons Per Day for State Lands within the Uinta Basin NAA:
2017 and 2023

	2017 Original			2017 Updated			2023		
Sectors	NOx	VOC	CO	NOx	VOC	CO	NOx	VOC	CO
Area Source	0.22	1.46	0.40	0.22	1.46	0.40	1.05	4.44	3.44
On-road Mobile	3.24	1.22	11.64	3.24	1.22	11.64	2.75	0.66	8.68
Non-road Mobile	0.10	0.11	1.47	0.10	0.11	1.47	0.20	0.40	2.97
Point Source	1.07	0.73	0.18	1.07	0.73	0.18	1.58	0.66	0.51
Oil & Gas	10.61	37.40	11.14	5.97	79.98	92.29	7.42	53.80	48.68
Total	15.23	41.03	24.91	10.60	83.50	105.98	13.02	59.95	64.28

IX.D.13.b.v Emissions Source Categories

1. Area Source

Area source emissions were calculated by county on a ton per year (TPY) basis using Division area source emissions calculation workbooks which serve as the basis for 2023 National Emissions Inventory data. 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, releases small amounts of a given pollutant. Notable examples include but are not limited to dry cleaners, residential heating and cooling, autobody painting, and commercial and consumer solvent use, and consumer products. Area source emissions are estimated as a group rather than individually using processes (i.e. fuel combustion) and activity data (including population, employment, VMT, fuel usage, animals, crops, oil and gas industry throughput submissions, etc.) to estimate emissions. Refer to

the attached TSD for specifics. The 2023 statewide emissions inventories can be accessed on the Division's inventory page.¹⁵

2. Point Source

Point sources include emissions estimates for larger sources that are located at fixed, stationary locations. Examples include large industrial facilities and electrical power plants. Point source emissions are represented as the actual 2023 emissions from the source-reported numbers in the Division's State and Local Emissions Inventory System (SLEIS) database.¹⁶ SLEIS contains extensive quality assurance/ quality control business rules that guide point sources as they submit their data. Division staff conduct additional quality assurance/quality control annually.

Any source that has the potential to emit greater than or equal to 100 TPY of NO_x or VOC in Utah is included in the point source inventory. There were four major point sources in the Uinta Basin NAA in 2020, with one additional source added in 2023. These major point sources operate under approval orders issued by the Division that establish enforceable operating requirements and include source-specific conditions designed to limit and control emissions. A map of all major point sources in the Uinta Basin with grid cells overlaid on the NAA is provided in Figure 2. Refer to the TSD attached with this document for specifics. The 2023 statewide emissions inventories can be accessed on the Division's inventory page.¹⁷

¹⁵ Statewide Emissions Inventory, <https://deq.utah.gov/air-quality/statewide-emissions-inventories>.

¹⁶ Utah Division of Air Quality SLEIS, <https://sleis.deq.utah.gov/>.

¹⁷ Statewide Emissions Inventory, <https://deq.utah.gov/air-quality/statewide-emissions-inventories>.

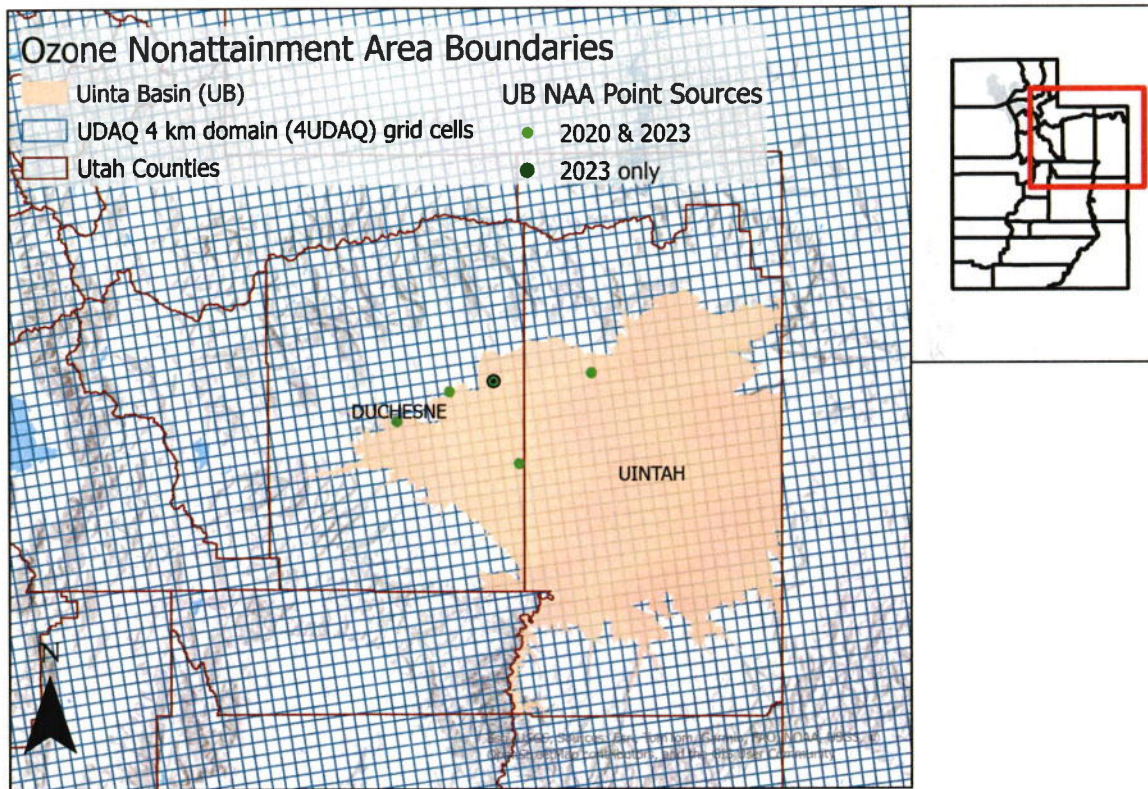


Figure 2: Map of the nonattainment area with an overlaid grid and the locations of point-source facilities

3. On-Road Mobile Source

On-road mobile sources include emissions from motorized vehicles that normally operate on public roadways. This includes passenger cars, motorcycles, minivans, sport-utility vehicles, light-duty trucks, heavy-duty trucks, and buses. On-road emissions were prepared using EPA approved MOVES3 (Motor Vehicle Emission Simulator).¹⁸ This model produces emissions daily estimates for on-road vehicles by providing emissions profiles for starts, exhaust, evaporative, and hot soak conditions.

The 2023 on-road mobile inventory projection was originally prepared as a requirement for the Moderate Ozone SIP¹⁹ before MOVES4 was available for use. The Division used the 2017 base-year inventory to project the 2023 emissions. The work was done in conjunction with the Utah

¹⁸ MOVES, www.epa.gov/moves.

¹⁹ Northern Wasatch Front Moderate Ozone SIP, <https://deq.utah.gov/air-quality/northern-wasatch-front-moderate-ozone-sip-technical-support-documentation>.

Department of Transportation to develop the Uinta Basin on-road mobile inventory. The inventory was developed in TPD for an average winter weekday for the NAA in the Uinta Basin. Refer to the attached TSD with this document for model specific inputs.

4. Non-Road Mobile Source

Non-road mobile sources include planes, trains, yard care equipment, construction equipment, engines used in recreational activities, and portable industrial, commercial, and agricultural engines. The 2023 non-road mobile inventory projection was originally prepared as a requirement for the Moderate Ozone SIP.²⁰ The Division used the 2017 base-year inventory to project the 2023 emissions by using EPA's MOVES4-Nonroad model²¹. Refer to the TSD attached with this document for model specific inputs.

5. Oil and Gas Source

Oil and gas source emissions are tabulated using a combination of the Division's individual inventory workbooks²² submitted by oil and gas sources located on state land that provide throughputs and emissions as well as summations from data sources which include EPA/NOMAD (Nonpoint Methods Advisory group) oil and gas tool outputs. These emissions are reported to EPA via the Emissions Inventory System database. Missing emissions values are gap-filled with EPA data where available. Refer to the Oil and Gas TSD attached with this document for specifics.

²⁰ Northern Wasatch Front Moderate Ozone SIP, <https://deq.utah.gov/air-quality/northern-wasatch-front-moderate-ozone-sip-technical-support-documentation>.

²¹ MOVES, www.epa.gov/moves.

²² Oil and Gas Emissions Inventory Workbook, <https://deq.utah.gov/air-quality/statewide-oil-gas-emissions-inventory>.