



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

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UTAH DEPARTMENT OF
ENVIRONMENTAL QUALITY

OCT 31 2018

DIVISION OF AIR QUALITY

Ref: 8P-AR

Bryce Bird, Director
Utah Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

**RE: EPA Region 8 Comments on Utah's Proposed PM_{2.5} State Implementation Plan and
Technical Support Documents.**

Dear Mr. Bird:

Thank you for the opportunity to provide additional comments on the state of Utah's draft Serious fine particulate matter (PM_{2.5}) State Implementation Plan (SIP) for the Salt Lake City area and the technical support documents (TSDs), which were approved for public comment by the Utah Air Quality Board on September 5, 2018, with comments due October 31, 2018.

Our comments, detailed in the four enclosures to this letter, are preliminary. Based on this preliminary assessment, the draft Serious PM_{2.5} SIP for the Salt Lake City area will benefit from additional development and analysis. We will reach a final conclusion on the PM_{2.5} SIP after the state provides a formal submittal of the PM_{2.5} SIP and after we conduct our own notice and comment rulemaking.

We acknowledge the tremendous efforts of the Utah Division of Air Quality (UDAQ) and all the hard work that went into the draft Serious PM_{2.5} SIP. We also want to provide any assistance needed and look forward to working with you to resolve any outstanding matters. If you have any questions, please contact me at 303-312-6936, or have your staff contact Crystal Ostigaard, of my staff, at 303-312-6602.

Sincerely,

10/31/2018

X Monica Mathews-Morales

Signed by: MONICA MATHEWS-MORALES
Monica Mathews-Morales
Director, Air Program
Office of Partnerships and Regulatory Assistance

Enclosures (4)

- 1) EPA Region 8 Comments Regarding the Utah Petroleum Association's Comments.
- 2) EPA Region 8 Comments for Utah PM_{2.5} SIP Section IX Salt Lake City Part A.31 and Technical Support Documents.
- 3) EPA Region 8 Comments on Mobile Sources and Transportation Conformity.
- 4) EPA Region 8 Comments on Emission Inventories.

ENCLOSURE 1

EPA Region 8 Comments Regarding the Utah Petroleum Association's Comments

- Source impacts from nitrogen oxide (NO_x) precursor emissions should be evaluated using CAMx Particulate Source Apportionment Technology (PSAT), due to the potential for non-linear model response to changes in NO_x precursor emissions. In NO_x saturated photochemical regimes, model simulations of reductions in NO_x emissions from individual sources can predict increases in ammonium nitrate, even though the cumulative effect of NO_x reductions from all sources combined would show reductions in ammonium nitrate. We note that the Utah Petroleum Association (UPA)/Ramboll sensitivity simulations show negative mass contributions of NO_x to PM_{2.5} which is an indicator of the effect of the non-linear response. The CAMx PSAT addresses this concern by tracking the mass contributions from individual sources instead of the sensitivity to an individual source. Other precursors can also be tracked using PSAT, but in this particular case, NO_x as a precursor to PM_{2.5} is most likely to be sensitive to the particular modeling technique.
- The modeled PM_{2.5} impacts are best evaluated and documented for individual PM_{2.5} species and for the sum of all PM_{2.5} species for which the state believes an insignificance demonstration should be provided.
- It appears that in the UPA/Ramboll analysis, precursor contributions to PM_{2.5} were evaluated using absolute model results, not the bias corrected (relative) model results. For a SIP model attainment demonstration, model relative response factors are typically used to correct for model bias. If UDAQ wants to examine absolute modeled precursor impacts, then it is critical to evaluate model bias for individual components of PM_{2.5}. Modeled underpredictions in PM components may lead to an underestimate of absolute modeled precursor impacts. Both absolute and relative model response are important to examine when evaluating the significance thresholds.
- The UPA comment letter relies on a recommended threshold found in the EPA's draft guidance for precursor demonstrations.¹ The draft guidance also states that it does not "assure that the EPA will approve a precursor demonstration[] in all instances where the guidance is followed, as *the guidance may not apply to a particular situation based upon the circumstances of a particular nonattainment area.*"² The UDAQ should consider whether the draft guidance thresholds should be used in the circumstances of the Salt Lake City nonattainment area (NAA), particularly in light of the results of UDAQ's attainment demonstration.

¹ "Draft PM_{2.5} Precursor Demonstration Guidance," Memorandum from Stephen D. Page to Regional Air Division Directors, pages 15-16 (Nov. 16, 2016).

²*Id.* at page 8 (emphasis added).

ENCLOSURE 2

EPA Region 8 Comments for Utah PM_{2.5} SIP Section IX Salt Lake City Part A.31 and Technical Support Documents

- On page 83 of the SIP Narrative, UDAQ states, “[t]he decline in SO₂ emissions is explained by the installation of a wet-gas scrubber at one of the refineries in 2018.” Please provide the name of the refinery where the wet-gas scrubber was installed.
- Reasonable Further Progress (RFP) and Quantitative Milestones. Clean Air Act (CAA) section 172(c), generally applicable to attainment plans, provides: “[s]uch plan provisions shall require reasonable further progress.” RFP is defined in section 171(1) as “such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.”

Under the PM_{2.5} SIP Requirements Rule, the attainment plan must include an “RFP plan that demonstrates that sources in the area will achieve such annual incremental reductions in emissions of direct PM_{2.5} and PM_{2.5} plan precursors as are necessary to ensure attainment of the applicable PM_{2.5} NAAQS as expeditiously as practicable.” See 40 CFR 51.1012(a). The RFP plan must include “[a] schedule describing the implementation of control measures during each year of the applicable attainment plan.” *Id.*

Chapter 5 of the SIP Narrative provides emissions reductions for each of the area source rules. However, neither Chapter 8 of the SIP Narrative nor the TSD describes the schedule for implementation of the area source rules, along with implementation of BACT for major stationary sources, as required and outlined above. We recommend adding a table in Chapter 8 to satisfy this part of the RFP plan requirement.

CAA section 189(c) ties the RFP requirements in section 172(c) to quantitative milestones. Under the SIP Requirements Rule, the plan must contain quantitative milestones “that provide for objective evaluation of reasonable further progress toward timely attainment of the applicable PM_{2.5} NAAQS in the area. At a minimum, each quantitative milestone plan must include a milestone for tracking progress achieved in implementing the SIP control measures, including RACM and RACT, by each milestone date.” See 40 CFR 51.1013(a)(2)(iii). We recommend using the table discussed above for RFP, pertaining to 40 CFR 51.1012(a)(1), to help provide a reporting metric to be used to satisfy the minimum quantitative milestone requirement.

- CAA part D, subpart 1, 172(c)(9) Contingency Measures. The PM_{2.5} SIP Requirements Rule (August 24, 2016, 81 FR 58010, 58093) notes that the contingency measures “should provide for emissions reductions equivalent to one year’s share of reductions needed to demonstrate attainment (*i.e.*, the overall needed reductions divided by the number of years from the base year to the attainment year), or approximately equivalent to a year’s worth of air quality improvement or emissions reductions proportional to the overall amount of air quality improvement or emissions reductions to be achieved by the area’s attainment plan.” The state should estimate the emission reductions that would be achieved by the EPA’s heavy-duty diesel engine emissions reduction grant program and assess whether those reductions would approximately equal the reductions necessary to demonstrate RFP for one year.

- Please provide an explanation for the discrepancy between Table 4.1, page 27 and Table 5.1, page 34 in the SIP Narrative. In Table 5.1, the tons per day (tpd) reductions do not correlate with tpd in Table 4.1 for area sources.

- Outdoor Wood Boilers. The following comments refer to the area source BACM document at <https://documents.deq.utah.gov/air-quality/pm25-serious-sip/DAQ-2018-013376.pdf>:

- On page 3, the document discusses R307-208 for Outdoor Wood Boilers. The rule bans the sale of new boilers within the nonattainment area (NAA). The UDAQ summary presents reviews of rules in Maine and Washington state, and concludes that R307-208 is more stringent than these rules. It is not clear how this conclusion was reached. Please provide additional information and discussion to support this conclusion.
- The summary also states that “UDAQ estimates that there are less than 50 existing outdoor wood burning units in the nonattainment area. This estimate is based on the number of people who attended the two public hearings held during the R307-208 public comment period. There are no opportunities beyond the current ban that would lead to further emission reductions.” Organic carbon is a fairly significant portion of PM_{2.5} on high pollution days, and wood burning is a key contributor to this fraction. The BACM analysis should include an evaluation of potential emission reduction measures for existing boilers. EPA encourages UDAQ to evaluate whether a more detailed survey of existing outdoor wood boilers may be available. Several states have implemented measures (such as changeout incentive programs) to reduce emissions from existing outdoor wood boilers.

ENCLOSURE 3

EPA Region 8 Comments on Mobile Sources and Transportation Conformity

- The Derivation of Motor Vehicle Emissions Budgets (MVEBs) is not provided in UDAQ's submittal and should be included pursuant to 40 CFR 93.118(iii) and (v).

Chapter 7 briefly explains the purpose of transportation conformity and its requirements. The Chapter also provides that UDAQ and the EPA agreed that PM_{2.5} re-entrained road dust would not be included in the MVEBs and a reference is provided to the appropriate section of the TSD.

The below MVEBs are then presented in Table 7.1 (see below, SIP page 78) for a winter weekday:

Table 7.1. Emissions Budgets for Transportation Conformity Purposes (EPA MOVES2014a).

	Direct PM_{2.5} (tpww)	NO_x (tpww)	VOC (tpww)
2017	2.68	59.92	32.67
2019	2.27	50.07	28.85
2020	2.11	45.84	26.88

UDAQ does not explain how the Chapter 7 / Table 7.1 MVEBs were developed. Based on our preliminary assessment, and with respect to 40 CFR 93.118(iii) and (v), we are unable to determine how the MVEBs in Table 7.1 were derived and from where, as well as the accuracy of the MVEBs. (We note that Chapter 7 explains how the MVEBs are different than the mobile source emissions provided in Table 4.1 of the SIP Narrative as the MVEBs are from a winter weekday emission inventory). Additional information and references to the TSD, as to how the MVEBs were derived for the SIP, should be provided.

EPA reviewed the TSD to identify specific information for the MVEBs. We identified the table below in the TSD section entitled "iv. Nonattainment Modeling Procedure for MVEB" (page 3.e.ii-16):

vi. PM2.5 SIP On-road Mobile Sources Inventory 2016-2020 Winter Weekday Emissions (Tons per Winter Weekday)***

Year		Modeling Area	NH3	NOx	PM10**	PM25***	SO2	VOC	VOC Refueling	PM10 Dust****	PM25 Dust****	VMT
2016	Base Year	PM2.5 NAA Counties +	1.56	67.37	5.73	5.73	0.49	34.57	1.83	4,498	1,124	47,693,290
2016	Base Year	Modeling Domain Counties ↔	1.38	102.17	6.78	6.78	0.44	30.81	1.68	5,510	1,377	
2017	Milestone Year	PM2.5 NAA Counties +	1.58	64.22	5.86	5.86	0.52	33.56	1.77	4,750	1,187	50,719,736
2017	Milestone Year	Modeling Domain Counties ↔	1.28	95.82	6.6	6.6	0.44	27.52	1.52	5,604	1,401	
2019	Attainment Year	PM2.5 NAA Counties +	1.52	53.78	5.5	5.5	0.52	29.63	1.53	4,956	1,239	52,970,766
2019	Attainment Year	Modeling Domain Counties ↔	1.25	81.76	6.04	6.04	0.45	23.4	1.36	5,900	1,475	
2020	Milestone Year	PM2.5 NAA Counties +	1.5	49.3	5.35	5.35	0.51	27.59	1.43	5,029	1,257	53,740,393
2020	Milestone Year	Modeling Domain Counties ↔	1.24	75.57	5.82	5.82	0.45	21.7	1.3	6,016	1,504	

* Tier 2 Fuel 30 ppm Sulfur

** PM10 Exhaust + Brake and Tire Wear

*** PM2.5 Exhaust (Elemental Carbon, Organic Carbon, Sulfate Particulate) + Brake and Tire Wear

**** PM10/PM2.5 Dust Emissions are in Tons Per Year

+ Box Elder, Davis, Salt Lake, Tooele, Weber Counties within the PM2.5 Nonattainment Area

↔ Beaver, Cache, Carbon, Daguerre, Duchesne, Emery, Garfield, Grand, Iron, Juab, Kane, Millard, Morgan, Piute, Rich, San Juan, Sanpete, Sevier, Summit, Uintah, Utah, Wasatch, Washington, Wayne Counties

If TSD Table “vi” includes the derivation of the MVEBs in Table 7.1, then the discrepancy in the PM2.5, NOx and volatile organic compounds (VOC) NAA mobile source emission figures must be corrected. Please see the EPA table below, in tons per winter weekday (tpww), for the appropriate years and mobile source emissions for the NAA county portions from Table 7.1 from the SIP Narrative and Table “vi” from the TSD; both are presented above. Additionally, if Table “vi” is the correct table, a reference in Chapter 7 of the SIP Narrative should be included to better correlate the supporting document to the narrative. If we are looking at the incorrect information in the TSD, then please provide the correct information and reference the correct TSD table in Chapter 7 of the SIP Narrative.

Year	Table 7.1 in SIP Narrative	Table “vi” in TSD	Table 7.1 in SIP Narrative	Table “vi” in TSD	Table 7.1 in SIP Narrative	Table “vi” in TSD
	PM2.5 tpww	PM2.5 tpww	NOx tpww	NOx tpww	VOC tpww	VOC tpww
2017	2.68	5.86	59.92	64.22	32.67	33.56
2019	2.27	5.5	50.07	53.78	28.85	29.63
2020	2.11	5.35	45.84	49.3	26.88	27.59

- The derivation/development of the 5% increase in Vehicle Miles Traveled (VMT).

This comment applies to the VMT used in the MOVES mobile sources modeling for the 2019 attainment year and the associated MVEBs.

Information supporting the derivation and development of the VMTs is not discussed in the SIP Narrative nor included as a TSD reference in Chapter 7. Such information must be included in UDAQ’s submittal to satisfy the requirements of 40 CFR 93.124(a) and 40 CFR 93.118(e)(4).

Specifically, information regarding the increase in VMT to address potential changes in future VMT that the Wasatch Front Regional Council (WFRC) may be exposed to, must be provided so that the Chapter 7 MVEBs are "... clearly identified and precisely quantified." (40 CFR 93.118(e)(4)(iii))

We appreciate that UDAQ provided a TSD reference (page 3.e.ii-10) regarding the 5% increase in VMT, on October 11, 2018 as noted below:

The annual growth rate was then applied to the 2015 HPMS data for the corresponding county to project VMT out to the year 2026. These AADT projections were then converted to winter season weekdays, Saturdays, and Sundays. In addition, based on the 5.9% growth rate anomaly in HPMS data identified from 2014 to 2015, the projected VMT values for each county and each year was increased by 5% to allow for unanticipated fluctuations in future VMT estimates.

Based on the above information, and to address the relevant portions of 40 CFR 93.118(e)(4) and 40 CFR 93.124(a), we recommend UDAQ include a brief statement(s) in Chapter 7 regarding the 5% VMT applied growth factor along with a reference to the above appropriate section in the TSD.

- Unreferenced MVEB Trading Ratios for the Salt Lake Serious PM_{2.5} SIP [40 CFR 93.124(b)].

Chapter 7 (SIP Narrative page 79) notes that MVEB trading ratios (ref. 40 CFR 93.124(b)) were developed for the Salt Lake PM_{2.5} NAA for use by the WFRC. The MVEB trading ratios are discussed in section 7.6 of Chapter 7 and the PM_{2.5}/NO_x/VOC ratios are provided. Chapter 7, however, does not provide information to support the development of the trading ratios, nor identify the MVEB trading ratio information in the TSD.

The EPA reviewed Tables 1 and 2 in the section of the TSD entitled "**Trading Ratios: Salt Lake Serious PM_{2.5} SIP.**" The EPA requests that UDAQ verify that this is the correct TSD information. If this information is correct, then the above TSD information should be further clarified to provide the derivation of the MVEB trading ratios that are identified in Chapter 7 of the SIP Narrative. Also, a reference to this specific section of the TSD should be included in section 7.6 of Chapter 7 of the SIP Narrative.

ENCLOSURE 4

EPA Region 8 Comments on Emission Inventories

- Performance of the air quality models with respect to elemental carbon.

Page 41 of the SIP Narrative provides: “[s]imulated fine crustal matter (CM) and elemental carbon (EC) concentrations were a bit higher than observed. The overestimation in these two primary aerosols were the likely result of a high bias in MOVES 2014a (EC) and the re-suspended road dust calculation tool provided by the EPA (CM).” On page 46, UDAQ concludes, “[t]he model, on the other hand, overestimated EC which can be related to an overestimation of EC in Utah’s mobile emissions modeling using MOVES 2014a.”

While the EPA agrees that re-entrained road dust estimates are possibly biased high when using AP-42 for Utah conditions, there is no demonstrated bias in MOVES for elemental carbon. EPA requests this language be removed.

