State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-070-15

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Bill Reiss, Environmental Engineer

DATE: November 20, 2015

SUBJECT: FINAL ADOPTION: Repeal of Existing SIP Subsection IX.A.10 and Re-enact with SIP Subsection IX.A.11: PM_{10} Maintenance Provisions for Salt Lake County, as amended.

Introduction:

This item concerns a proposed State Implementation Plan (SIP) revision to address Utah's three nonattainment areas for PM_{10}, Salt Lake County, Utah County, and Ogden City.

The revision is structured as a maintenance plan. It demonstrates that these areas will continue to attain the PM_{10} standard through the year 2030 and allows Utah to request that EPA change the area designations back to attainment.

The existing SIP for PM_{10} affecting Salt Lake and Utah Counties was adopted in 1991. It resulted in attainment of the 1987 National Ambient Air Quality Standards (NAAQS) in both areas by 1996. Since that time, $PM_{2.5}$ has supplanted PM_{10} as the indicator of fine particulate matter.

Essentially, this SIP revision would close the book on PM_{10} and allow Utah to focus on meeting the $PM_{2.5}$ standard. All three of the affected areas are currently designated nonattainment for $PM_{2.5}$.

Scope:

There are two parts to the SIP revision. (This) Section IX. Part A is the SIP document itself. It addresses each of the criteria necessary to request redesignation. It includes the actual maintenance plan, which includes the quantitative demonstration of continued attainment.

Some of the items addressed in Part A include:

- monitored attainment of the PM_{10} NAAQS,
- establishment of motor vehicle emission budgets (MVEB) for purposes of transportation conformity,
- consideration of emission reduction credits, and
- contingency measures.

The second piece is SIP Section IX, Part H. It includes the emission limits for certain specific stationary sources. Inclusion of these limits within the SIP makes them federally enforceable.

The list of stationary sources to be included in Part H was updated as part of this proposal. It includes sources located in any of the nonattainment areas with actual emissions from 2011 that were at least 100 tons per year (tpy) for PM_{10}, SO_2, or NOx. It also includes sources with the potential to emit at least 100 tpy for any of these pollutants.

Using these criteria means that some sources will not be retained in the revised Part H. Other new sources that did not exist when the original SIP was written will be added.

The Board proposed this comprehensive SIP revision for public comment at the September 2, 2015 Utah Air Quality Board meeting.

<u>Re-Numbering and SIP Organization:</u>

You will notice that the proposed Subsection IX.A.10, 11, and 12 have been renumbered to IX.A.11, 12, and 13.

The way the SIP proposal was structured created an unintended problem for Utah County. It would have effectively repealed the existing Mobile Source Emissions Budgets (MVEB) for PM_{10} and NOx, leaving Utah County without any defined budgets until the year 2030, the last year of the new maintenance plan.

The problem arises because of differences between the federally approved SIP and the version of the SIP that resides within State law. To explain:

The original PM_{10} nonattainment SIPs for Salt Lake and Utah Counties created Subsections IX.A. 1 – 9 of the Utah SIP. EPA approved Subsections IX.A. 1 – 9 on July 8, 1994.

Utah County's portion of the SIP was revised in 2002, and a Subsection IX.A.10 was added at that time to address transportation conformity within Utah County. These revisions were also approved by EPA on December 23, 2002.

In 2005, Utah prepared a revision that also was structured as a maintenance plan. Maintenance provisions for Salt Lake County, Utah County, and Ogden City were prepared and located at SIP Subsections IX.A.10, 11, and 12 (respectively.) The MVEB for Utah County was addressed in Subsection IX.A.11, and the pre-existing Subsection IX.A.10 was overwritten.

Subsequently, however, EPA proposed to disapprove the 2005 maintenance plan, and Utah withdrew it from consideration. As a federal matter, Utah County's existing MVEB still resides in Subsection IX.A.10. There is no IX.A.11, or 12.

In September, we recommended repealing the existing Subsections IX.A.10, 11, & 12, (the State-approved, Maintenance Provisions for Salt Lake County, Utah County and Ogden City respectively), and re-enacting with new maintenance provisions for the same three areas at the same respective SIP locations.

Assuming the Board was to approve these revisions, they would then be submitted to EPA for federal approval. At that point, Utah would essentially be asking EPA to over-write existing Subsection IX.A.10 (Utah County's MVEB) with the new maintenance provisions for Salt Lake County.

To prevent this, each of the three maintenance plans will be re-positioned. Rather than using Subsections IX.A.10, 11, and 12, the new maintenance provisions for the three areas should appear in Subsections IX.A.11, 12, and 13. EPA can then approve them into the federal SIP while leaving Subsection IX.A.10 intact.

For this reason, you will notice, in every case, the appropriate re-numbering of the plans that were proposed in September.

Comments Received and Other Amendments:

A 30-day public comment period was held. A summary of each of the comments that was received, along with a response from UDAQ, is attached.

Any recommended revision to SIP Subsection IX.A.11 has been identified in the amended attachment using strikeout and underline. Where these amendments are in response to the comments received, they are highlighted in red color coding.

Some of the comments also directed UDAQ to make revisions to the technical support documentation (TSD.) Since this technical material is not explicitly part of the rulemaking action, these revisions have not been prepared for the December 2015 Air Quality Board meeting. They will, however, be completed in time for official submittal to the EPA.

Finally, the reader should still note that blue text is specific to the Salt Lake County nonattainment area, green text is specific to Utah County, and purple text is specific to Ogden City.

Staff Recommendation: Staff recommends that the Board repeal existing (State) SIP Subsection IX.A.10, and re-enact with SIP Subsection IX.A.11: PM_{10} Maintenance Provisions for Salt Lake County, as amended.

UTAH

PM_{10} Maintenance Provisions for Salt Lake County

Section IX.A.11[~~10~~]

Adopted by the Air Quality Board
December 2, 2015

Table of Contents

IX.A.11[~~10~~].a Introduction 1
(1) The PM_{10} SIP 2
(2) Supplemental History of SIP Approval - PM_{10} 2
(3) Attainment of the PM_{10} Standard and Reasonable Further Progress 2

IX.A. 11[~~10~~].b Pre-requisites to Area Redesignation 3
(1) The Area Has Attained the PM_{10} NAAQS 4
(a) Ambient Air Quality Data (Monitoring) 4
(b) PM_{10} Monitoring Network 6
(c) Modeling Element 9
(d) EPA Acknowledgement 10
(2) Fully Approved Attainment Plan for PM_{10} 10
(3) Improvements in Air Quality Due to Permanent and Enforceable Reductions in Emissions 10
(a) Improvement in Air Quality 10
(b) Reduction in Emissions 19
(4) State has Met Requirements of Section 110 and Part D 20
(5) Maintenance Plan for PM_{10} Areas 21

IX.A.11[~~10~~].c Maintenance Plan 21
(1) Demonstration of Maintenance - Modeling Analysis 22
(a) Introduction 23
(b) Photochemical Modeling 23
(c) Domain/Grid Resolution 23
(d) Episode Selection 24
(e) Meteorological Data 27
(f) Photochemical Model Performance Evaluation 27
(g) Summary of Model Performance 38
(h) Modeled Attainment Test 38
(2) Attainment Inventory 40
(3) Emissions Limitations 44
(4) Emission Reduction Credits 44
(5) Additional Controls for Future Years 45
(6) Mobile Source Budget for Purposes of Conformity 45
(a) Salt Lake County Mobile Source PM10 Emissions Budgets 45
(i) Direct PM10 Emissions Budget 45
(ii) NO_X Emissions Budget 46
(b) Net Effect to Maintenance Demonstration 47
(i) Inventory: The emissions inventory was adjusted as shown below: ... 47
(ii) Modeling: 47
(7) Nonattainment Requirements Applicable Pending Plan Approval 48
(8) Revise in Eight Years 48
(9) Verification of Continued Maintenance 48
(10) Contingency Measures 49
(a) Tracking 49
(b) Triggering 49

List of Tables

IX.A.11[~~10~~].1. Prerequisites to Redesignation 4
IX.A.11[~~10~~].2. PM10 Compliance in Salt Lake County, 2002-2004 6
IX.A.11[~~10~~].3. Salt Lake County Expected Exceedances per Year, 1985-2004 11
IX.A.11[~~10~~].4. Requirements of a Maintenance Plan 21
IX.A.11[~~10~~].5. Baseline Design Values 38
IX.A.11[~~10~~].6. Future Design Values 39
IX.A.11[~~10~~].7. Baseline Emissions throughout Modeling Domain 41
IX.A.11[~~10~~].8. Emissions Projections – Salt Lake County 41
IX.A.11[~~10~~].9. Modeling of Attainment in 2030, Including the Portion of the Safety Margin Allocated to Motor Vehicles 46

List of Figures

IX.A.11[~~10~~].1. Modeling Domain 7
IX.A.11[~~10~~].2. 3 Highest 24-hr Concentrations, Cottonwood 12
IX.A.11[~~10~~].3. 3 Highest 24-hr Concentrations, AMC 13
IX.A.11[~~10~~].4. 3 Highest 24-hr Concentrations, North Salt Lake 13
IX.A.11[~~10~~].5. 3 Highest 24-hr Concentrations, Magna 14
IX.A.11[~~10~~].6. 3 Highest 24-hr Concentrations, Hawthorne 14
IX.A.11[~~10~~].7. Annual Arithmetic Mean, Cottonwood 15
IX.A.11[~~10~~].8 Annual Arithmetic Mean, AMC 16
IX.A.11[~~10~~].9. Annual Arithmetic Mean, North Salt Lake 16
IX.A.11[~~10~~].10. Annual Arithmetic Mean, Magna 17
IX.A.11[~~10~~].11. Annual Arithmetic Mean, Hawthorne 17
IX.A.11[~~10~~].12. Northern Utah Photochemical Modeling Domain 23
IX.A.11[~~10~~].13. Hourly PM2.5 Concentrations for January 11-20, 2007 24
IX.A.11[~~10~~].14. Hourly PM2.5 Concentrations for February 14-19 2008 25
IX.A.11[~~10~~].15. Hourly PM2.5 Concentrations for Dec – Jan, 2009-2010 25
IX.A.11[~~10~~].16. UDAQ Monitoring Network 27
IX.A.11[~~10~~].17. Spatial Plot of CMAQ Modeled 24-hr PM2.5 for 2010 Jan. 03 28
IX.A.11[~~10~~].18. 24 hr PM2.5 Time Series - Hawthorne 29
IX.A.11[~~10~~].19. 24 hr PM2.5 Time Series - Ogden 29
IX.A.11[~~10~~].20. 24 hr PM2.5 Time Series - Lindon 30
IX.A.11[~~10~~].21. 24 hr PM2.5 Time Series - Logan 30
IX.A.11[~~10~~].22. Salt Lake Valley; End of Episode 31
IX.A.11[~~10~~].23. Composition of Observed & Simulated PM2.5 - Hawthorne 32
IX.A.11[~~10~~].24. Composition of Observed & Simulated PM2.5 - Ogden 32
IX.A.11[~~10~~].25. composition of Observed & Simulated PM2.5 - Lindon 32
IX.A.11[~~10~~].26. Composition of Observed & Simulated PM2.5 - Logan 33
IX.A.11[~~10~~].27. Time Series of Total PM10 – Hawthorne 34
IX.A.11[~~10~~].28. Time Series of Total PM10 - Lindon 34
IX.A.11[~~10~~].29. Time Series of Total PM10 - Ogden 35
IX.A.11[~~10~~].30. Time Series of Total PM10 – North Provo 35
IX.A.11[~~10~~].31. Time Series of Total PM10 - Magna 36
IX.A.11[~~10~~].32. Time Series of Total PM10 - Logan 36

Section IX.A.11[~~10~~]
PM_{10} Maintenance Provisions for Salt Lake County

IX.A.11[~~10~~].a Introduction

The State of Utah is requesting that the U.S. Environmental Protection Agency (EPA) redesignate the Salt Lake County nonattainment area to attainment status for the 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS).

The foregoing Subsections 1-9 of Part IX.A of the Utah State Implementation Plans (SIP) were written in 1991 to address violations of the NAAQS for PM_{10} in both Utah County and Salt Lake County. These areas were each classified as Initial Moderate PM_{10} Nonattainment Areas, and as such required "nonattainment SIPs" to bring them into compliance with the NAAQS by a statutory attainment date. The control measures adopted as part of those plans have proven successful in that regard, and at the time of this writing (2015) each of these areas continues to show compliance with the federal health standards for PM_{10}.

This Subsection 11[~~10~~] of Part IX.A of the Utah SIP represents the second chapter of the PM_{10} story for Salt Lake County, and demonstrates that the area has achieved compliance with the PM_{10} NAAQS and will continue to maintain that standard through the year 2030. As such, it is written in accordance with Section 175A (42 U.S.C. 7505a) of the federal Clean Air Act (the Act), and should serve to satisfy the requirement of Section 107(d)(3)(E)(iv) of the Act.

This section is hereafter referred to as the "Maintenance Plan" or "the Plan," and contains the maintenance provisions of the PM_{10} SIP for Salt Lake County.

While the Maintenance Plan could be written to replace all that had come before, it is presented herein as an addendum to Subsections 1-9 in the interest of providing the reader with some sense of historical perspective. Subsections 1-9 are retained for historical purposes, as is the federally approved Subsection 10 (transportation conformity for Utah County). [~~while existing subsection 10 (transportation conformity for Utah County) is herein replaced. A more current evaluation of transportation conformity for Utah County is presented in Section IX.A.11.~~]

In a similar way, any references to the Technical Support Document (TSD) in this section means actually Supplement IV-15 to the Technical Support Document for the PM_{10} SIP.

Background

The Act requires areas failing to meet the federal ambient PM_{10} standard to develop SIP revisions with sufficient control requirements to expeditiously attain and maintain the standard. On July 1, 1987, EPA promulgated a new NAAQS for particulate matter with a diameter of 10 microns or less (PM_{10}), and listed Salt Lake County as a Group I area for PM_{10}. This designation was based on historical data for the previous standard, total suspended particulate, and indicated there was a 95% probability the area would exceed the new PM_{10} standard. Group I area SIPs were due in April 1988, but Utah was unable to complete the SIP by that date. In 1989, several citizens groups sued EPA (*Preservation Counsel v. Reilly*, civil Action (No. 89-C262-G (D, Utah)) for

failure to implement a Federal Implementation Plan (FIP) under provisions of §110(c)(1) of the Clean Air Act (42 U.S.C. 7410(c)(1)).

A settlement agreement in January 1990 called for Utah to submit a SIP and for EPA to approve it by December 31, 1991. In August 1991, the parties voluntarily agreed to dismiss the lawsuit and the complaint and vacate the settlement agreement.

The Clean Air Act Amendments of November 1990 redesignated Group I areas as initial moderate nonattainment areas and required that SIPs be submitted by November 15, 1991. These moderate area SIPs were to require installation of Reasonably Available Control Measures (RACM) on industrial sources by December 10, 1993 and a demonstration the NAAQS would be attained no later than December 31, 1994.

(1) The PM_{10} SIP

On November 14, 1991, Utah submitted a SIP for Salt Lake and Utah Counties that demonstrated attainment of the PM_{10} standards in Salt Lake and Utah Counties for 10 years, 1993 through 2003. EPA published approval of the SIP on July 8, 1994 (59 FR 35036).

(2) Supplemental History of SIP Approval - PM_{10}

Utah's SIP included two provisions that promised additional action by the state: 1) a road salting and sanding program, and 2) a diesel vehicle emissions inspection and maintenance program.

On February 3, 1995, Utah submitted amendments to the SIP to specify the details of the road salting and sanding program promised as a control measure. EPA published approval of the road salting and sanding provisions on December 6, 1999 (64 FR 68031).

On February 6, 1996, Utah submitted to EPA a new SIP Section XXI, a diesel vehicle inspection and maintenance program.

Also, in April 1992, EPA published the "General Preamble," describing EPA's views on reviewing state SIP submittals. One of the requirements was that moderate nonattainment area states must submit contingency plans by November 15, 1993.

On July 31, 1994, Utah submitted an amendment to the PM_{10} SIP that required lowering the threshold for calling no-burn days as a contingency measure for Salt Lake, Davis and Utah Counties.

On July 18, 1997, EPA promulgated a new form of the PM_{10} standard. As a way to simplify EPA's process of revoking the old PM_{10} standard, EPA requested on April 6, 1998, that Utah withdraw its submittals of contingency measures. Utah submitted a letter requesting withdrawal on November 9, 1998, and EPA returned the submittals on January 29, 1999.

(3) Attainment of the PM_{10} Standard and Reasonable Further Progress

By statute, EPA was to determine whether Initial Moderate Areas were attaining the standard as of December 31, 1994. This determination requires an examination of the three previous calendar years of monitoring data (in this case 1992, 1993 and 1994). The 24-hour NAAQS allows no more than three expected exceedances of the 24-hour standard at any monitor in this 3-year period. Since the statutory deadline for the implementation of RACM was not until the end of 1993, it was reasonable to presume that the area might not be able to show attainment with a 3-

year data set until the end of 1996 even if the control measures were having the desired effect. Presumably for this reason, Section188(d) of the Act, (42 U.S.C. 7513(d)) allows a state to request up to two 1-year extensions of the attainment date. In doing so, the state must show that it has met all requirements of the SIP, that no more than one exceedance of the 24-hour PM_{10} NAAQS has been observed in the year prior to the request, and that the annual mean concentration for such year is less than or equal to the annual standard.

EPA's Office of Air Quality Planning and Standards issued a guidance memorandum concerning extension requests (November 14, 1994), clarifying that the authority delegated to the Administrator for extending moderate area attainment dates is discretionary. In exercising this discretionary authority, it says, EPA will examine the air quality planning progress made in the area, and in addition to the two criteria specified in Section 188(d), EPA will be disinclined to grant an attainment date extension unless a state has, in substantial part, addressed its moderate PM_{10} planning obligations for the area. The EPA will expect the State to have adopted and substantially implemented control measures submitted to address the requirement for implementing RACM/RACT in the moderate nonattainment area, as this was the central control requirement applicable to such areas. Furthermore it said, "EPA believes this request is appropriate, as it provides a reliable indication that any improvement in air quality evidenced by a low number of exceedances reflects the application of permanent steps to improve the air quality in the region, rather than temporary economic or meteorological changes." As part of this showing, EPA expected the State to demonstrate that the PM_{10} nonattainment area has made emission reductions amounting to reasonable further progress (RFP) toward attainment of the NAAQS, as defined in Section 171(1) of the Act.

On May 11, 1995, Utah requested one-year extensions of the attainment date for both Salt Lake and Utah Counties. On October 18, 1995, EPA sent a letter granting the requests for extensions, and on January 25, 1996, sent a letter indicating that EPA would publish a rulemaking action on the extension requests.

Along with the extension requests in 1995, Utah submitted a milestone report as required under Section 172(1) of the Act, (42 U.S.C. 7501(1)) to assess progress toward attainment. This milestone report addressed two issues: 1) that all control measures in the approved plan had been implemented, and 2) that reasonable further progress (RFP) had been made toward attainment of the standard in terms of reducing emissions. As defined in Section 171(1), RFP means such annual incremental reductions in emissions of the relevant air pollutant as are required to ensure attainment of the applicable NAAQS by the applicable date.

On June 18, 2001, EPA published notice in the Federal Register (66 FR 32752) that Utah's extension requests were granted, that Salt Lake County attained the PM_{10} standard by December 31, 1995, and that Utah County attained the standard by December 31, 1996. The notice stated that these areas remain moderate nonattainment areas and are not subject to the additional requirements of serious nonattainment areas.

IX.A.11[~~10~~].b Pre-requisites to Area Redesignation

Section107(d)(3)(E) of the Act outlines five requirements that must be satisfied in order that a state may petition the Administrator to redesignate a nonattainment area back to attainment. These requirements are summarized as follows: 1) the Administrator determines that the area has attained the applicable NAAQS, 2) the Administrator has fully approved the applicable

implementation plan for the area under §110(k) of the Act, 3) the Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan … and other permanent and enforceable reductions, 4) the Administrator has fully approved a maintenance plan for the area as meeting the requirements of §175A of the Act, and 5) the State containing such area has met all requirements applicable to the area under §110 and Part D of the Act.

Each of these requirements will be addressed below. Certainly, the central element from this list is the maintenance plan found at Subsection IX.A.11[~~10~~].c below. Section 175A of the Act contains the necessary requirements of a maintenance plan, and EPA policy based on the Act requires additional elements in order that such plan be federally approvable. Table IX.A.11[~~10~~]. 1 identifies the prerequisites that must be fulfilled before a nonattainment area may be redesignated to attainment under Section 107(d)(3)(E) of the Act.

Table IX.A. 11[~~10~~]. 1 Prerequisites to Redesignation in the federal Clean Air Act (CAA)

Category	**Requirement**	**Reference**	**Addressed in Section**
Attainment of Standard	Three consecutive years of PM_{10} monitoring data must show that violations of the standard are no longer occurring.	CAA §107(d)(3)(E)(i)	IX.A. 11[~~10~~].b(1)
Approved State Implementation Plan	The SIP for the area must be fully approved.	CAA §107(d)(3)(E)(ii)	IX.A. 11[~~10~~].b(2)
Permanent and Enforceable Emissions Reductions	The State must be able to reasonably attribute the improvement in air quality to emission reductions that are permanent and enforceable	CAA §107(d)(3)(E)(iii), Calcagni memo (Sect 3, para 2)	IX.A. 11[~~10~~].b(3)
Section 110 and Part D requirements	The State must verify that the area has met all requirements applicable to the area under section 110 and Part D.	CAA: §107(d)(3)(E)(v), §110(a)(2), Sec 171	IX.A. 11[~~10~~].b(4)
Maintenance Plan	The Administrator has fully approved the Maintenance Plan for the area as meeting the requirements of CAA §175A	CAA: §107(d)(3)(E)(iv)	IX.A. 11[~~10~~].b(5) and IX.A.11[~~10~~].c

(1) The Area Has Attained the PM_{10} NAAQS

CAA 107(d)(3)(E)(i) - *The Administrator determines that the area has attained the national ambient air quality standard.* To satisfy this requirement, the State must show that the area is attaining the applicable NAAQS. According to EPA's guidance concerning area redesignations (Procedures for Processing Requests to Redesignate Areas to Attainment, John Calcagni to Regional Air Directors, September 4, 1992 [or, Calcagni]), there are generally two components involved in making this demonstration. The first relies upon ambient air quality data which should be representative of the area of highest concentration and should be collected and quality assured in accordance with 40 CFR 58. The second component relies upon supplemental air quality modeling. Each will be discussed in turn.

(a) Ambient Air Quality Data (Monitoring)

In 1987 EPA promulgated the National Ambient Air Quality Standard (NAAQS) for PM_{10}. The NAAQS for PM_{10} is listed in 40 CFR 50.6 along with the criteria for attaining the standard. The 24-hour NAAQS is 150 micrograms per cubic meter (ug/m^3) for a 24-hour period, measured from midnight to midnight. The 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 ug/m^3, as determined in accordance with Appendix K to that part, is equal to or less than one. In other words, each monitoring site is allowed up to three expected exceedances of the 24-hour standard within a period of three calendar years. More than three expected exceedances in that three-year period is a violation of the NAAQS.

There also had been an annual standard of 50 ug/m^3. The annual standard was attained if the three-year average of individual annual averages was less than 50 ug/m^3. None of Utah's areas was ever designated nonattainment for the annual NAAQS [~~Utah never violated the annual standard at any of its monitoring stations~~], and the annual average was not retained as a PM_{10} standard when the NAAQS was revised in 2006. Nevertheless, an annual average still provides a useful metric to evaluate long-term trends in PM_{10} concentrations here in Utah where short-term meteorology has such an influence on high 24-hour concentrations during the winter season.

40 CFR 58 Appendix K, Interpretation of the National Ambient Air Quality Standards for Particulate Matter, acknowledges the uncertainty inherent in measuring ambient PM_{10} concentrations by specifying that an *observed exceedance* of the (150 ug/m^3) 24-hour health standard means a daily value that is above the level of the 24-hour standard after rounding to the nearest 10 ug/m^3 (e.g., values ending in 5 or greater are to be rounded up).

The term *expected exceedance* accounts for the possibility of missing data. Missing data can occur when a monitor is being repaired, calibrated, or is malfunctioning, leaving a time gap in the monitored readings. [~~EPA discounts these gaps if the highest recorded PM_{10} reading at the affected monitor on the day before or after the gap is not more than 75 percent of the standard, and no measured exceedance has occurred during the year.~~]

Expected exceedances are calculated from the (AQS) [~~Aerometric Information and Retrieval System (AIRS)~~] data base according to procedures contained in 40 CFR Part 50, Appendix K. The State relied on the expected exceedance values contained in the (AQS) [~~AIRS~~] Quick Look Report (AMP 450) to determine if a violation of the standard had occurred.

Data may also be flagged when circumstances indicate that it would represent an event [~~outlier~~] in the data set and not be indicative of the entire airshed or the efforts to reasonably mitigate air pollution within. 40 CFR 50.14 "Treatment of air quality monitoring data influenced by exceptional events" anticipates this, and says that a State may request EPA to exclude data showing exceedances or violations… that are directly due to an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event, from use in determinations. [~~Appendix N to Part 50 – "Interpretation of the National Ambient Air Quality Standards for Particulate Matter" anticipates this and states: "Data resulting from uncontrollable or natural events, for example structural fires or high winds, may require special consideration. In some cases, it may be appropriate to exclude these data because they could result in inappropriate values to compare with the levels of the PM standards."~~] The protocol for data handling dictates that flagging is initiated by the state or local agency, and then the EPA either concurs or indicates that it has not concurred. Some discussion will be provided to help the reader understand the occasional occurrence of wind-blown dust events that affect these nonattainment areas, and how the resulting data should be interpreted with respect to the control measures enacted to address the 24-hour NAAQS.

Using the criteria from 40 CFR 58 Appendix K, data was compiled for all PM_{10} monitors within the Salt Lake County nonattainment area that recorded a four-year data set comprising the years 2011 – 2014. For each monitor, the number of expected exceedances is reported for each year, and then the average number of expected exceedances is reported for the overlapping three-year periods. If this average number of expected exceedances is less than or equal to 1.0, then that particular monitor is said to be in compliance with the 24-hour standard for PM_{10}. In order for an area to be in compliance with the NAAQS, every monitor within that area must be in compliance.

As illustrated in the table below, the results of this exercise show that the Salt Lake County PM_{10} nonattainment area is presently attaining the NAAQS.

Table IX.A.11[~~10~~]. 2 PM_{10} Compliance in Salt Lake County, 2011-2014

Hawthorne 49-035-3006	24-hr Standard	3-Year Average
	No. Expected Exceedances	No. Expected Exceedances
2011	0.0[~~/ 0.0*~~]	
2012	0.0[~~/ 0.0*~~]	
2013	0.0[~~/ 0.0*~~]	0.0[~~/ 0.0*~~]
2014	0.0[~~/ 0.0*~~]	0.0[~~/ 0.0*~~]

North Salt Lake 49-035-0012	24-hr Standard	3-Year Average
	No. Expected Exceedances	No. Expected Exceedances
2011	0.0[~~/ 0.0*~~]	
2012	0.0[~~/ 0.0*~~]	
2013	0.0[~~/ 0.0*~~]	0.0[~~/ 0.0*~~]
2014	NA*[~~*~~]	NA*[~~*~~]

Magna 49-035-1001	24-hr Standard	3-Year Average
	No. Expected Exceedances	No. Expected Exceedances
2011	0.0[~~/ 0.0*~~]	
2012	0.0[~~/ 0.0*~~]	
2013	0.0[~~/ 0.0*~~]	0.0[~~/ 0.0*~~]
2014	0.0[~~/ 0.0*~~]	0.0[~~/ 0.0*~~]

[~~* The second set of numbers shows what would be the effect of including all of the data that has been flagged by DAQ and not yet concurred with by EPA.~~]

[~~~~] The North Salt Lake monitor was closed in September of 2013.

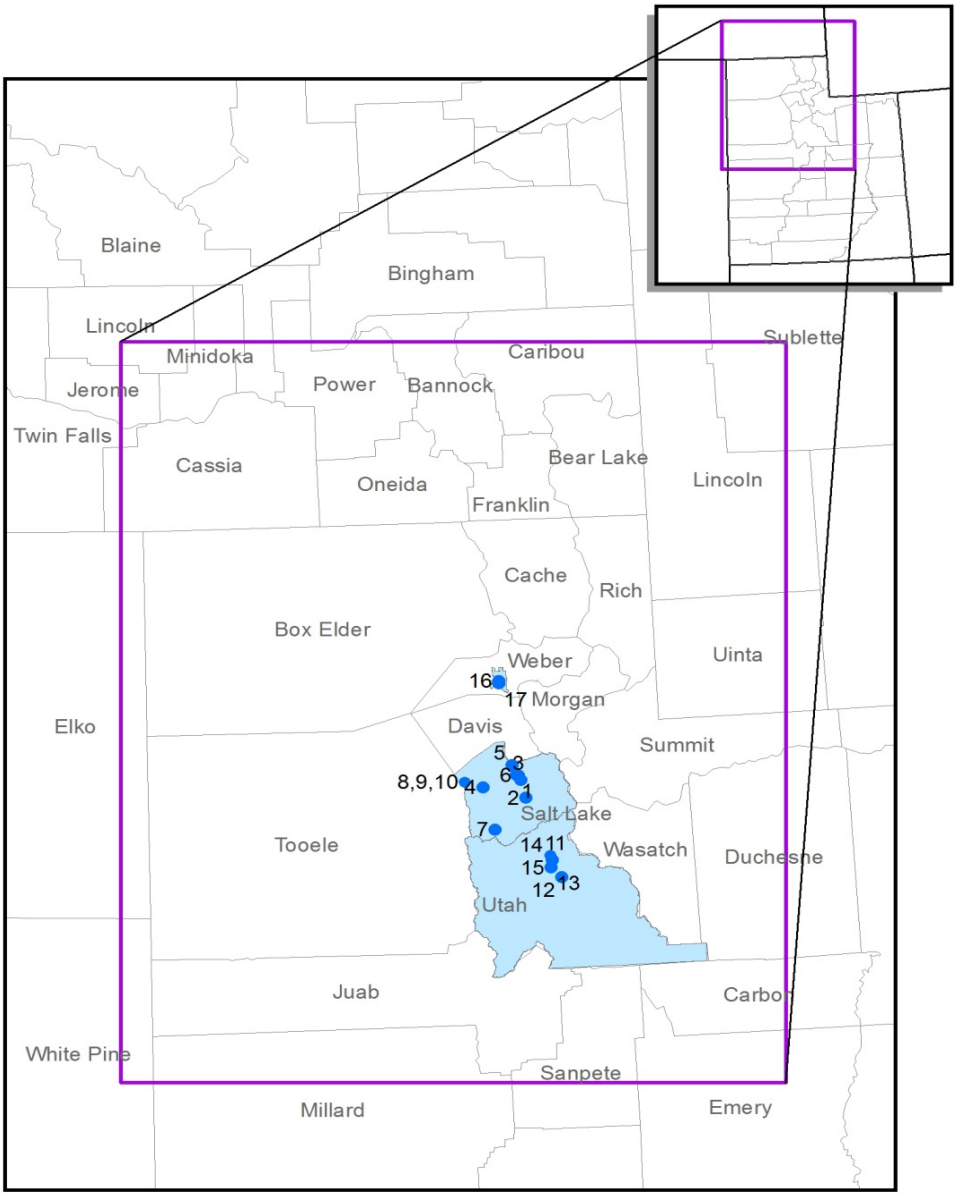
(b) PM_{10} Monitoring Network

The overall assessments made in the preceding paragraph were based on data collected at monitoring stations located throughout the nonattainment area. The Utah DAQ maintains a network of PM_{10} monitoring stations in accordance with 40 CFR 58. These stations are referred to as SLAMS sites, meaning that they are State and Local Air Monitoring Stations. In

consultation with EPA, an Annual Monitoring Network Plan is developed to address the adequacy of the monitoring network for all criteria pollutants. Within the network, individual stations may be situated so as to monitor large sources of PM_{10}, capture the highest concentrations in the area, represent residential areas, or assess regional concentrations of PM_{10}. Collectively, these monitors make up Utah's PM_{10} monitoring network. The following paragraphs describe the network in each of Utah's three nonattainment areas for PM_{10}.

Provided in Figure IX.A.11[~~10~~]. 1 is a map of the modeling domain that shows the existing PM_{10} nonattainment areas and the locations of the monitors therein. Some of the monitors at these locations are no longer operational, but they have been included for informational purposes.

Figure IX.A.11[~~10~~]. 1 Modeling Domain



The following PM_{10} monitoring stations operated in the Salt Lake County PM_{10} nonattainment area from 1985 through 2015. They are numbered as they appear on the map:

1. Air Monitoring Center (AMC) (AIRS number 49-035-0010): This site was located in an urban city center, near an area of high vehicle use. It was closed in 1999 when DAQ lost its lease on the building.

2. Cottonwood (AIRS number 49-035-0003): This site was located in a suburban residential area. It collected data from 1986 - 2011. It was closed in 2011 due to siting criteria violations as well as safety concerns.

3. Hawthorne (AIRS number 49-035-3006): This site is located in a suburban residential area. It began collecting data in 1997, and is the NCORE site for Utah.

4. Magna (AIRS number 49-035-1001): This site is located in a suburban residential area. It was historically impacted periodically by blowing dust from a large tailings impoundment, and as such is anomalous with respect to the typical wintertime scenario that otherwise characterizes the nonattainment area. It has been collecting data since 1987.

5. North Salt Lake (AIRS number 49-035-0012): This site was located in an industrial area that is impacted by sand and gravel operations, freeway traffic, and several refineries. It was near a residential area as well. It collected data from 1985 - 2013. The monitor was situated over a sewer main, and service of that main required its removal in September 2013 and following the service, the site owner did not allow the monitor to return.

6. Salt Lake City (AIRS number 49-035-3001): This site was situated in an urban city center. It was discontinued in 1994 because of modifications that were made to the air conditioning on the roof-top.

7. Herriman #3 (AIRS number 49-035-3012): This site is located in a suburban residential area. It began collecting data in 2015.

8. Beach #2 (AQS number 49-035-0005): This site, from 1988-1990, was located near the Great Salt Lake.

9. Beach #3 (AQS number 49-035-2003): This site, from 1991-1992, was located at the Great Salt Lake Marina.

10. Beach #4 (AQS number 49-035-2004): This site, from 1991-1997, was located at the Great Salt Lake Marina.

The following PM_{10} monitoring stations operated in the Utah County PM_{10} nonattainment area from 1985 through 2015. They are numbered as they appear on the map:

11[~~8~~]. Lindon (AIRS number 49-049-4001): This site is designed to measure population exposure to PM_{10}. It is located in a suburban residential area affected by both industrial and vehicle emissions. PM_{10} has been measured at this site since 1985, and the readings taken here have consistently been the highest in Utah County. Area source emissions, primarily wood smoke, also affect the site.

12[~~9~~]. North Provo (AIRS number 49-049-0002): This is a neighborhood site in a mixed residential-commercial area in Provo, Utah. It began collecting data in 1986.

13[~~10~~]. West Orem (AIRS number 49-049-5001): This site was originally located in a residential area adjacent to a large steel mill which has since closed. It is a neighborhood site. It was situated based on computer modeling, and has historically reported high PM_{10} values, but not consistently as high as those observed at the Lindon site. The site was closed at the end of 1997 for this reason.

14. Pleasant Grove (AQS number 49-049-2001): This site, from 1985-1987, was located in a suburban area.

15. Orem (AQS number 49-049-5004): This site, from 1991-1993, was located next to a through highway in a business area.

The following PM_{10} monitoring stations operated in the Ogden City PM_{10} nonattainment area from 1986 through 2015. They are numbered as they appear on the map:

16[~~11~~]. Ogden 1 (AIRS number 49-057-0001): This site was situated in an urban city center. It was discontinued in 2000 because DAQ lost its lease on the building.

17[~~12~~]. Ogden 2 (AIRS number 49-057-0002): This site began collecting data in 2001, as a replacement for the Ogden 1 location. It, too, is situated in an urban city center.

(c) Modeling Element

EPA guidance concerning redesignation requests and maintenance plans (Calcagni) discusses the requirement that the area has attained the standard, and notes that air quality modeling may be necessary to determine the representativeness of the monitored data.

Information concerning PM_{10} monitoring in Utah is included in the Annual Monitoring Plan [~~Annual Monitoring Network Review~~] and the 5-Year Monitoring Network Assessment [~~The 5 Year Network Plan~~]. Since the early 1980's, the network review has been updated annually and submitted to EPA for approval. EPA has concurred with the annual network reviews and agreed that the PM_{10} network is adequate. EPA personnel have also visited the monitor sites on several occasions to verify compliance with federal siting requirements. Therefore, additional modeling will not be necessary to determine the representativeness of the monitored data.

The Calcagni memo goes on to say that areas that were designated nonattainment based on modeling will generally not be redesignated to attainment unless an acceptable modeling analysis indicates attainment.

Though none of Utah's three PM_{10} nonattainment areas was designated based on modeling, Calcagni also states that (when dealing with PM_{10}) dispersion modeling will generally be necessary to evaluate comprehensively sources' impacts and to determine the areas of expected high concentrations based upon current conditions. Air quality modeling was conducted for the purpose of this maintenance demonstration. It shows that all three nonattainment areas are presently in compliance, and will continue to comply with the PM_{10} NAAQS through the year 2030.

(d) EPA Acknowledgement

The data presented in the preceding paragraphs shows quite clearly that the Salt Lake County PM_{10} nonattainment area is attaining the NAAQS. As discussed before, the EPA acknowledged in the Federal Register that both Utah County and Salt Lake County had already attained.

On June 18, 2001, EPA published notice in the Federal Register (66 FR 32752) that Utah's extension requests were granted, [and] that Salt Lake County attained the PM_{10} standard by December 31, 1995. The notice stated that the area would remain a moderate nonattainment area and would not be subject to the additional requirements of serious nonattainment areas.

(2) Fully Approved Attainment Plan for PM_{10}

CAA 107(d)(3)(E)(ii) - *The Administrator has fully approved the applicable implementation plan for the area under section 110(k).*

On November 14, 1991, Utah submitted a SIP for Salt Lake and Utah Counties that demonstrated attainment for Salt Lake and Utah Counties for 10 years, 1993 through 2003. EPA published approval of the SIP on July 8, 1994 (59 FR 35036).

(3) Improvements in Air Quality Due to Permanent and Enforceable Reductions in Emissions

CAA 107(d)(3)(E)(iii) - *The Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollutant control regulations and other permanent and enforceable reductions.* Speaking further on the issue, EPA guidance (Calcagni) reads that the State must be able to reasonably attribute the improvement in air quality to emission reductions which are permanent and enforceable. In the following sections, both the improvement in air quality and the emission reductions themselves will be discussed.

(a) Improvement in Air Quality

The improvement in air quality with respect to PM_{10} can be shown in a number of ways. Improvement, in this case, is relative to the various control strategies that affected the airshed.

For the Salt Lake County nonattainment area, these control measures were implemented as the result of the nonattainment PM_{10} SIP promulgated in 1991. As discussed below, the actual implementation of the control strategies required therein first exhibits itself in the observable data in 1994. The ambient air quality data presented below includes values prior to 1994 in order to give a representation of the air quality prior to the application of any control measures. It then includes data collected from then until the present time to illustrate the effect of these controls. In considering the data presented below, it is important to keep this distinction in mind: data through 1993 represents pre-SIP conditions, and data collected from 1994 through the present represents post-SIP conditions.

Additionally, a downturn in the economy is clearly not [~~nor~~] responsible for the improvement in ambient particulate levels in Salt Lake County, Utah County, and Ogden City areas. From 2001 to present, the areas have experienced strong growth [~~while at the same time achieving~~

~~continuous attainment of the 24-hour and annual PM_{10} NAAQS~~]. Data was analyzed for the Salt Lake City Metropolitan Statistical Area from the US Department of Commerce, Bureau of Economic Analysis. According to this data, job growth from 2011 through 2013 increased by 5.5 percent, population increased by 3 percent, and personal income increased by approximately 10 percent. The estimated VMT increase was 12 percent from 2011 to present.

Expected Exceedances – Referring back to the discussion of the PM_{10} NAAQS in Subsection IX.A.11[~~10~~].b(1), it is apparent that the number of expected exceedances of the 24-hour standard is an important indicator. As such, this information has been tabulated for each of the monitors located in each of the nonattainment areas. The data in Table IX.A.11[~~10~~]. 3 below reveals a marked decline in the number of these expected exceedances, and therefore that the Salt Lake County PM_{10} nonattainment area has experienced significant improvements in air quality. The gray cells indicate that the monitor was not in operation. This improvement is especially revealing in light of the significant growth experienced during this same period in time.

Table IX.A.11[~~10~~]. 3 Salt Lake County: Expected Exceedances Per-Year, 1985-2014

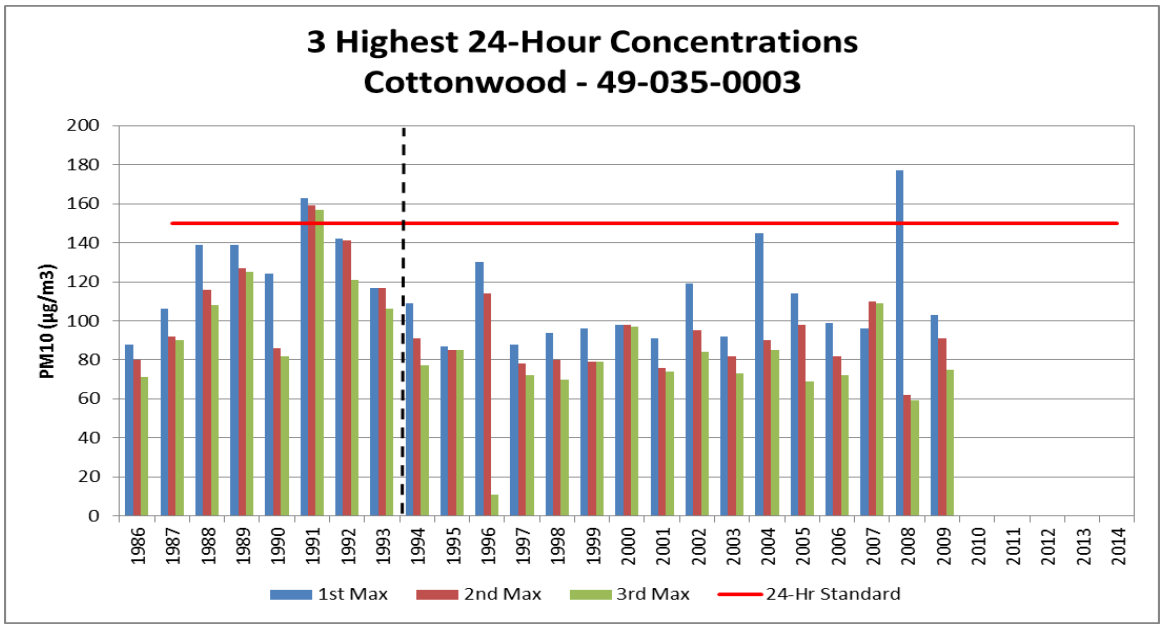
Salt Lake County Nonattainment Area					
Monitor:	**Cottonwood**	**AMC**	**North Salt Lake**	**Magna**	**Hawthorne**
1986	0.0				
1987	0.0		0.0	2.4	
1988	0.0		5.8	2.2	
1989	0.0	8.7	3.3	0.0	
1990	0.0	0.0	0.0	0.0	
1991	6.0	15.9	13.5	0.0	
1992	0.0	8.6	3.2	0.0	
1993	0.0	0.0	0.0	0.0	
1994	0.0	1.0	8.6	0.0	
1995	0.0	0.0	0.0	0.0	
1996	0.0	0.0	2.3	0.0	
1997	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0
2000	0.0		0.0	0.0	0.0
2001	0.0		0.0	6.4	0.0
2002	0.0		0.0	0.0	0.0
2003	0.0		3.1	1.6	2.1
2004	0.0		1.0	0.0	0.0
2005	0.0		0.0	3.4	0.0
2006	0.0		2.2	0.0	0.0
2007	0.0		4.3	0.0	0.0
2008	3.6		2.1	0.0	2.0
2009	0.0		1.0	0.0	0.0
2010			2.0	3.0	2.1
2011			0.0	0.0	0.0
2012			0.0	0.0	0.0
2013			0.0	0.0	0.0
2014				0.0	0.0

As discussed before in section IX.A.11[~~10~~].b(1), the number of expected exceedances may include data which had been flagged by DAQ as being influenced by an exceptional event; most typically, a wind-blown dust event. Data is flagged when circumstances indicate that it would [~~represent an outlier in the data set and~~] not be indicative of the entire airshed or the efforts to reasonably mitigate air pollution within.

As such, two things should be noted: 1) The focus of the control strategy developed for the 1991 PM_{10} SIP was directed at episodes characterized by wintertime temperature inversions, elevated concentrations of secondary aerosol, and low wind speed. Under these conditions, blowing dust is generally nonexistent. Therefore, in evaluating the effectiveness of these types of controls, the inclusion of several high wind events may bias the conclusion. 2) Even with the inclusion of these values, the conclusion remains essentially the same; that since 1994 when the 1991 SIP controls were fully implemented, there has been a marked improvement in monitored air quality.

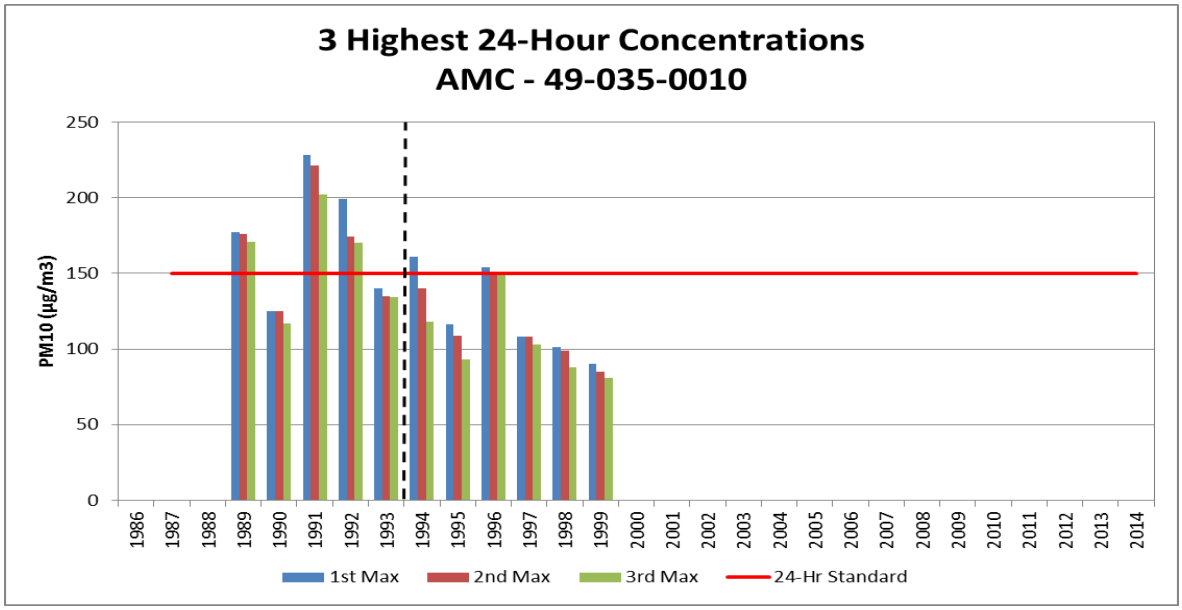
Highest Values – Also indicative of improvement in air quality with respect to the 24-hour standard, is the magnitude of the excessive concentrations that are observed. This is illustrated in Figures IX.A.11[~~10~~]. 2 - 6, which show the three highest 24-hour concentrations observed at each monitor in a particular year.

Figure IX.A.11[~~10~~]. 2 3 Highest 24-hr PM_{10} Concentrations; Cottonwood



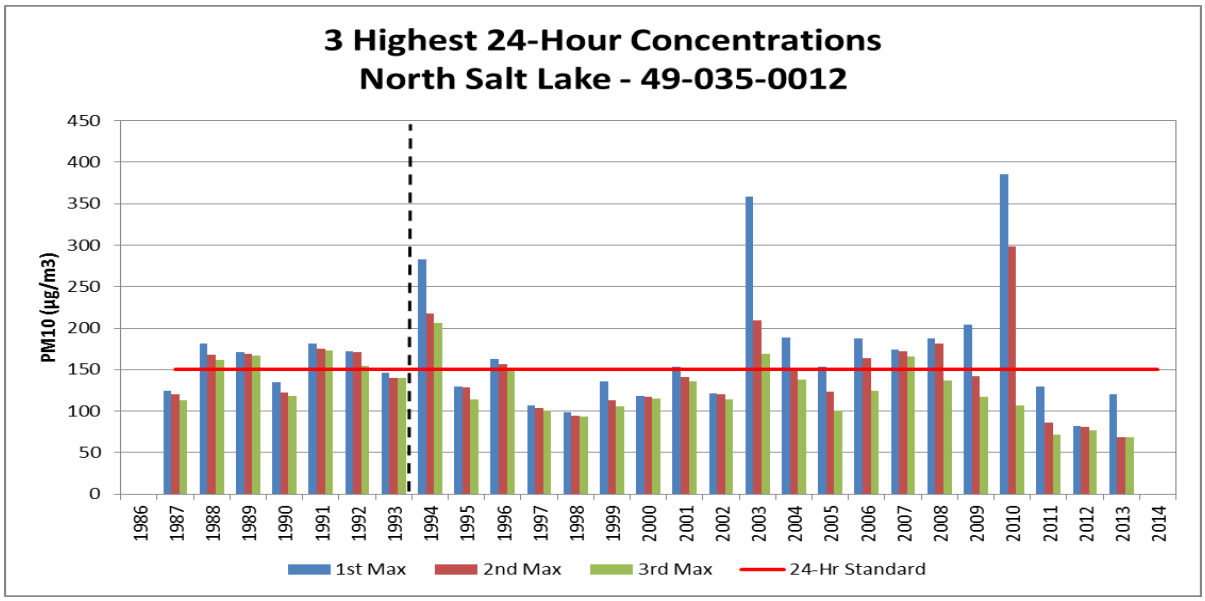
(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 3 3 Highest 24-hr PM_{10} Concentrations; AMC



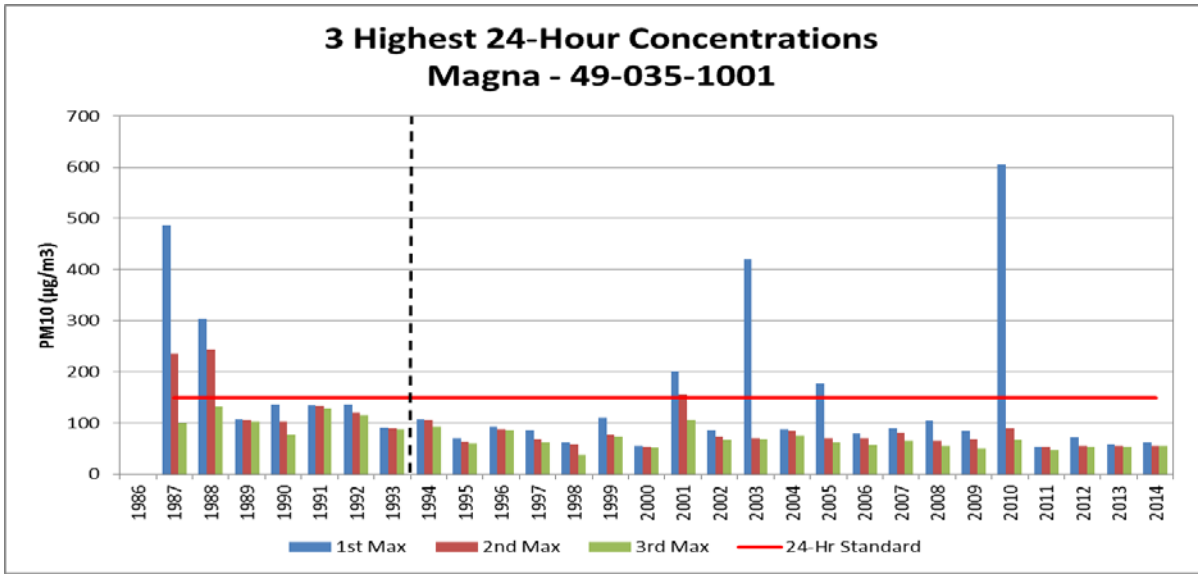
(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 4 3 Highest 24-hr PM_{10} Concentrations; North Salt Lake



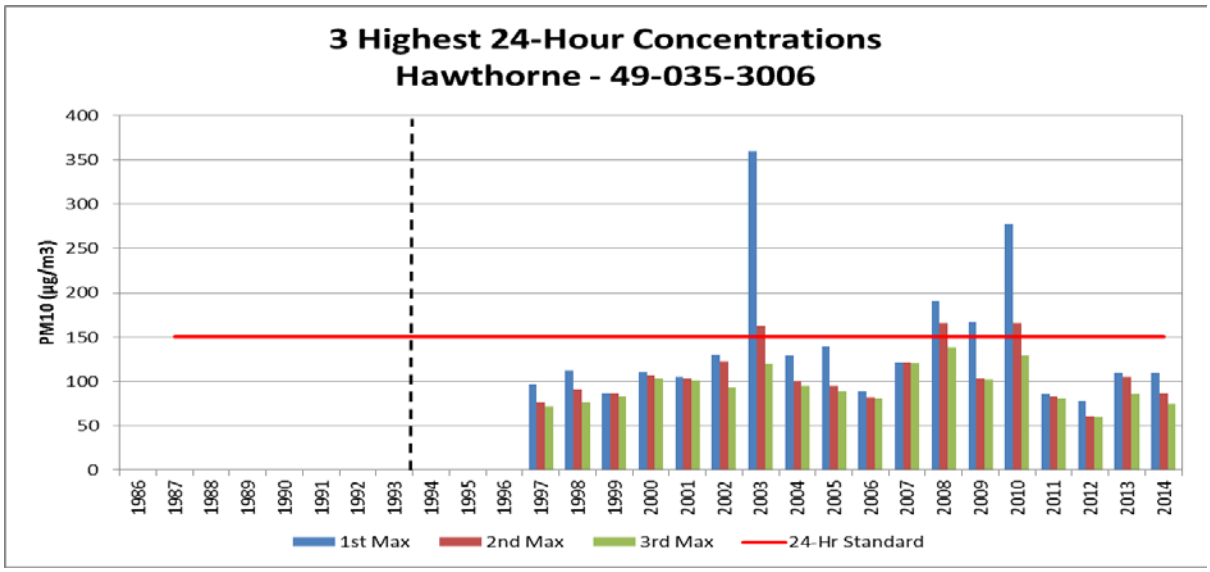
(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 5 3 Highest 24-hr PM_{10} Concentrations; Magna



(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 6 3 Highest 24-hr PM_{10} Concentrations; Hawthorne

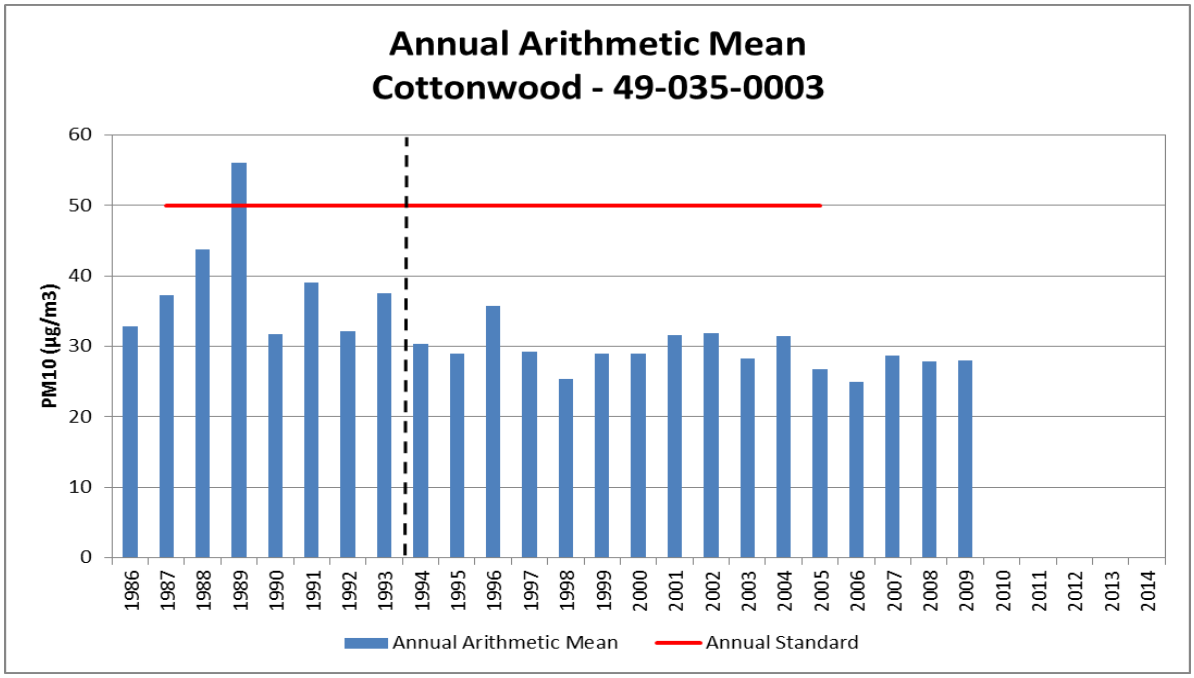


(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Again there is a noticeable improvement in the magnitude of these concentrations. It must be kept in mind, however, that some of these concentrations may have resulted from windblown dust events that occur outside of the typical scenario of wintertime air stagnation. As such, the effectiveness of any control measures directed at the precursors to PM_{10} would not be evident.

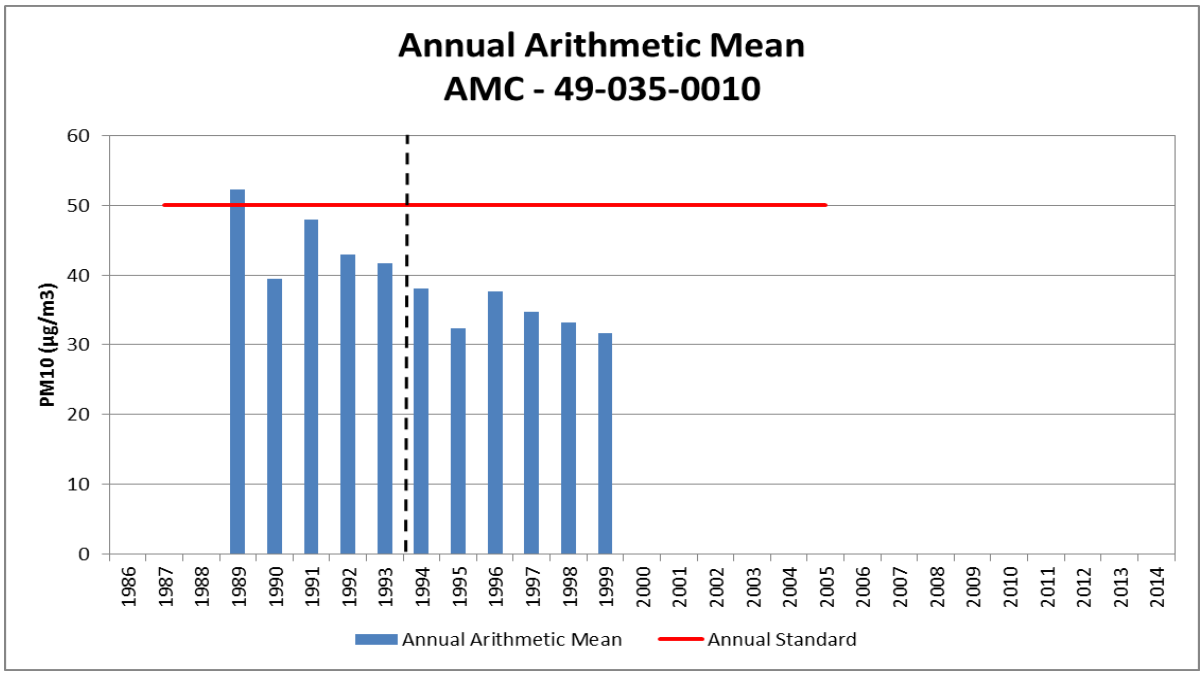
Annual Mean – Although there is no longer an annual PM_{10} standard, the annual arithmetic mean is also a significant parameter to consider. This is especially so given one of the assumptions made in the original nonattainment SIP for Salt Lake County. The SIP was developed to address the 24-hour standard for PM_{10}, but it was assumed that by controlling for the wintertime 24-hour standard, the annual arithmetic mean concentrations would also be reduced such that the annual standard would be protected (even though it had never been violated). Annual arithmetic means have been plotted in Figures IX.A.11[~~10~~] 7 - 11, and the data reveals a noticeable decline in the values of these annual means. This supports the validity of the assumption made in the SIP, and indicates that there have been significant improvements in air quality in the Salt Lake County nonattainment area.

Figure IX.A.11[~~10~~]. 7 Annual Arithmetic Mean; Cottonwood



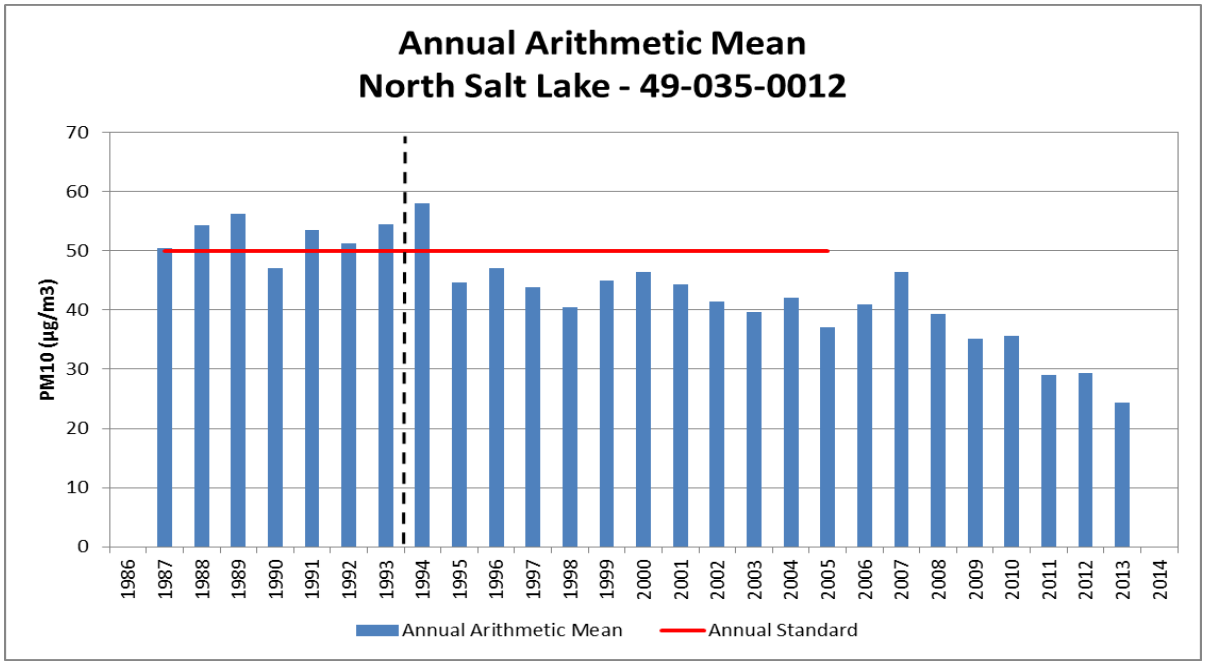
(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 8 Annual Arithmetic Mean; Cottonwood



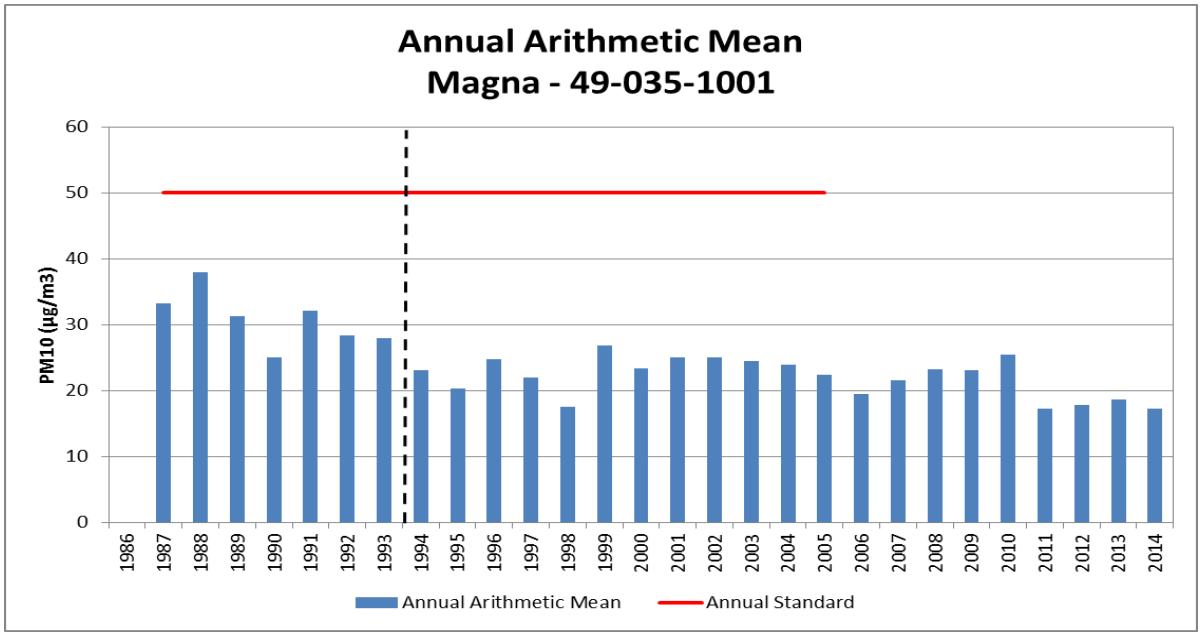
(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 9 Annual Arithmetic Mean; North Salt Lake



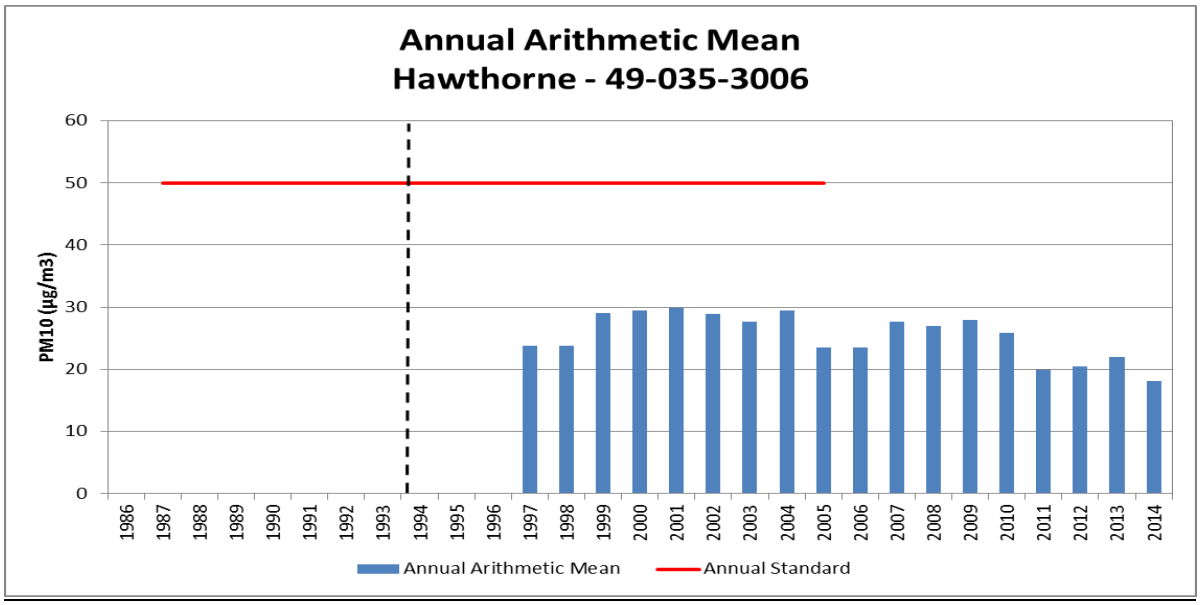
(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 10 Annual Arithmetic Mean; Magna



(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

Figure IX.A.11[~~10~~]. 11 Annual Arithmetic Mean; Hawthorne



(Vertical dotted line indicates complete implementation of 1991 SIP control measures.)

As with the number of expected exceedances and the three highest values, the data in Figures IX.A.11[~~10~~]. 7 - 11 may include data which had been flagged by DAQ as being influenced by wind-blown dust events. Nevertheless, the annual averaging period tends to make these data points less significant. The downward trend of these annual mean values is truly indicative of improvements in air quality, particularly during the winter inversion season.

(b) Reduction in Emissions

As stated above, EPA guidance (Calcagni) says that the State must be able to reasonably attribute the improvement in air quality to emission reductions that are permanent and enforceable. In making this showing, the State should estimate the percent reduction (from the year that was used to determine the design value) achieved by Federal measures such as motor vehicle control, as well as by control measures that have been adopted and implemented by the State.

In Salt Lake County, the design values at each of the representative monitors were measured in 1988 or 1989 (see SIP Subsections IX.A.3-5).

As mentioned before, the ambient air quality data presented in Subsection IX.A.11[~~10~~].b(3)(a) above includes values prior to these dates in order to give a representation of the air quality prior to the application of any control measures. It then includes data collected from then until the present time to illustrate the lasting effect of these controls. In discussing the effect of the controls, as well as the control measures themselves, however, it is important to keep in mind the time necessary for their implementation.

The nonattainment SIPs for all initial moderate PM_{10} nonattainment areas included a statutory date for the implementation of reasonably available control measures (RACM), which includes reasonably available control technologies (RACT). This date was December 10, 1993 (Section 189(a) CAA). Thus, 1994 marked the first year in which these control measures were reflected in the emissions inventories for Salt Lake County.

The nonattainment SIP for the Salt Lake County PM_{10} nonattainment area included control strategies for stationary sources and area sources (including controls for woodburning, mobile sources, and road salting and sanding) of primary PM_{10} emissions as well as sulfur oxide (SO_X) and nitrogen oxide (NO_X) emissions, which are secondary sources of particulate emissions. This is discussed in SIP Subsection IX.A.6, and was reflected in the attainment demonstration presented in Subsection IX.A.5.

The RACM control measures prescribed by the nonattainment SIP and their subsequent implementation by the State were discussed in more detail in a milestone report submitted for the area.

Section 189(c) of the CAA identifies, as a required plan element, quantitative milestones which are to be achieved every 3 years, and which demonstrate reasonable further progress (RFP) toward attainment of the standard by the applicable date. As defined in CAA Section 171(1), the term *reasonable further progress* has the meaning of such annual incremental reductions in emissions of the relevant air pollutant as are required by Part D of the Act for the purpose of ensuring attainment of the NAAQS by the applicable date.

Hence, the milestone report must demonstrate that all measures in the approved nonattainment SIP have been implemented and that the milestone has been met. In the case of initial moderate areas for PM_{10}, this first milestone had the meaning of all control measures identified in the plan

being sufficient to bring the area into compliance with the NAAQS by the statutory attainment date of December 31, 1994.

Section 188(d) of the Act allows States to petition the Administrator for up to two one-year extensions of the attainment date, provided that all SIP elements have been implemented and that the ambient data collected in the area during the year preceding the extension year indicates that the area is on-target to attain the NAAQS. Presumably this is because the statutory attainment date for initial moderate PM_{10} nonattainment areas occurred only one year after the statutory implementation date for RACM, the central control element of all implementation plans for such areas, and because three consecutive years of clean ambient data are needed to determine that an area has attained the standard. Because the milestone report and the request for extension of the attainment date both required a demonstration that all SIP elements had been implemented, as well as a showing of RFP, Utah combined these into a single analysis.

Utah's actions to meet these requirements and EPA's subsequent review thereof are discussed in a Federal Register notice from Monday, June 18, 2001 (66 FR 32752). In this notice, EPA granted a one-year extension of the attainment date for the Salt Lake County PM_{10} nonattainment area and determined that the area had attained the PM_{10} NAAQS by December 31, 1995. The key elements of that FR notice are reiterated below.

On May 11, 1995, Utah submitted a milestone report as required by sec.189(c)(2). On Sept.29, 1995, Utah submitted a revised version of the milestone report. It estimated current emissions from all source categories covered by the SIP and compared those to actual emissions from 1988. Based on information the State submitted in 1995, EPA believes that Utah was in substantial compliance with the requirements and commitments in the SIP for the Salt Lake County PM_{10} nonattainment area. The milestone report indicates that Utah had implemented most of its adopted control measures and had, therefore, substantially implemented the RACM/RACT requirements applicable to moderate PM_{10} nonattainment areas. It showed that in Salt Lake County, emissions of PM_{10}, SO_2 and NO_X had been reduced by approximately 60,752 tpy (from 150,292 down to 89,540). The effect of these emission reductions appears to be reflected in ambient measurements at the monitoring site [and] is evidence that the State's implementation of the PM_{10} SIP control measures resulted in emission reductions amounting to RFP in the Salt Lake County PM_{10} nonattainment area.

This Federal Register notice (66 FR 32752) and the milestone report from September 29, 1995 have been included in the TSD.

Furthermore, since these control measures are incorporated into the Utah SIP, the emission reductions that resulted are consistent with the notion of permanent and enforceable improvements in air quality. Taken together, the trends in ambient air quality illustrated in the preceding paragraph, along with the continued implementation of the nonattainment SIP for the Salt Lake County nonattainment area, provide a reliable indication that these improvements in air quality reflect the application of permanent steps to improve the air quality in the region, rather than just temporary economic or meteorological changes.

(4) State has Met Requirements of Section 110 and Part D

CAA 107(d)(3)(E)(v) - The State containing such area has met all requirements applicable to the area under section 110 and part D. Section 110(a)(2) of the Act deals with the broad scope of state implementation plans and the capacity of the respective state agency to effectively administer such a plan. Sections I through VIII of Utah's SIP contain information relevant to

these criteria. Part D deals specifically with plan requirements for nonattainment areas, and includes the requirements for a maintenance plan in Section 175A.

Utah currently has an approved SIP that meets the requirements of section 110(a)(2) of the Act. Many of these elements have been in place for several decades. In the March 9, 2001 approval of Utah's Ogden City Maintenance Plan for Carbon Monoxide, EPA stated:

> On August 15, 1984, we approved revisions to Utah's SIP as meeting the requirements of section 110(a)(2) of the CAA (see 45 FR 32575). Although section 110 of the CAA was amended in 1990, most of the changes were not substantial. Thus, we have determined that the SIP revisions approved in 1984 continue to satisfy the requirements of section 110(a)(2). For further detail, see 45 FR 32575 dated August 15, 1984 (Volume 49, No. 159) or 66 FR 14079 dated March 9, 2001 (Volume 66, No. 47.)

Part D of the Act addresses "Plan Requirements for Nonattainment Areas." Subpart 1 of Part D includes the general requirements that apply to all areas designated nonattainment based on a violation of the NAAQS. Section 172(c) of this subpart contains a list of generally required elements for all nonattainment plans. Subpart 1 is followed by a series of subparts (2-5) specific to various criteria pollutants. Subpart 4 contains the provisions specific to PM_{10} nonattainment areas. The general requirements for nonattainment plans in Section 172(c) may be subsumed within or superseded by the more specific requirements of Subpart 4, but each element must be addressed in the respective nonattainment plan.

One of the pre-conditions for a maintenance plan is a fully approved (non)attainment plan for the area. This is also discussed in section IX.A.11[~~10~~].b(2).

Other Part D requirements that are applicable in nonattainment and maintenance areas include the general and transportation conformity provisions of Section 176(c) of the Act. These provisions ensure that federally funded or approved projects and actions conform to the PM_{10} SIPs and Maintenance Plans prior to the projects or actions being implemented. The State has already submitted to EPA a SIP revision implementing the requirement of Section 176(c).

For Salt Lake County, the Part D requirements for PM_{10} were addressed in an attainment SIP approved by EPA on July 8, 1994 (59 FR 35036).

(5) Maintenance Plan for PM_{10} Areas

As stated in the Act, an area may not request redesignation to attainment without first submitting, and then receiving EPA approval of, a maintenance plan. The plan is basically a quantitative showing that the area will continue to attain the NAAQS for an additional 10 years (from EPA approval), accompanied by sufficient assurance that the terms of the numeric demonstration will be administered by the State and by the EPA in an oversight capacity. The maintenance plan is the central criterion for redesignation. It is contained in the following subsection.

IX.A.11[~~10~~].c Maintenance Plan

CAA 107(d)(3)(E)(iv) - The Administrator has fully approved a maintenance plan for the area as meeting the requirements of section 175A. An approved maintenance plan is one of several

criteria necessary for area redesignation as outlined in Section 107(d)(3)(E) of the Act. The maintenance plan itself, as described in Section 175A of the Act and further addressed in EPA guidance (Procedures for Processing Requests to Redesignate Areas to Attainment, John Calcagni to Regional Air Directors, September 4, 1992; or for the purpose of this document, simply "Calcagni"), has its own list of required elements. The following table is presented to summarize these requirements. Each will then be addressed in turn.

Table IX.A.11[~~10~~]. 4 Requirements of a Maintenance Plan in the Clean Air Act (CAA)

Category	Requirement	Reference	Addressed in Section
Maintenance demonstration	Provide for maintenance of the relevant NAAQS in the area for at least 10 years after redesignation.	CAA: Sec 175A(a)	IX.A. 11[~~10~~].c(1)
Revise in 8 Years	The State must submit an additional revision to the plan, 8 years after redesignation, showing an additional 10 years of maintenance.	CAA: Sec 175A(b)	IX.A. 11[~~10~~].c(8)
Continued Implementation of Nonattainment Area Control Strategy	The Clean Air Act requires continued implementation of the nonattainment area control strategy unless such measures are shown to be unnecessary for maintenance or are replaced with measures that achieve equivalent reductions.	CAA: Sec 175A(c), CAA Sec 110(l), Calcagni memo	IX.A. 11[~~10~~].c(7)
Contingency Measures	Areas seeking redesignation from nonattainment to attainment are required to develop contingency measures that include State commitments to implement additional control measures in response to future violations of the NAAQS.	CAA: Sec 175A(d)	IX.A. 11[~~10~~].c(10)
Verification of Continued Maintenance	The maintenance plan must indicate how the State will track the progress of the maintenance plan.	Calcagni memo	IX.A. 11[~~10~~].c(9)

(1) Demonstration of Maintenance - Modeling Analysis

CAA 175A(a) - Each State which submits a request under section 107(d) for redesignation of a nonattainment area as an area which has attained the NAAQS shall also submit a revision of the applicable implementation plan to provide for maintenance of the NAAQS for at least 10 years after the redesignation. The plan shall contain such additional measures, if any, as may be required to ensure such maintenance. The maintenance demonstration is discussed in EPA guidance (Calcagni) as one of the core provisions that should be considered by states for inclusion in a maintenance plan.

According to Calcagni, a State may generally demonstrate maintenance of the NAAQS by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory (discussed below) or by modeling to show that the future mix of sources and emission rates will not cause a violation of the NAAQS. Utah has elected to make its demonstration based on air quality modeling.

(a) Introduction

The following chapter presents an analysis using observational datasets to detail the chemical regimes of Utah's Nonattainment areas.

Prior to the development of this PM_{10} maintenance plan, UDAQ conducted a technical analysis to support the development of Utah's 24-hr State Implementation Plan for $PM_{2.5}$. That analysis included preparation of emissions inventories and meteorological data, and the evaluation and application of a regional photochemical model.

Outside of the springtime high wind events and wildfires, the Wasatch Front experiences high 24-hr PM_{10} concentrations under stable conditions during the wintertime (e.g., temperature inversion). These are the same episodes where the Wasatch Front sees its highest concentrations of 24-hr $PM_{2.5}$ that sometimes exceed the 24-hr $PM_{2.5}$ NAAQS. Most (60% to 90%) of the PM_{10} observed during high wintertime pollution days consists of $PM_{2.5}$. The dominant species of the wintertime PM_{10} is secondarily formed particulate nitrate, which is also the dominant species of $PM_{2.5}$.

Given these similarities, the $PM_{2.5}$ modeling analysis was utilized as the foundation for this PM_{10} Maintenance Plan.

The CMAQ model performance for the PM_{10} Maintenance Plan adds to the detailed model performance that was part of the UDAQ's previous $PM_{2.5}$ SIP process. Utah DAQ used the same modeling episode that was used in the $PM_{2.5}$ SIP, which is the 45-day modeling episode from the winter of 2009-2010. The modeled meteorology datasets from the Weather Research and Forecasting (WRF) model for the PM_{10} Plan are the same datasets used for the $PM_{2.5}$ SIP. Also, the CMAQ version (4.7.1) and CMAQ model setup (i.e., vertical advection module turned off) for the PM_{10} modeling matches the $PM_{2.5}$ SIP setup.

For this reason, much of the information presented below pertains specifically to the $PM_{2.5}$ evaluation. This is supplemented with information pertaining to PM_{10}, most notably with respect to the PM_{10} model performance evaluation.

The additional PM_{10} analysis is also presented in the Technical Support Document.

(b) Photochemical Modeling

Photochemical models are relied upon by federal and state regulatory agencies to support their planning efforts. Used properly, models can assist policy makers in deciding which control programs are most effective in improving air quality, and meeting specific goals and objectives. The air quality analyses were conducted with the Community Multiscale Air Quality (CMAQ) Model version 4.7.1, with emissions and meteorology inputs generated using SMOKE and WRF, respectively. CMAQ was selected because it is the open source atmospheric chemistry model co-sponsored by EPA and the National Oceanic Atmospheric Administration (NOAA), and thus approved by EPA for this plan.

(c) Domain/Grid Resolution

UDAQ selected a high resolution 4-km modeling domain to cover all of northern Utah including the portion of southern Idaho extending north of Franklin County and west to the Nevada border (Figure IX.A.11[~~10~~]. 12). This 97 x 79 horizontal grid cell domain was selected to ensure that all

of the major emissions sources that have the potential to impact the nonattainment areas were included. The vertical resolution in the air quality model consists of 17 layers extending up to 15 km, with higher resolution in the boundary layer.

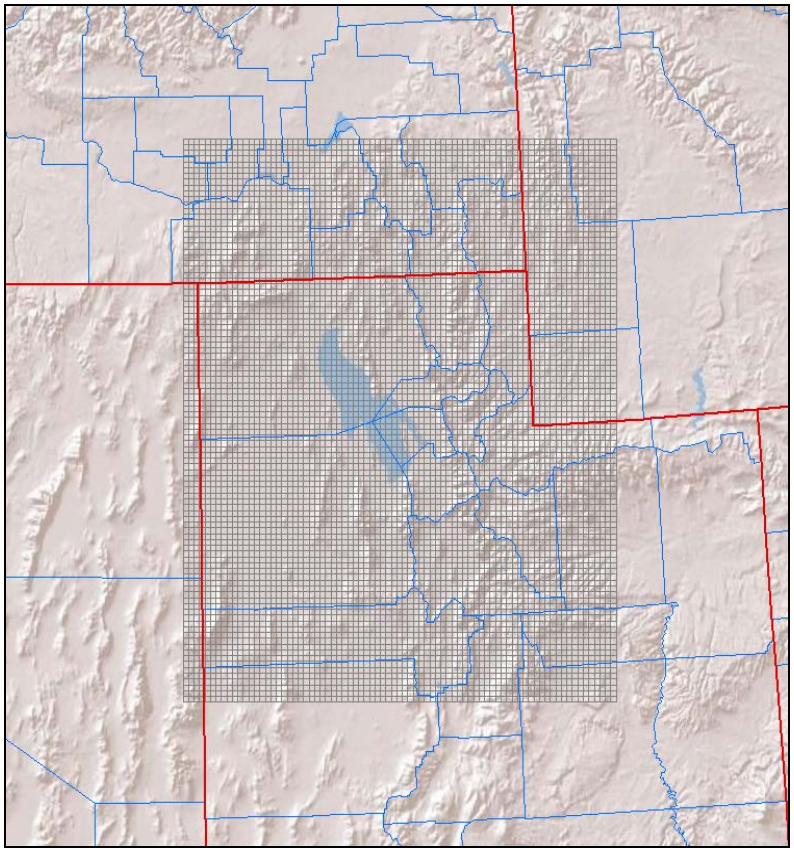


Figure IX.A.11[~~10~~]. 12 Northern Utah photochemical modeling domain.

(d) Episode Selection

According to EPA's April 2007 "Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze," the selection of SIP episodes for modeling should consider the following 4 criteria:

1. Select episodes that represent a variety of meteorological conditions that lead to elevated $PM_{2.5}$.

2. Select episodes during which observed concentrations are close to the baseline design value.

3. Select episodes that have extensive air quality data bases.

4. Select enough episodes such that the model attainment test is based on multiple days at each monitor violating NAAQS.

In general, UDAQ wanted to select episodes with hourly $PM_{2.5}$ concentrations that are reflective of conditions that lead to 24-hour NAAQS exceedances. From a synoptic meteorology point of

view, each selected episode features a similar pattern. The typical pattern includes a deep trough over the eastern United States with a building and eastward moving ridge over the western United States. The episodes typically begin as the ridge begins to build eastward, near surface winds weaken, and rapid stabilization due to warm advection and subsidence dominate. As the ridge centers over Utah and subsidence peaks, the atmosphere becomes extremely stable and a subsidence inversion descends towards the surface. During this time, weak insolation, light winds, and cold temperatures promote the development of a persistent cold air pool. Not until the ridge moves eastward or breaks down from north to south is there enough mixing in the atmosphere to completely erode the persistent cold air pool.

From the most recent 5-year period of 2007-2011, UDAQ developed a long list of candidate $PM_{2.5}$ wintertime episodes. Three episodes were selected. An episode was selected from January 2007, an episode from February 2008, and an episode during the winter of 2009-2010 that features multi-event episodes of $PM_{2.5}$ buildup and washout.

As noted in the introduction, these episodes were also ideal from the standpoint of characterizing PM_{10} buildup and formation.

Further detail of the episodes is below:

- **Episode 1: January 11-20, 2007**

A cold front passed through Utah during the early portion of the episode and brought very cold temperatures and several inches of fresh snow to the Wasatch Front. The trough was quickly followed by a ridge that built north into British Columbia and began expanding east into Utah. This ridge did not fully center itself over Utah, but the associated light winds, cold temperatures, fresh snow, and subsidence inversion produced very stagnant conditions along the Wasatch Front. High temperatures in Salt Lake City throughout the episode were in the high teens to mid-20's Fahrenheit.

Figure IX.A.11[~~10~~]. 13 shows hourly $PM_{2.5}$ concentrations from Utah's 4 $PM_{2.5}$ monitors for January 11-20, 2007. The first 6 to 8 days of this episode are suited for modeling. The episode becomes less suited after January 18 because of the complexities in the meteorological conditions leading to temporary $PM_{2.5}$ reductions.

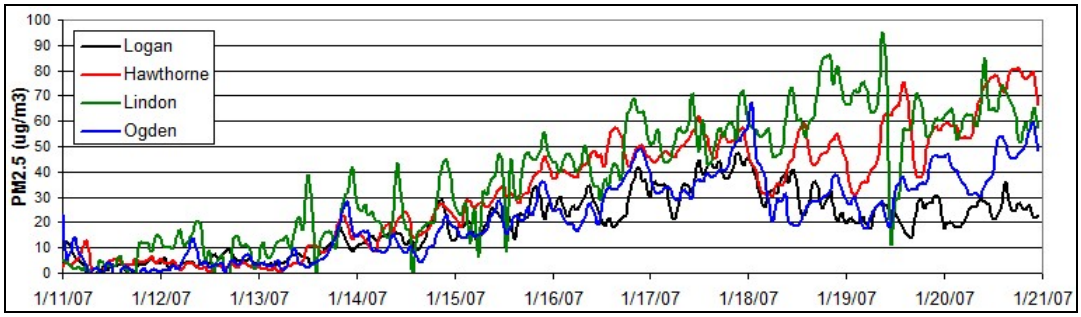


Figure IX.A.10. 13 Hourly $PM_{2.5}$ concentrations for January 11-20, 2007

- **Episode 2: February 14-18, 2008**

The February 2008 episode features a cold front passage at the start of the episode that brought significant new snow to the Wasatch Front. A ridge began building eastward from the Pacific

Coast and centered itself over Utah on Feb 20th. During this time a subsidence inversion lowered significantly from February 16 to February 19. Temperatures during this episode were mild with high temperatures at SLC in the upper 30's and lower 40's Fahrenheit.

The 24-hour average $PM_{2.5}$ exceedances observed during the proposed modeling period of February 14-19, 2008 were not exceptionally high. What makes this episode a good candidate for modeling are the high hourly values and smooth concentration build-up. The first 24-hour exceedances occurred on February 16 and were followed by a rapid increase in $PM_{2.5}$ through the first half of February 17 (Figure IX.A.11[~~10~~]. 14). During the second half of February 17, a subtle meteorological feature produced a mid-morning partial mix-out of particulate matter and forced 24-hour averages to fall. After February 18, the atmosphere began to stabilize again and resulted in even higher $PM_{2.5}$ concentrations during February 20, 21, and 22. Modeling the 14th through the 19th of this episode should successfully capture these dynamics. The smooth gradual build-up of hourly $PM_{2.5}$ is ideal for modeling.

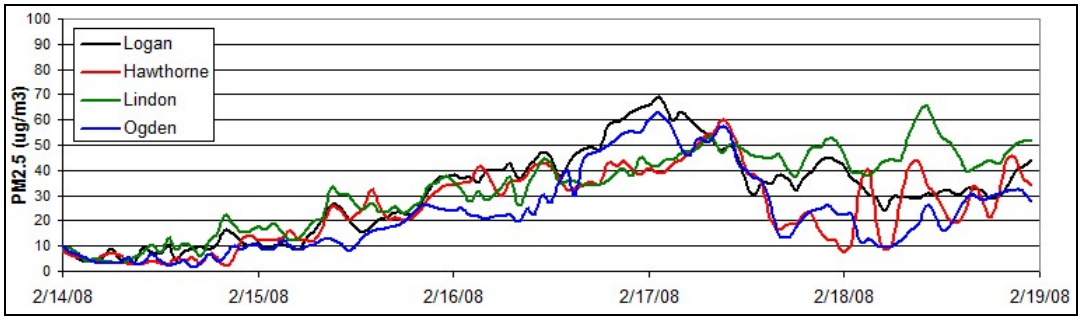


Figure IX.A.11[~~10~~]. 14 Hourly $PM_{2.5}$ concentrations for February 14-19, 2008

- **Episode 3: December 13, 2009 – January 18, 2010**

The third episode that was selected is more similar to a "season" than a single $PM_{2.5}$ episode (Figure IX.A.11[~~10~~]. 15). During the winter of 2009 and 2010, Utah was dominated by a semi-permanent ridge of high pressure that prevented strong storms from crossing Utah. This 35 day period was characterized by 4 to 5 individual $PM_{2.5}$ episodes each followed by a partial $PM_{2.5}$ mix out when a weak weather system passed through the ridge. The long length of the episode and repetitive $PM_{2.5}$ build-up and mix-out cycles makes it ideal for evaluating model strengths and weaknesses and $PM_{2.5}$ control strategies.

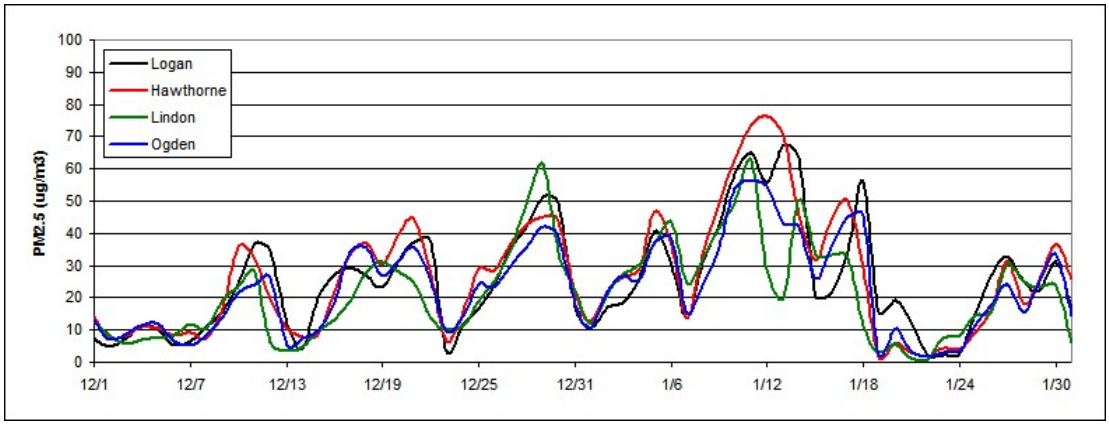


Figure IX.A.11[~~10~~]. 15 24-hour average $PM_{2.5}$ concentrations for December-January, 2009-10

(e) Meteorological Data

Meteorological inputs were derived using the Advanced Research WRF (WRF-ARW) model version 3.2. WRF contains separate modules to compute different physical processes such as surface energy budgets and soil interactions, turbulence, cloud microphysics, and atmospheric radiation. Within WRF, the user has many options for selecting the different schemes for each type of physical process. There is also a WRF Preprocessing System (WPS) that generates the initial and boundary conditions used by WRF, based on topographic datasets, land use information, and larger-scale atmospheric and oceanic models.

Model performance of WRF was assessed against observations at sites maintained by the Utah Air Monitoring Center. A summary of the performance evaluation results for WRF are presented below:

- The biggest issue with meteorological performance is the existence of a warm bias in surface temperatures during high $PM_{2.5}$ episodes. This warm bias is a common trait of WRF modeling during Utah wintertime inversions.

- WRF does a good job of replicating the light wind speeds (< 5 mph) that occur during high $PM_{2.5}$ episodes.

- WRF is able to simulate the diurnal wind flows common during high $PM_{2.5}$ episodes. WRF captures the overnight downslope and daytime upslope wind flow that occurs in Utah valley basins.

- WRF has reasonable ability to replicate the vertical temperature structure of the boundary layer (i.e., the temperature inversion), although it is difficult for WRF to reproduce the inversion when the inversion is shallow and strong (i.e., an 8 degree temperature increase over 100 vertical meters).

(f) Photochemical Model Performance Evaluation

$PM_{2.5}$ Results

The model performance evaluation focused on the magnitude, spatial pattern, and temporal variation of modeled and measured concentrations. This exercise was intended to assess whether, and to what degree, confidence in the model is warranted (and to assess whether model improvements are necessary).

CMAQ model performance was assessed with observed air quality datasets at UDAQ-maintained air monitoring sites (Figure IX.A.11[~~10~~]. 16). Measurements of observed $PM_{2.5}$ concentrations along with gaseous precursors of secondary particulate (e.g., NO_x, ozone) and carbon monoxide are made throughout winter at most of the locations in the figure . $PM_{2.5}$ speciation performance was assessed using the three Speciation Monitoring Network Sites (STN) located at the Hawthorne site in Salt Lake City, the Bountiful site in Davis County, and the Lindon site in Utah County.

PM_{10} data is also collected at Logan, Bountiful, Ogden2, Magna, Hawthorne, North Provo, and Lindon.

PM_{10} filters were collected at Bountiful, Hawthorne and Lindon, and analyzed with the goal comparing CMAQ modeled speciation to the collected PM_{10} filters. While analyzing the PM_{10} filters, most of the secondarily chemically formed particulate nitrate had been volatized, and thus could not be accounted for. This is most likely due to the age of the filters, which were collected over five years ago. Thus, a robust comparison of CMAQ modeled PM_{10} speciation to PM_{10} filter speciation could not be made for this modeling period.

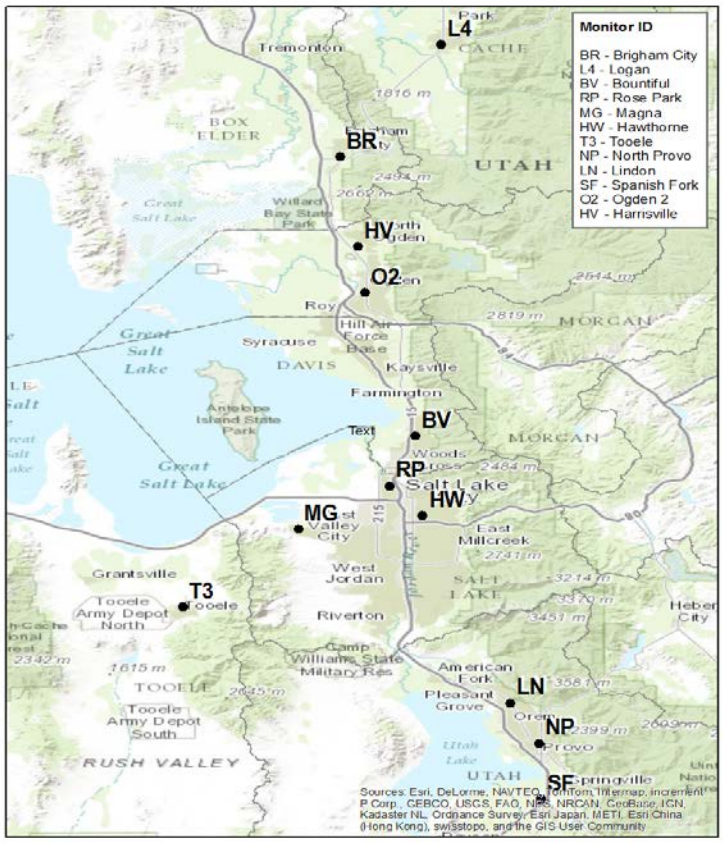


Figure IX.A.11[~~10~~]. 16 UDAQ monitoring network.

A spatial plot is provided for modeled 24-hr $PM_{2.5}$ for 2010 January 03 in Figure IX.A.11[~~10~~]. 17. The spatial plot shows the model does a reasonable job reproducing the high $PM_{2.5}$ values, and keeping those high values confined in the valley locations where emissions occur.

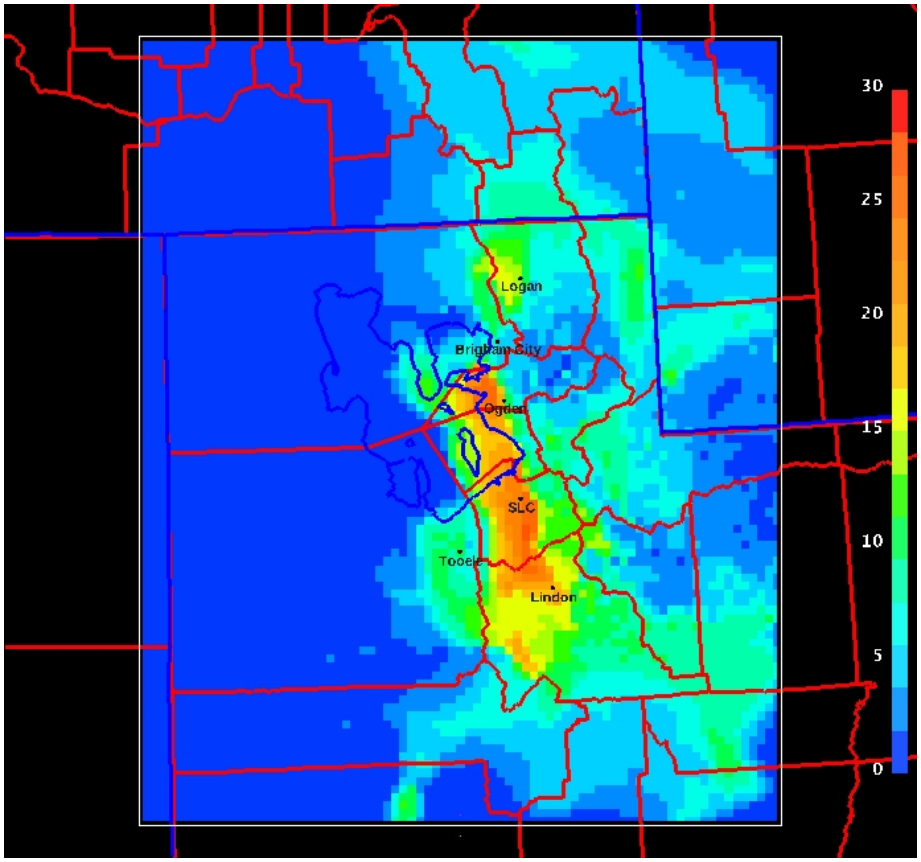


Figure IX.A.11[~~10~~]. 17 Spatial plot of CMAQ modeled 24-hr $PM_{2.5}$ ($\mu g/m^3$) for 2010 Jan. 03.

Time series of 24-hr $PM_{2.5}$ concentrations for the 13 Dec. 2009 – 15 Jan. 2010 modeling period are shown in Figs. IX.A.11[~~10~~]. 18 - 21 at the Hawthorne site in Salt Lake City, the Ogden site in Weber County, the Lindon site in Utah County, and the Logan site in Cache County. For the most part, CMAQ replicates the buildup and washout of each individual episode. While CMAQ builds 24-hr $PM_{2.5}$ concentrations during the 08 Jan. – 14 Jan. 2010 episode, it was not able to produce the > 60 $\mu g/m^3$ concentrations observed at the monitoring locations.

It is often seen that CMAQ "washes" out the $PM_{2.5}$ episode a day or two earlier than that seen in the observations. For example, on the day 21 Dec. 2009, the concentration of $PM_{2.5}$ continues to build while CMAQ has already cleaned the valley basins of high $PM_{2.5}$ concentrations. At these times, the observed cold pool that holds the $PM_{2.5}$ is often very shallow and winds just above this cold pool are southerly and strong before the approaching cold front. This situation is very difficult for a meteorological and photochemical model to reproduce. An example of this situation is shown in Fig. IX.A.11[~~10~~]. 22, where the lowest part of the Salt Lake Valley is still under a very shallow stable cold pool, yet higher elevations of the valley have already been cleared of the high $PM_{2.5}$ concentrations.

During the 24 – 30 Dec. 2009 episode, a weak meteorological disturbance brushes through the northernmost portion of Utah. It is noticeable in the observations at the Ogden monitor on 25 Dec. as $PM_{2.5}$ concentrations drop on this day before resuming an increase through Dec. 30. The meteorological model and thus CMAQ correctly pick up this disturbance, but completely clears out the building $PM_{2.5}$; and thus performance suffers at the most northern Utah monitors (e.g. Ogden, Logan). The monitors to the south (Hawthorne, Lindon) are not influence by this disturbance and building of $PM_{2.5}$ is replicated by CMAQ. This highlights another challenge of modeling $PM_{2.5}$ episodes in Utah. Often during cold pool events, weak disturbances will pass through Utah that will de-stabilize the valley inversion and cause a partial clear out of $PM_{2.5}$. However, the $PM_{2.5}$ is not completely cleared out, and after the disturbance exits, the valley inversion strengthens and the $PM_{2.5}$ concentrations continue to build. Typically, CMAQ completely mixes out the valley inversion during these weak disturbances.

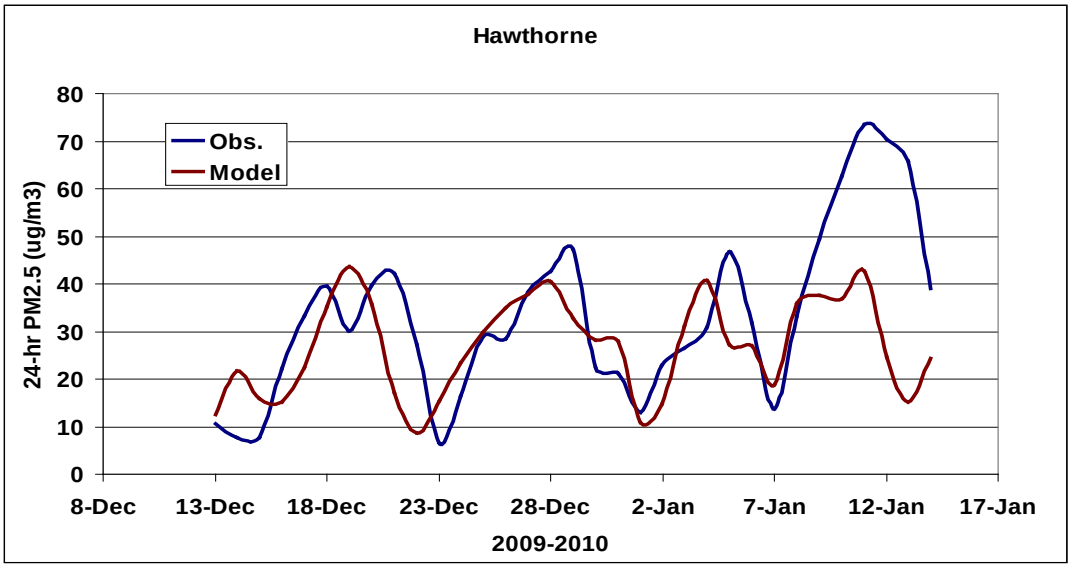


Figure IX.A.11[~~10~~]. 18 24-hr $PM_{2.5}$ time series (Hawthorne). Observed 24-hr $PM_{2.5}$ (blue trace) and CMAQ modeled 24-hr $PM_{2.5}$ (red trace).

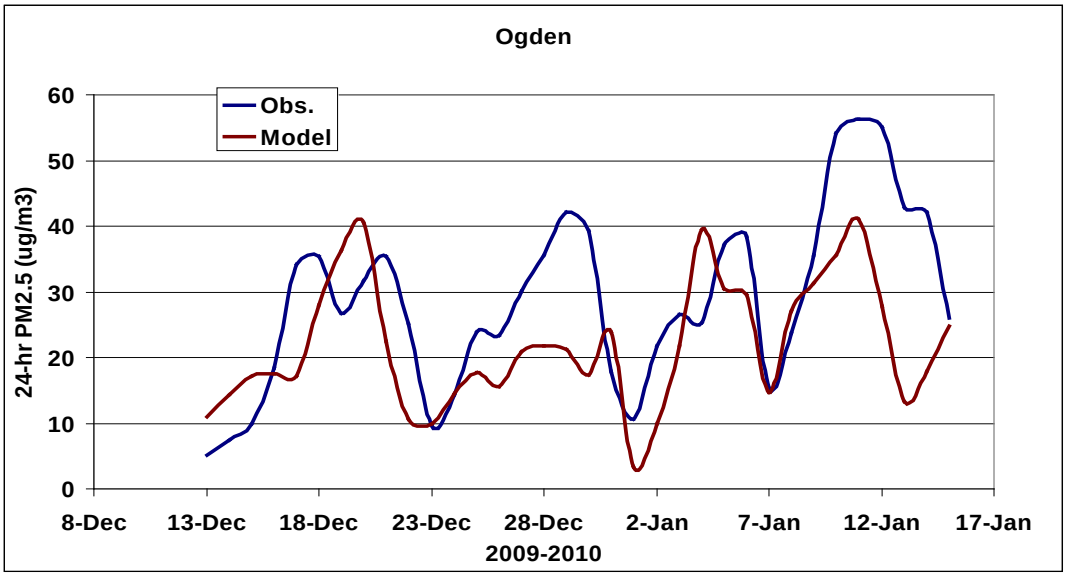


Figure IX.A.11[~~10~~]. 19 24-hr $PM_{2.5}$ time series (Ogden). Observed 24-hr $PM_{2.5}$

(blue trace) and CMAQ modeled 24-hr $PM_{2.5}$ (red trace).

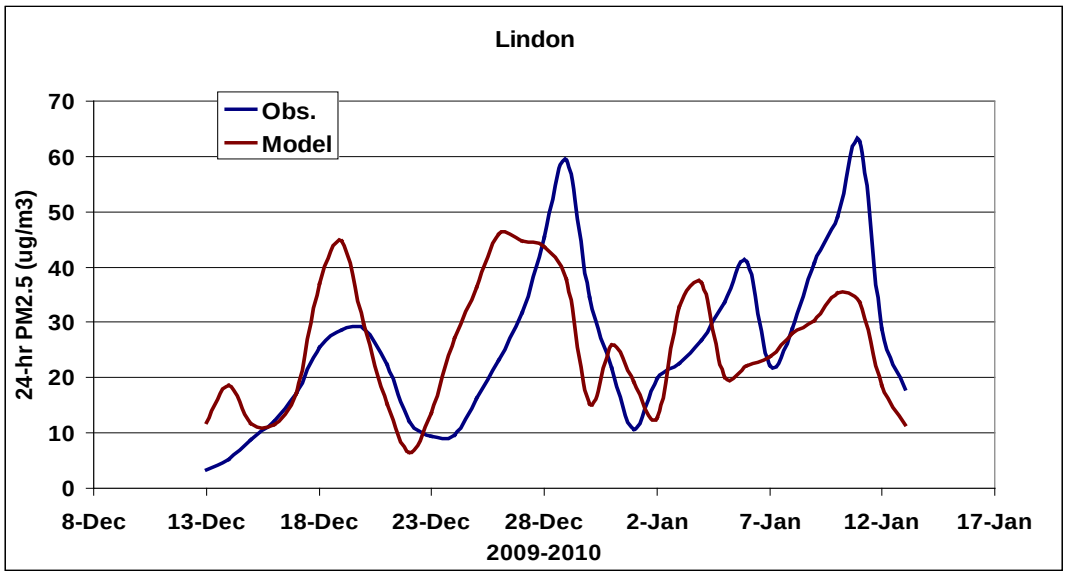


Figure IX.A.11[~~10~~]. 20 24-hr $PM_{2.5}$ time series (Lindon). Observed 24-hr $PM_{2.5}$ (blue trace) and CMAQ modeled 24-hr $PM_{2.5}$ (red trace).

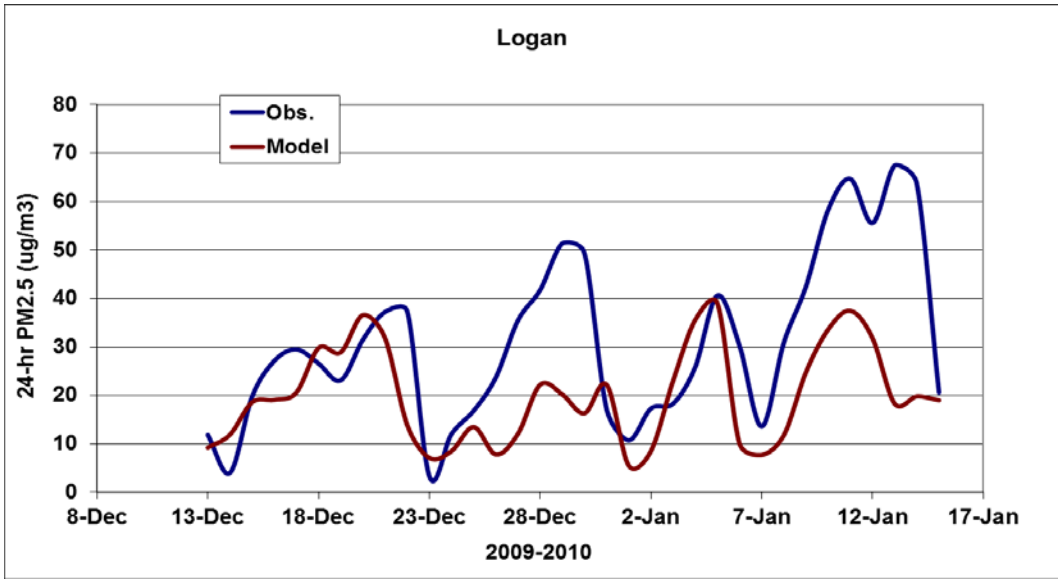


Figure IX.A.11[~~10~~]. 21 24-hr $PM_{2.5}$ time series (Logan). Observed 24-hr $PM_{2.5}$ (blue trace) and CMAQ modeled 24-hr $PM_{2.5}$ (red trace).

Figure IX.A.11[~~10~~]. 22 An example of the Salt Lake Valley at the end of a high $PM_{2.5}$ episode. The lowest elevations of the Salt Lake Valley are still experiencing an inversion and elevated $PM_{2.5}$ concentrations while the $PM_{2.5}$ has been 'cleared out' throughout the rest of the valley. These 'end of episode' clear out periods are difficult to replicate in the photochemical model.

Generally, the performance of CMAQ to replicate the buildup and clear out of $PM_{2.5}$ is good. However, it is important to verify that CMAQ is replicating the components of $PM_{2.5}$ concentrations. $PM_{2.5}$ simulated and observed speciation is shown at the 3 STN sites in Figures IX.A.11[~~10~~]. 23 -25. The observed speciation is constructed using days in which the STN filter 24-hr $PM_{2.5}$ concentration was > 35 µg/m^3. For the 2009-2010 modeling period, the observed speciation pie charts were created using 8 filter days at Hawthorne, 6 days at Lindon, and 4 days at Bountiful.

The simulated speciation is constructed using modeling days that produced 24-hr $PM_{2.5}$ concentrations > 35 µg/m^3. Using this criterion, the simulated speciation pie chart is created from 18 modeling days for Hawthorne, 14 days at Lindon, and 14 days at Bountiful.
At all 3 STN sites, the percentage of simulated nitrate is greater than 40%, while the simulated ammonium percentage is at ~15%. This indicates that the model is able to replicate the secondarily formed particulates that typically make up the majority of the measured $PM_{2.5}$ on the STN filters during wintertime pollution events.

The percentage of model simulated organic carbon is ~13% at all STN sites, which is in agreement with the observed speciation of organic carbon at Hawthorne and slightly overestimated (by ~3%) at Lindon and Bountiful.

There is no STN site in the Logan nonattainment area, and very little speciation information available in the Cache Valley. Figure IX.A.11[~~10~~]. 26 shows the model simulated speciation at Logan. Ammonium (17%) and nitrate (56%) make up a higher percentage of the simulated $PM_{2.5}$ at Logan when compared to sites along the Wasatch Front.

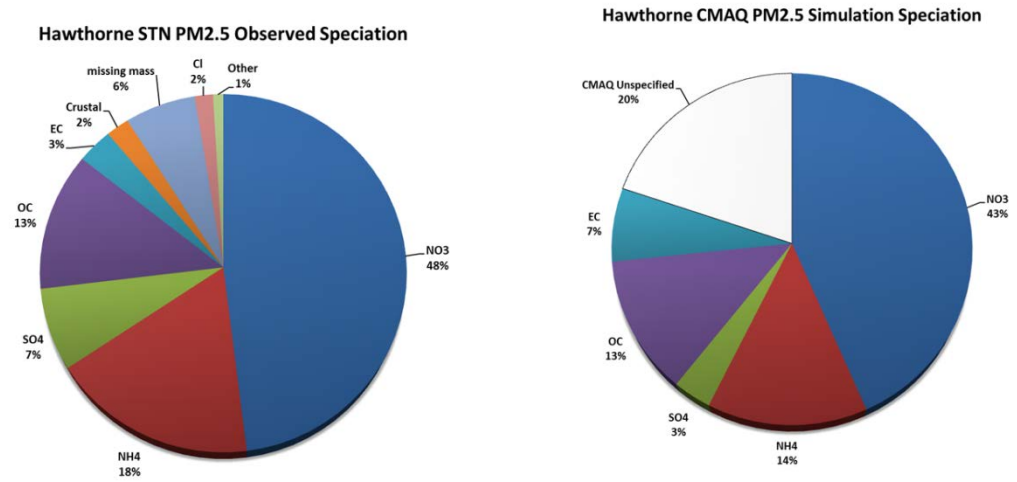


Figure IX.A.11[~~10~~]. 23 The composition of observed and model simulated average 24-hr $PM_{2.5}$ speciation averaged over days when an observed and modeled day had 24-hr concentrations > 35 µg/m^3 at the Hawthorne STN site.

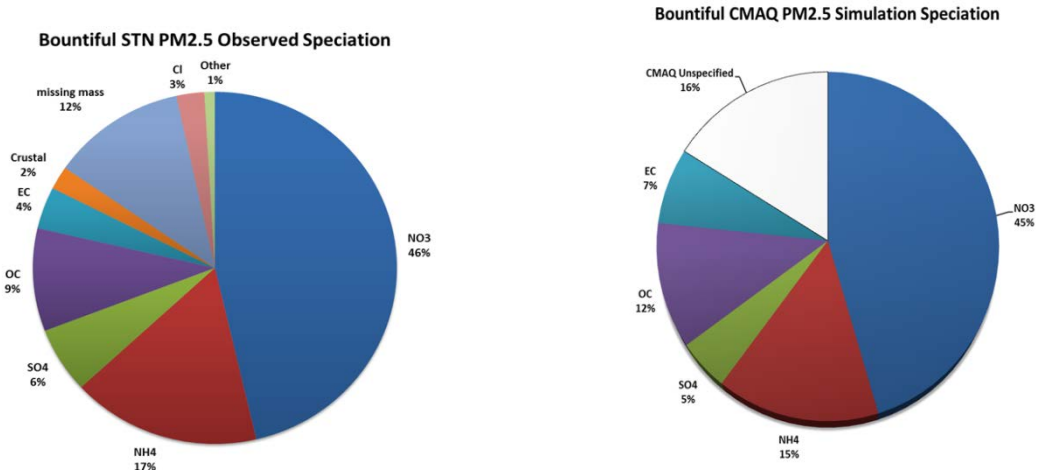


Figure IX.A.11[~~10~~]. 24 The composition of observed and model simulated average 24-hr $PM_{2.5}$ speciation averaged over days when an observed and modeled day had 24-hr concentrations > 35 µg/m^3 at the Bountiful STN site.

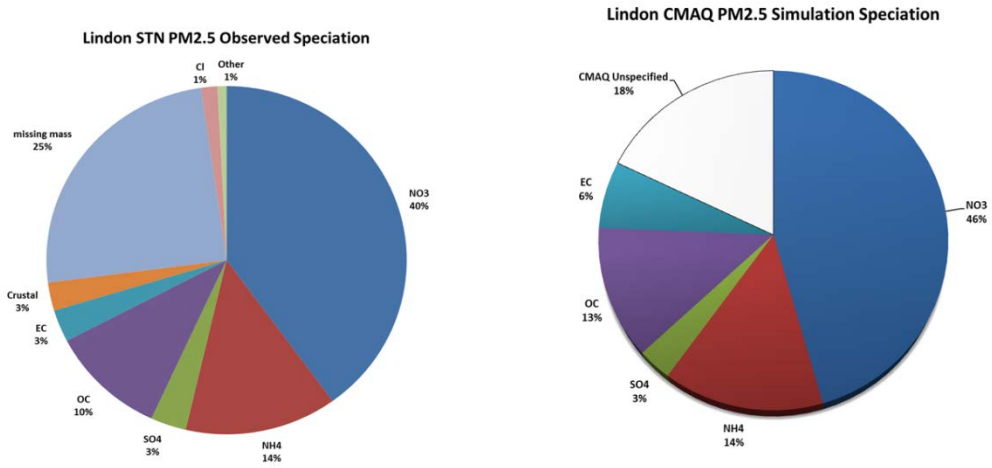


Figure IX.A.11[~~10~~]. 25 The composition of observed and model simulated average 24-hr $PM_{2.5}$ speciation averaged over days when an observed and modeled day had 24-hr concentrations > 35 µg/m^3 at the Lindon STN site.

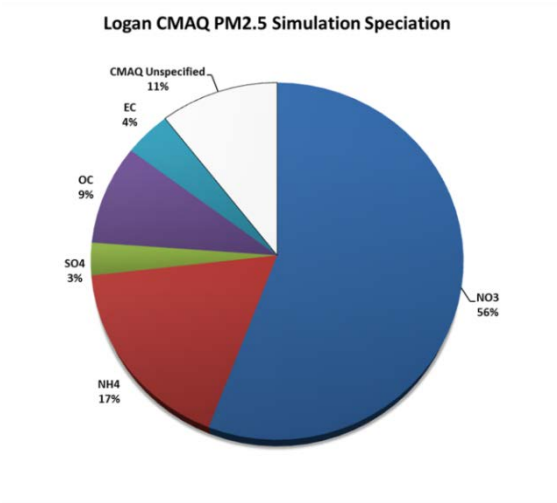


Figure IX.A.11[~~10~~]. 26 The composition of model simulated average 24-hr $PM_{2.5}$ speciation averaged over days when a modeled day had 24-hr concentrations > 35 µg/m^3 at the Logan monitoring site. No observed speciation data is available for Logan.

PM_{10} Results

As mentioned previously, the bulk of the performance for CMAQ modeled Particulate Matter (PM) for the 2009 – 2010 episode was done for the 24-hr $PM_{2.5}$ SIP. The detailed model performance was shown using time series, statistical metrics, and pie charts. For the CMAQ performance of PM_{10} in particular, UDAQ has updated the model versus observations time series plots to show PM_{10}, in addition to the prior times series using $PM_{2.5}$. For the 2009 – 2010 episode, UDAQ collected PM_{10} observational data at Hawthorne and Magna in Salt Lake County; Lindon and North Provo in Utah County; and for Ogden City.

The PM_{10} model versus observation time series is shown in Figures IX.A.11[~~10~~]. 27 - 32.

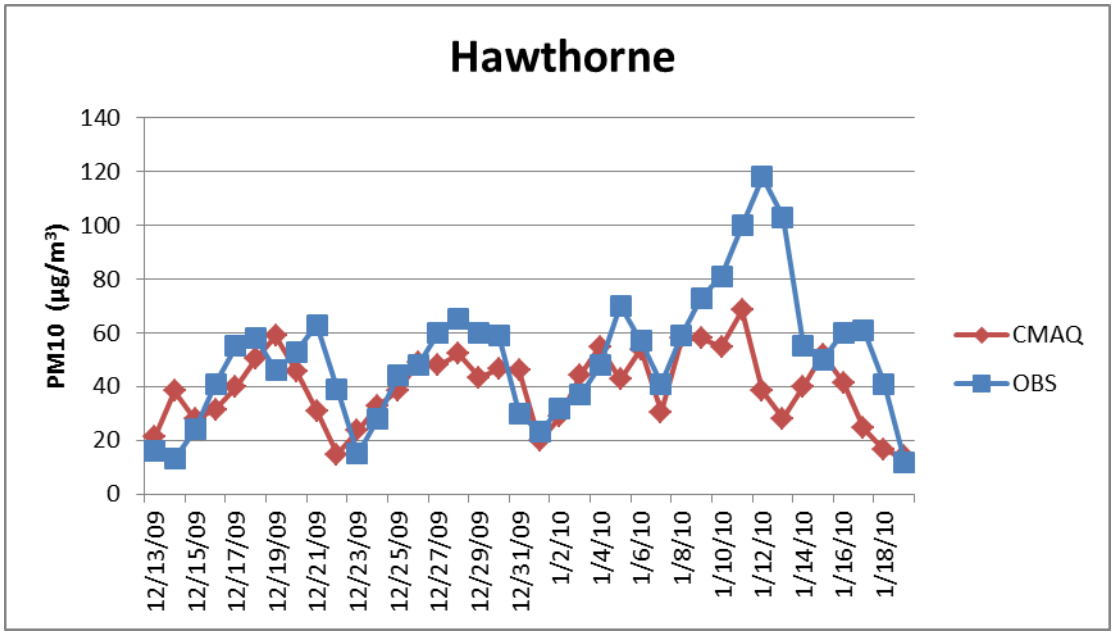


Figure IX.A.11[~~10~~]. 27 Time Series of total PM10 (ug/m3) for Hawthorne for the 2009-2010 modeling. CMAQ results are shown in the red trace and the observations are the blue trace.

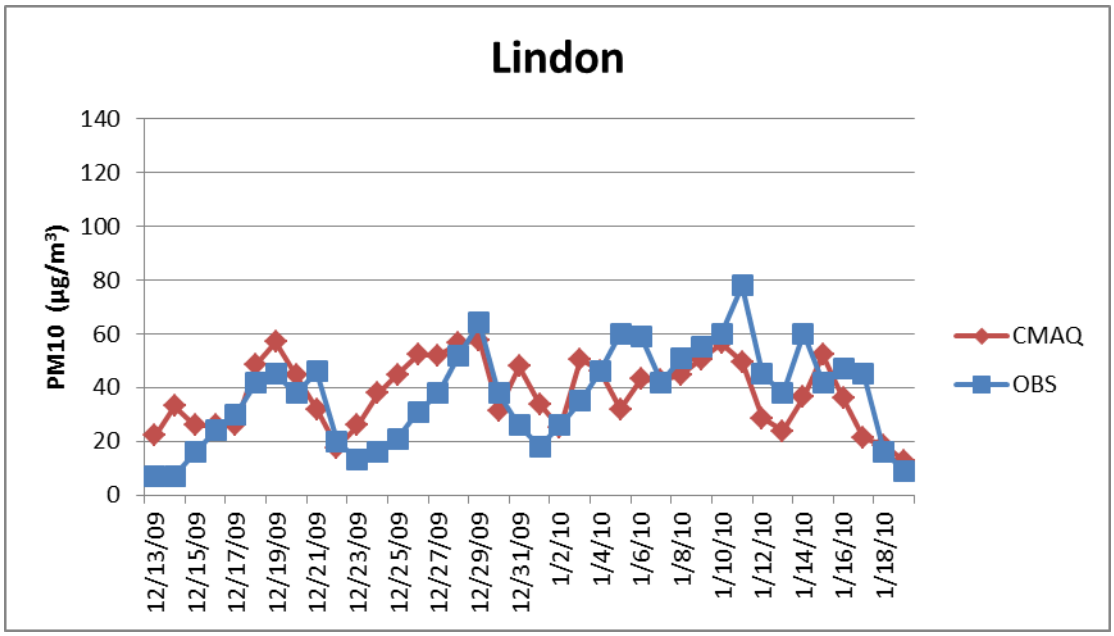


Figure IX.A.11[~~10~~]. 28 Time Series of total PM10 (ug/m3) for Lindon for the 2009-2010 modeling. CMAQ results are shown in the red trace and the observations are the blue trace.

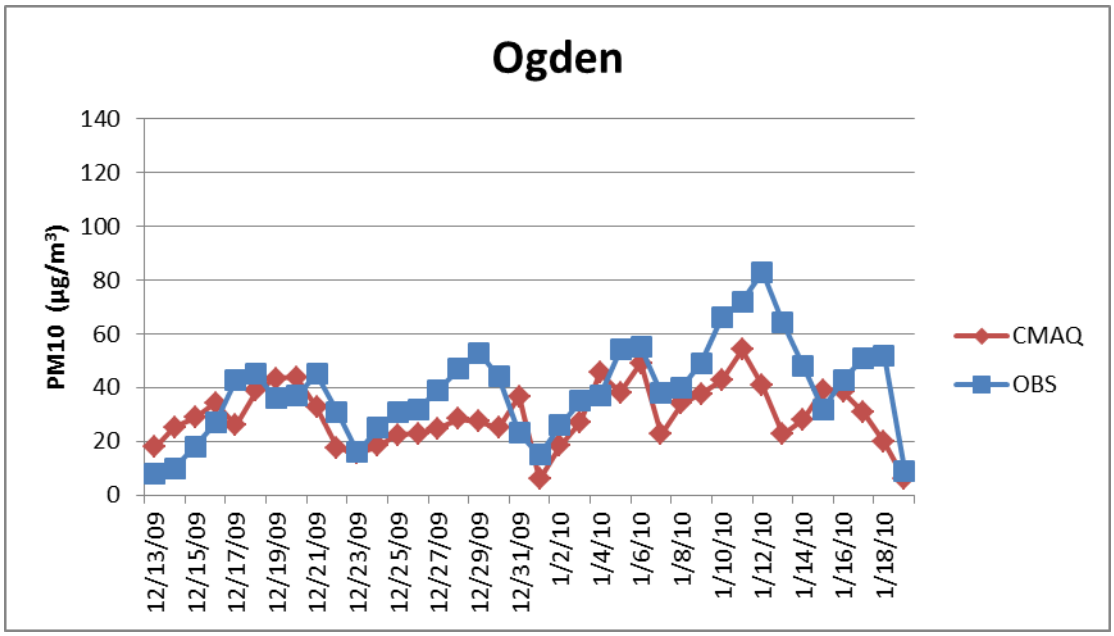


Figure IX.A.11[~~10~~]. 29 Time Series of total PM10 (ug/m3) for Ogden for the 2009-2010 modeling. CMAQ results are shown in the red trace and the observations are the blue trace.

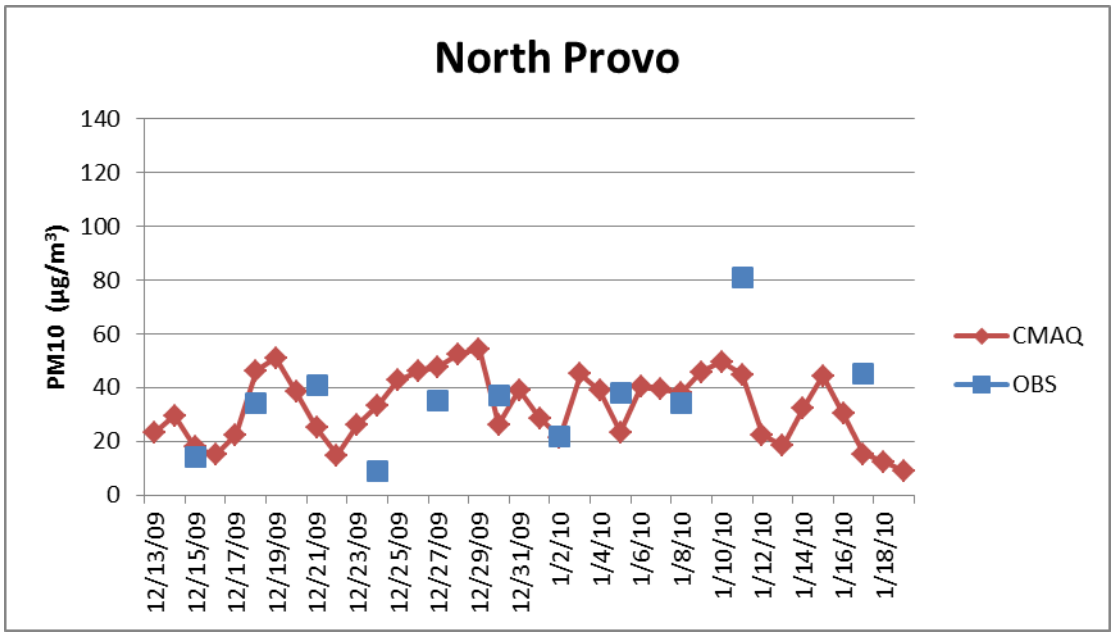


Figure IX.A.11[~~10~~]. 30 Time Series of total PM10 (ug/m3) for North Provo for the 2009-2010 modeling. CMAQ results are shown in the red trace and the observations are the blue trace.

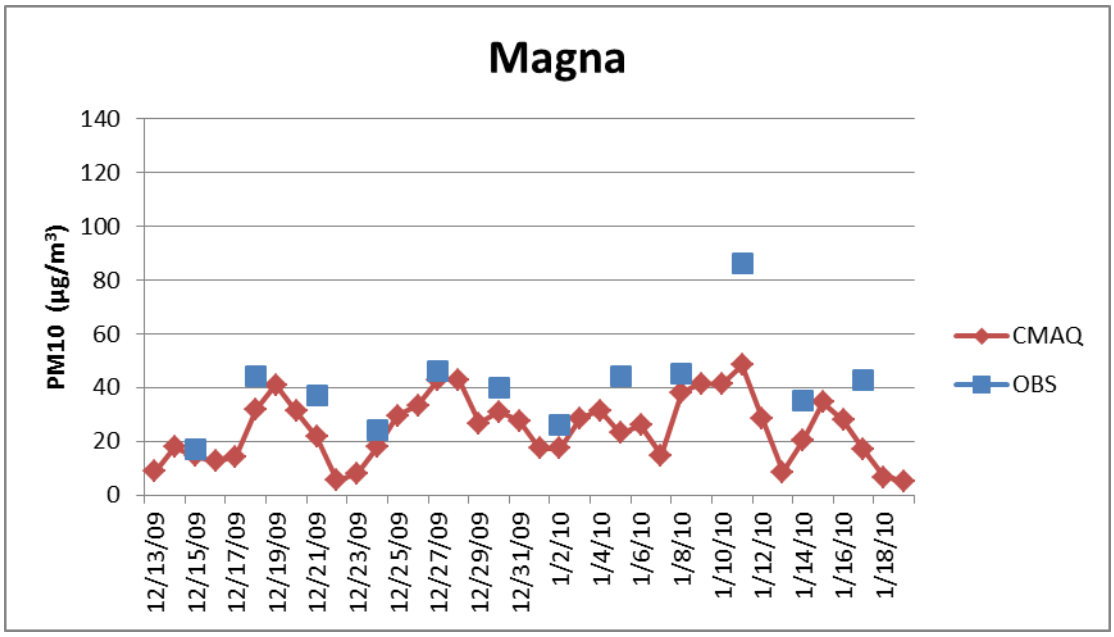


Figure IX.A.11[~~10~~]. 31 Time Series of total PM10 (ug/m3) for Magna for the 2009-2010 modeling. CMAQ results are shown in the red trace and the observations are the blue trace.

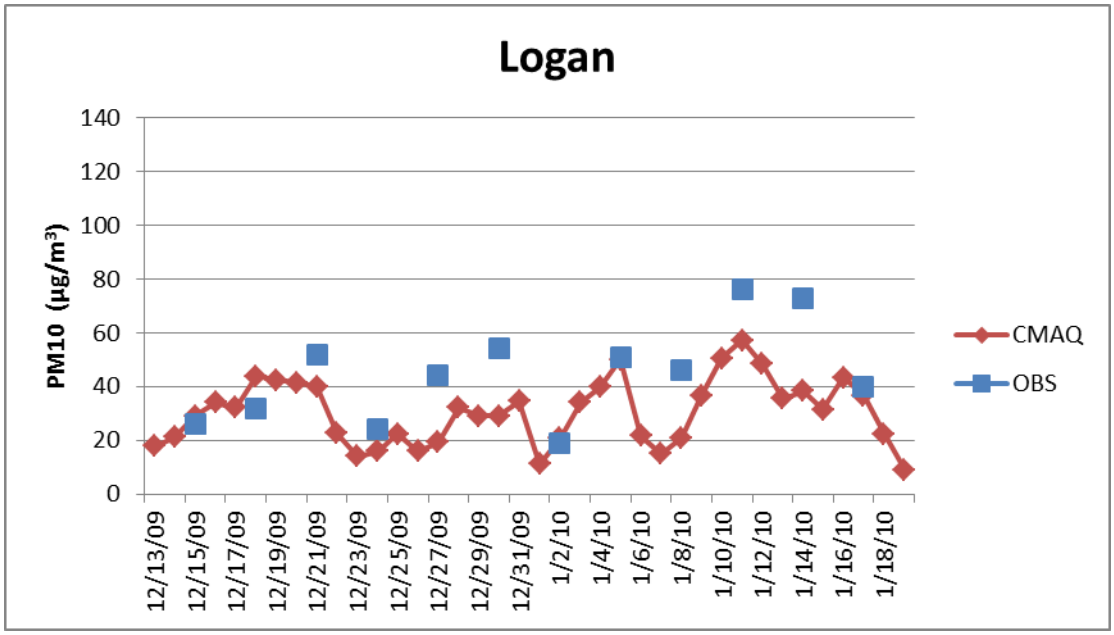


Figure IX.A.11[~~10~~]. 32 Time Series of total PM10 (ug/m3) for Logan for the 2009-2010 modeling. CMAQ results are shown in the red trace and the observations are the blue trace.

As noted before, a robust comparison of CMAQ modeled PM_{10} speciation to PM_{10} filter speciation could not be made for this modeling period because most of the secondarily chemically formed particulate nitrate had been volatized from the PM_{10} filters and thus could not be accounted for. It should be noted that CMAQ was able to produce the secondarily formed nitrate

when compared to $PM_{2.5}$ filters during the previous $PM_{2.5}$ SIP work. Therefore, UDAQ feels CMAQ shows good replication of the species that make up PM_{10} during wintertime pollution events.

(g) Summary of Model Performance

Model performance for 24-hr $PM_{2.5}$ is good and generally acceptable and can be characterized as follows:

- Good replication of the episodic buildup and clear out of $PM_{2.5}$. Often the model will clear out the simulated $PM_{2.5}$ a day too early at the end of an episode. This clear out time period is difficult to model (i.e., Figure IX.A.11[~~10~~]. 22).

- Good agreement in the magnitude of $PM_{2.5}$, as the model can consistently produce the high concentrations of $PM_{2.5}$ that coincide with observed high concentrations.

- Spatial patterns of modeled 24-hr $PM_{2.5}$, show for the most part, that the $PM_{2.5}$ is being confined in the valley basins, consistent to what is observed.

- Speciation and composition of the modeled $PM_{2.5}$ matches the observed speciation quite well. Modeled and observed nitrate are between 40% and 50% of the $PM_{2.5}$. Ammonium is between 15% and 20% for both modeled and observed $PM_{2.5}$, while modeled and observed organic carbon falls between 10% to 13% of the total $PM_{2.5.}$

For PM_{10} the CMAQ model performance is quite good at all locations along Northern Utah. CMAQ is able to re-produce the buildup and washout of the pollution episodes during the 2009 – 2010 winter. CMAQ is also able to re-produce the peak PM_{10} concentrations during most episodes. The exception being the 2010 Jan. 08 – 14 episode, where CMAQ fails to build to the extremely high PM_{10} concentration (>80 ug/m3) seen at the monitors. This episode in particular featured an "early model washout," and these results are similar to the results found in $PM_{2.5}$ modeling.

Several observations should be noted on the implications of these model performance findings on the attainment modeling presented in the following section. First, it has been demonstrated that model performance overall is acceptable and, thus, the model can be used for air quality planning purposes. Second, consistent with EPA guidance, the model is used in a relative sense to project future year values. EPA suggests that this approach "should reduce some of the uncertainty attendant with using absolute model predictions alone."

(h) Modeled Attainment Test

- **Introduction**

With acceptable performance, the model can be utilized to make future-year attainment projections. For any given (future) year, an attainment projection is made by calculating a concentration termed the Future Design Value (FDV). This calculation is made for each monitor included in the analysis, and then compared to the NAAQS (150 $\mu g/m^3$). If the FDV at every monitor located within a nonattainment area is smaller than the NAAQS, this would demonstrate attainment for that area in that future year.

A maintenance plan must demonstrate continued attainment of the NAAQS for a span of ten years. This span is measured from the time EPA approves the plan, a date which is somewhat uncertain during plan development. To be conservative, attainment projections were made for 2019, 2028, and 2030. An assessment was also made for 2024 as a "spot-check" against emission trends within the ten year span.

- **PM_{10} Baseline Design Values**

For any monitor, the FDV is greatly influenced by existing air quality at that location. This can be quantified and expressed as a Baseline Design Value (BDV). The BDV is consistent with the form of the 24-hour PM_{10} NAAQS; that is, that the probability of exceeding the standard should be no greater than once per calendar year. Quantification of the BDV for each monitor is included in the TSD, and is consistent with EPA guidance.

Hourly PM_{10} observations are taken from FRM filters spanning five monitors in three maintenance areas: Salt Lake County, Utah County, and the city of Ogden.

In Table IX.A.11[~~10~~]. 5, baseline design values are given for Ogden, Hawthorne, Magna, Lindon, and North Provo. These values were calculated based on data collected during the 2011-2014 time period.

Table IX.A.11[~~10~~]. 5 Baseline design values listed for each monitor.

Site	Maintenance Area	2011-2014 BDV
Ogden	Ogden City	88.2 µg/m^3
Hawthorne	Salt Lake County	100.9 µg/m^3
Magna	Salt Lake County	70.5 µg/m^3
Lindon	Utah County	111.4 µg/m^3
North Provo	Utah County	124.4 µg/m^3

- **Relative Response Factors**

In making future-year predictions, the output from the CMAQ 4.7.1 model is not considered to be an absolute answer. Rather, the model is used in a relative sense. In doing so, a comparison is made using the predicted concentrations for both the year in question and a pre-selected base-year, which for this plan is 2011. This comparison results in a Relative Response Factor (RRF). RRFs are calculated as follows:

1) Modeled PM_{10} concentrations are calculated for each grid cell in the modeling domain over the 39-day wintertime 2009-2010 episode. Of particular interest are the nine grid cells (3x3 window) that are collocated with each monitor. The monitor, itself is located in the window's center cell.

2) For every simulated day, the maximum daily PM_{10} concentration for each of these nine-cell windows is identified.

3) For each monitor, the top 20% of these 39 values are averaged to formulate a modeled PM_{10} peak concentration value (PCV).

4) At each monitor, the RRF is calculated as the ratio between future-year PCV and base-year PCV: **RRF = FPCV / BPCV**

- **Future Design Values and Results**

Finally, for each monitor, the FDV is calculated by multiplying the baseline design value by the relative response factor: **FDV = RRF * BDV**. These FDV's are compared to the NAAQS in order to determine whether attainment is predicted at that location or not. The results for each of the monitors are shown below in Table IX.A.11[~~10~~]. 6.

Table IX.A.11[~~10~~]. 6 Baseline design values, relative response factors, and future design values for all monitors and future years. Units of design values are µg/m^3, while RRF's are dimensionless.

Monitor	2011 BDV	2019 RRF	2019 FDV	2024 RRF	2024 FDV	2028 RRF	2028 FDV	2030 RRF	2030 FDV
Ogden	88.2	1.05	92.6	1.04	91.7	1.04[~~02~~]	91.7[~~90.0~~]	1.05	92.6
Hawthorne	100.9	1.09	110.0	1.09	110.0	1.11[~~09~~]	112.0[~~110.0~~]	1.12	113.0
Magna	70.5	1.14	80.4	1.13	79.7	1.14[~~11~~]	80.4[~~78.3~~]	1.15	81.1
Lindon	111.4	1.16	129.2	1.12	124.8	1.14[~~11~~]	127.0[~~123.7~~]	1.16	129.2
North Provo	124.4	1.15	143.1	1.12	139.3	1.13[~~10~~]	140.6[~~136.8~~]	1.15	143.1

For all future-years and monitors, no FDV exceeds the NAAQS. Therefore continued attainment is demonstrated for all three maintenance areas.

(2) Attainment Inventory

The attainment inventory is discussed in EPA guidance (Calcagni) as another one of the core provisions that should be considered by states for inclusion in a maintenance plan.

According to Calcagni, the stated purpose of the attainment inventory is to establish the level of emissions during the time periods associated with monitoring data showing attainment.

In cases such as this, where a maintenance demonstration is founded on a modeling analysis that is used in a relative sense, the baseline inventory modeled as the basis for comparison with every projection year model run is best suited to act as the attainment inventory. For this analysis, a baseline inventory was compiled for the year 2011. This year also falls within the span of data representing current attainment of the PM_{10} NAAQS.

Calcagni speaks about the projection inventory as well, and notes that it should consider future growth, including population and industry, should be consistent with the base-year attainment inventory, and should document data inputs and assumptions. Any assumptions concerning emission rates must reflect permanent, enforceable measures.

Utah compiled projection inventories for use in the quantitative modeling demonstration. The years selected for projection included 2019, 2024, 2028, and 2030. The emissions contained in the inventories include sources located within a regional area called a modeling domain. The

modeling domain encompasses all three areas within the state that were designated as nonattainment areas for PM_{10}: Salt Lake County, Utah County, and Ogden City, as well as a bordering region see Figure IX.A.11[~~10~~] 1.

Since this bordering region is so large (owing to its creation to assess a much larger region of $PM_{2.5}$ nonattainment), a "core area" within this domain was identified wherein a higher degree of accuracy would be important. Within this core area (which includes Weber, Davis, Salt Lake, and Utah Counties), SIP-specific inventories were prepared to include seasonal adjustments and forecasting to represent each of the projection years. In the bordering regions away from this core, the 2011 National Emissions Inventory was downloaded from EPA and inserted to the analysis. It remained unchanged throughout the analysis period.

There are four general categories of sources included in these inventories: large stationary sources, smaller area sources, on-road mobile sources, and off-road mobile sources.

For each of these source categories, the pollutants that were inventoried included: particulate matter with an aerodynamic diameter of ten microns or less (PM_{10}), sulfur dioxide (SO_2), oxides of nitrogen (NO_X), volatile organic compounds (VOC), and ammonia. SO_2 and NO_X are specifically defined as PM_{10} precursors, that is, compounds that, after being emitted to the atmosphere, undergo chemical or physical change to become PM_{10}. Any PM_{10} that is created in this way is referred to as secondary aerosol. The CMAQ model also considers ammonia and VOC to be contributing factors in the formation of secondary aerosol.

The unit of measure for point and area sources is the traditional tons per year, but the CMAQ model includes a pre-processor that converts these emission rates to hourly increments throughout each day for each episode. Mobile source emissions are reported in terms of tons per day, and are also pre-processed by the model.

The basis for the point source and area inventories, for the base-year attainment inventory as well as all future-year projection inventories, was the 2011 tri-annual inventory of actual emissions that had already been compiled by the Division of Air Quality.

Area sources, off-road mobile sources, and generally also the large point sources were projected forward from 2011, using population and economic forecasts from the Governor's Office of Management and Budget.

Mobile source emissions were calculated for each year using MOVES2010 in conjunction with the appropriate estimates for vehicle miles traveled (VMT). VMT estimates for the urban counties were based on a travel demand model that is only run periodically for specific projection years. VMT for intervening years were estimated by interpolation.

Since this SIP subsection takes the form of a maintenance plan, it must demonstrate that the area will continue to attain the PM_{10} NAAQS throughout a period of ten years from the date of EPA approval. It is also necessary to "spot check" this ten-year interval. Hence, projection inventories were prepared for the following years: 2019, 2024, 2028, (the ten-year mark from anticipated EPA approval), and 2030. 2011 was established as the baseline period.

The following tables are provided to summarize these inventories. As described, they represent point, area, on-road mobile, and off-road mobile sources in the modeling domain. They include PM_{10}, SO_2, NO_X, VOC, and ammonia.

Table IX.A.11[~~10~~]. 7 shows the baseline emissions for each of the areas within the modeling domain. Table IX.A.11[~~10~~]. 8 is specific to this nonattainment area, and shows the emissions from the baseline through the projection years.

Table IX.A.11[~~10~~]. 7 Baseline Emissions throughout the Modeling Domain

2011 Baseline	NA-Area	Source Category	PM10	SO2	NOx	VOC	NH3
2011 Baseline Sum of Emissions (tpd)	Ogden City NA-Area	Area Sources	0.85	0.08	2.12	5.67	0.86
		NonRoad	0.90	0.00	1.32	0.91	0.00
		Point Source	0.00	0.00	0.00	0.00	0.00
		Mobile Sources	2.09	0.05	12.18	8.58	0.22
		Provo NA Total	**3.84**	**0.13**	**15.62**	**15.16**	**1.08**
	Salt Lake County NA-Area	Area Sources	~~4.61~~	~~0.05~~	~~0.73~~	~~32.62~~	~~1.53~~
		NonRoad	7.12	0.32	11.71	6.38	0.00
		Point Source	4.04	8.90	15.56	2.97	0.20
		Mobile Sources	10.95	0.28	57.96	35.35	1.14
		Salt Lake City NA Total	~~26.72~~	~~9.55~~	~~85.96~~	~~77.32~~	~~2.87~~
	Utah County NA-Area	Area Sources	~~2.19~~	~~0.02~~	~~0.22~~	~~1.16~~	~~0.83~~
		NonRoad	3.53	0.02	4.24	2.31	0.00
		Point Source	0.28	0.29	1.03	0.18	0.18
		Mobile Sources	4.90	0.13	24.64	11.89	0.49
		Surrounding Areas Total	~~10.90~~	~~0.46~~	~~30.13~~	~~15.54~~	~~1.50~~
	Surrounding Areas	Area Sources	~~537.49~~	~~13.60~~	~~228.31~~	~~629.52~~	~~331.22~~
		NonRoad	34.53	0.10	60.77	72.57	0.01
		Point Source	17.64	283.15	538.86	63.96	6.08
		Mobile Sources	22.80	193.52	434.92	6.47	1.67
		Surrounding Areas Total	~~612.46~~	~~490.37~~	~~1262.86~~	~~772.52~~	~~338.98~~
		2011 Total	**653.92**	**500.51**	**1394.57**	**880.54**	**344.43**

2011 Baseline	NA-Area	Source Category	PM10	SO2	NOx	VOC	NH3
2011 Baseline Sum of Emissions (tpd)	Ogden City NA-Area	Area Sources	0.85	0.08	2.12	5.67	0.86
		NonRoad Sources	0.90	0.00	1.32	0.91	0.00
		Point Sources	0.00	0.00	0.00	0.00	0.00
		Mobile Sources	2.09	0.05	12.18	8.58	0.22
		Ogden City NA Total	**3.84**	**0.13**	**15.62**	**15.16**	**1.08**
	Salt Lake County NA-Area	Area Sources	5.50	0.37	9.14	30.35	3.82
		NonRoad Sources	7.12	0.32	11.71	6.38	0.00
		Point Sources	4.04	8.90	15.56	2.97	0.20
		Mobile Sources	10.95	0.28	57.96	35.35	1.14
		Salt Lake County NA Total	**27.61**	**9.87**	**94.37**	**75.05**	**5.16**
	Utah County NA-Area	Area Sources	3.90	0.28	5.61	13.02	6.62
		NonRoad Sources	3.53	0.02	4.24	2.31	0.00
		Point Sources	0.28	0.29	1.03	0.18	0.18
		Mobile Sources	4.90	0.13	24.64	11.89	0.49
		Utah County NA Total	**12.61**	**0.72**	**35.52**	**27.40**	**7.29**
	Surrounding Areas	Area Sources	534.89	13.02	214.51	619.93	323.14
		NonRoad Sources	34.53	0.10	60.77	72.57	0.01
		Point Sources	17.64	283.15	538.86	63.96	6.08
		Mobile Sources	22.80	193.52	434.92	6.47	1.67
		Surrounding Areas Total	**609.86**	**489.79**	**1,249.06**	**762.93**	**330.90**
		2011 Total	**653.92**	**500.51**	**1,394.57**	**880.54**	**344.43**

Table IX.A.11[~~10~~]. 8 Salt Lake County Nonattainment Area; Actual Emissions for 2011 and Emission Projections for 2019, 2024, 2028, and 2030.

Year	NA-Area	Source Category	PM10	SO2	NOx	VOC	NH3
2011 Baseline	Salt Lake County NA-Area	Area Sources	~~4.61~~	~~0.05~~	~~0.73~~	~~32.62~~	~~1.53~~
		NonRoad	7.12	0.32	11.71	6.38	0.00
		Point Source	4.04	8.90	15.56	2.97	0.20
		Mobile Sources	10.95	0.28	57.96	35.35	1.14
		2011 Total	~~26.72~~	~~9.55~~	~~85.96~~	~~77.32~~	~~2.87~~
2019	Salt Lake County NA-Area	Area Sources	~~4.61~~	~~0.05~~	~~0.73~~	~~32.62~~	~~1.53~~
		NonRoad	8.28	0.36	9.11	5.94	0.01
		Point Source	11.29	7.72	22.17	3.77	0.26
		Mobile Sources	10.88	0.31	25.79	21.16	0.89
		2019 Total	~~35.06~~	~~8.44~~	~~57.80~~	~~63.49~~	~~2.69~~
2024	Salt Lake County NA-Area	Area Sources	~~4.61~~	~~0.05~~	~~0.73~~	~~32.62~~	~~1.53~~
		NonRoad	8.83	0.40	8.48	6.22	0.01
		Point Source	11.52	8.16	22.36	3.86	0.29
		Mobile Sources	11.28	0.29	17.16	16.63	0.89
		2024 Total	~~36.24~~	~~8.90~~	~~48.73~~	~~59.33~~	~~2.72~~
2028	Salt Lake County NA-Area	Area Sources	~~4.61~~	~~0.05~~	~~0.73~~	~~32.62~~	~~1.53~~
		NonRoad	9.27	0.44	8.43	6.54	0.01
		Point Source	11.72	8.57	~~0.00~~	3.95	0.31
		Mobile Sources	11.82	0.28	13.88	13.94	0.91
		2028 Total	~~37.42~~	~~9.34~~	~~23.04~~	~~57.05~~	~~2.76~~
2030	Salt Lake County NA-Area	Area Sources	~~4.61~~	~~0.05~~	~~0.73~~	~~32.62~~	~~1.53~~
		NonRoad	9.52	0.46	8.50	6.72	0.01
		Point Source	11.83	8.82	22.68	4.00	0.32
		Mobile Sources	12.07	0.28	12.59	13.34	0.93
		2030 Total	~~38.03~~	~~9.61~~	~~44.50~~	~~56.68~~	~~2.79~~

Year	NA-Area	Source Category	PM10	SO2	NOx	VOC	NH3
2011 Baseline	Salt Lake County NA-Area	Area Sources	5.50	0.37	9.14	30.35	3.82
		NonRoad	7.12	0.32	11.71	6.38	0.00
		Point Sources	4.04	8.90	15.56	2.97	0.20
		Mobile Sources	10.95	0.28	57.96	35.35	1.14
		2011 Total	27.61	9.87	94.37	75.05	5.16
2019	Salt Lake County NA-Area	Area Sources	4.88	0.35	5.84	22.06	4.18
		NonRoad	8.28	0.36	9.11	5.94	0.01
		Point Sources	11.29	7.72	22.17	3.77	0.26
		Mobile Sources	10.88	0.31	25.79	21.16	0.89
		2019 Total	35.33	8.74	62.91	52.93	5.34
2024	Salt Lake County NA-Area	Area Sources	5.03	0.51	5.41	22.83	4.48
		NonRoad	8.83	0.40	8.48	6.22	0.01
		Point Sources	11.52	8.16	22.36	3.86	0.29
		Mobile Sources	11.28	0.29	17.16	16.63	0.89
		2024 Total	36.66	9.36	53.41	49.54	5.67
2028	Salt Lake County NA-Area	Area Sources	5.25	0.43	5.58	23.80	4.67
		NonRoad	9.27	0.44	8.43	6.54	0.01
		Point Sources	11.72	8.57	22.55	3.95	0.31
		Mobile Sources	11.82	0.28	13.88	13.94	0.91
		2028 Total	38.06	9.72	50.44	48.23	5.90
2030	Salt Lake County NA-Area	Area Sources	5.36	0.34	5.63	24.30	4.76
		NonRoad	9.52	0.46	8.50	6.72	0.01
		Point Sources	11.83	8.82	22.68	4.00	0.32
		Mobile Sources	12.07	0.28	12.59	13.34	0.93
		2030 Total	38.78	9.90	49.40	48.36	6.02

More detail concerning any element of the inventory can be found at the appropriate section of the Technical Support Document (TSD). More detail about the general construction of the inventory may be found in the Inventory Preparation Plan.

(3) Emissions Limitations

As discussed above, the larger sources within the nonattainment areas were individually inventoried and modeled in the analysis.

A subset of these "large" sources was subsequently identified for the purpose of establishing emission limitations as part of the Utah SIP. This subset includes any source located within any of the three current nonattainment areas for PM_{10}: Salt Lake County, Utah County, or Ogden City whose actual emissions of PM_{10}, SO_2, or NOx exceeded 100 tons in 2011, or who had the potential to emit 100 tpy of any of these pollutants. A source might also be included in the subset if it was currently regulated for PM_{10} under section IX, Part H of the Utah SIP. There were several sources in Davis County that were close enough to the border so as to have originally been included in the original PM_{10} SIP.

As discussed before, the emission limits for these sources had already been reflected in the projected emissions inventories used in the modeling analysis. Only those limits for which credit is being taken in the SIP have been incorporated specifically into the SIP. Many of these limits appear in state issued Approval Orders or Title V Operating Permits. Such regulatory documents typically include many emission limits and operating restrictions. However, the limits found in the SIP cannot be changed unless the State provides, and EPA approves, a SIP revision.

These limits are incorporated in the Utah SIP at Section IX, Part H (formerly Sections 1 and 2 of Appendix A to Section IX, Part A), and as such are federally enforceable.

These conditions support a demonstration of maintenance through 2030.

(4) Emission Reduction Credits

Under Utah's new source review rules in R307-403-8, banking of emission reduction credits (ERCs) is permitted to the fullest extent allowed by applicable Federal Law as identified in 40 CFR 51, Appendix S, among other documents. Under Appendix S, Section IV.C.5, a permitting authority may allow banked ERCs to be used under the preconstruction review program (R307-403) as long as the banked ERCs are identified and accounted for in the SIP control strategy.

Existing Emission Reduction Credits, for PM_{10}, SO_2, and NOx, were included in the modeled demonstration of maintenance outlined in Subsection IX.A.11[~~10~~].c(1).

The subsequent crediting of any emission reduction of PM_{10}, or precursors thereto, whether pre-existing or established subsequent to the approval of this SIP revision, remains permissible. In general, credits must be in excess and must be established by actual, verifiable, and enforceable reductions in emissions. Additionally, these ERCs cannot be used to offset major new sources or major modifications at existing sources in $PM_{2.5}$ nonattainment areas.

Once Salt Lake County is redesignated to attainment for PM_{10}, permitting new PM_{10} sources or major modifications to existing PM_{10} sources will be conducted under the rules of the Prevention of Significant Deterioration program.

(5) Additional Controls for Future Years

Since the emission limitations discussed in subsection IX.A.11[~~10~~].c.(3) are federally enforceable and, as demonstrated in IX.A.11[~~10~~].c(1) above, are sufficient to ensure continued attainment of the PM_{10} NAAQS, there is no need to require any additional control measures to maintain the PM_{10} NAAQS.

(6) Mobile Source Budget for Purposes of Conformity

The transportation conformity provisions of section 176(c)(2)(A) of the Clean Air Act (CAA) require regional transportation plans and programs to show that "…emissions expected from implementation of plans and programs are consistent with estimates of emissions from motor vehicles and necessary emissions reductions contained in the applicable implementation plan…" EPA's transportation conformity regulation (40 CFR 93, Subpart A, last amended at 77 FR 14979, March 14 2012) also requires that motor vehicle emission budgets must be established for the last year of the maintenance plan, and may be established for any years deemed appropriate (see 40 CFR 93.118((b)(2)(i)). If the maintenance plan does not establish motor vehicle emissions budgets for any years other than the last year of the maintenance plan, the conformity regulation requires that a "demonstration of consistency with the motor vehicle emissions budget(s) must be accompanied by a qualitative finding that there are not factors which would cause or contribute to a new violation or exacerbate an existing violation in the years before the last year of the maintenance plan." The normal interagency consultation process required by the regulation (40 CFR 93.105) shall determine what must be considered in order to make such a finding.

Thus, for a Metropolitan Planning Organization's (MPO's) Regional Transportation Plan (RTP), analysis years that are after the last year of the maintenance plan (in this case 2030), a conformity determination must show that emissions are less than or equal to the maintenance plan's motor vehicle emissions budget(s) for the last year of the implementation plan.

EPA's MOVES2014 was used to calculate mobile source emissions, and road dust projections were calculated using the January 2011 update to AP-42 Method for Estimating Re-Entrained Road Dust from Paved Roads (Chapter 13, released 76 FR 6329 February 4, 2011).

[~~Utah has determined that mobile sources are not significant contributors of SO_2 for this maintenance plan. As such, this maintenance plan does not establish a motor vehicle emissions budget for SO_2.~~]

(a) Salt Lake County Mobile Source PM10 Emissions Budgets

In this maintenance plan, Utah is establishing transportation conformity motor vehicle emission budgets (MVEB) for PM_{10} (direct) and NOx for 2030.

(i) Direct PM10 Emissions Budget

Direct (or "primary") PM_{10} refers to PM_{10} that is not formed via atmospheric chemistry. Rather, direct PM_{10} is emitted straight from a mobile or stationary source. With regard to the emission budget presented herein, direct PM_{10} includes road dust, brake wear, and tire wear as well as PM_{10} from exhaust.

As presented in the Technical Support Document for on-road mobile sources, the estimated on-road mobile source emissions for Salt Lake County, in 2030**,** of direct sources of PM_{10} (road dust,

brake wear, tire wear, and exhaust particles) were 12.07 tons per winter-weekday. These mobile source PM_{10} emissions were included in the maintenance demonstration in Subsection IX.A.11[~~10~~].c.(1) which estimates a maximum PM_{10} concentration of 113.0 µg/m^3 in 2030 within the Salt Lake County portion of the modeling domain. The above PM_{10} mobile source emission figure of 12.07 tons per day (tpd) would traditionally be considered as the MVEB for the maintenance plan. However, and as discussed below, the modeled concentration is 37.0 µg/m^3 below the NAAQS of 150 µg/m^3, and indicates the potential for PM_{10} emissions to be considered [~~represents potential PM_{10} emissions that may be considered~~] for allocation to the PM_{10} MVEB.

EPA's conformity regulation (40 CFR 93.124(a)) allows the implementation plan to quantify explicitly the amount by which motor vehicle emissions could be higher while still demonstrating compliance with the maintenance requirement. These additional emissions that can be allocated to the applicable MVEB are considered the "safety margin." As defined in 40 CFR 93.101, safety margin represents the amount of emissions by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for demonstrating maintenance. The implementation plan can then allocate some or all of this "safety margin" to the applicable MVEBs for transportation conformity purposes.

The safety margin for the Salt Lake County portion of the domain equates to 37.0 µg/m^3.

To evaluate the portion of safety margin that could be allocated to the PM_{10} MVEB, modeling was re-run for 2030 with additional emissions attributed to the on-road mobile sources.

Using the same emission projections for point and area and non-road mobile sources, the SMOKE 3.6 emissions model was re-run using 24.00 tons of PM_{10} per winter-weekday for mobile sources (and 21.00 tons/winter-weekday of NO_X). The revised maintenance demonstration for 2030 still shows maintenance of the PM_{10} standard.

It estimates a maximum PM_{10} concentration of 120.1 µg/m^3 in 2030 within the Salt Lake County portion of the modeling domain. This value is 29.9 µg/m^3 below the NAAQ Standard of 150 µg/m^3, but 7.1 µg/m^3 higher than the previous value.

This shows that the safety margin is at least 11.93 tons/day of PM_{10} (24.00 tons/day minus 12.07 tons/day) and 8.41 tons/day of NO_X (21.00 tons/day minus 12.59 tons/day). This maintenance plan allocates this portion of the safety margin to the mobile source budgets for Salt Lake County, and thereby sets the direct PM_{10} MVEB for 2030 at 24.00 tons/winter-weekday.

(ii) NO_X Emissions Budget

Through atmospheric chemistry, NO_X emissions can substantially contribute to secondary PM_{10} formation. For this reason, NOx is considered a PM10 precursor.

As presented in the Technical Support Document for on-road mobile sources, the estimated on-road mobile source NO_X emissions for Salt Lake County in 2030 were 12.59 tons per winter-weekday. These mobile source PM_{10} emissions were included in the maintenance demonstration in Subsection IX.A.11[~~10~~].c.(1) which estimates a maximum PM_{10} concentration of 113.0 µg/m^3 in 2030 within the Salt Lake County portion of the modeling domain. The above NOx mobile source emission figure of 12.59 tons per day (tpd) would traditionally be considered as the MVEB for the maintenance plan. However, and as discussed below, the modeled concentration is 37.0 µg/m^3 below the NAAQS of 150 µg/m^3, and indicates the potential for NOx emissions to

be considered [~~represents potential NOx emissions that may be considered~~] for allocation to the NOx MVEB.

EPA's conformity regulation (40 CFR 93.124(a)) allows the implementation plan to quantify explicitly the amount by which motor vehicle emissions could be higher while still demonstrating compliance with the maintenance requirement. These additional emissions that can be allocated to the applicable MVEB are considered the "safety margin." As defined in 40 CFR 93.101, safety margin represents the amount of emissions by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for demonstrating maintenance. The implementation plan can then allocate some or all of this "safety margin" to the applicable MVEBs for transportation conformity purposes.

The safety margin for the Salt Lake County portion of the domain equates to 37.0 $\mu g/m^3$.

To evaluate the portion of safety margin that could be allocated to the PM_{10} MVEB, modeling was re-run for 2030 with additional emissions attributed to the on-road mobile sources.

Using the same emission projections for point and area and non-road mobile sources, the SMOKE 3.6 emissions model was re-run using 21.00 tons of NO_X per winter-weekday for on-road mobile sources (and 24.00 tons/winter-weekday of PM_{10}). The revised maintenance demonstration for 2030 still shows maintenance of the PM_{10} standard.

It estimates a maximum PM_{10} concentration of 120.1 $\mu g/m^3$ in 2030 within the Salt Lake County portion of the modeling domain. This value is 29.9 $\mu g/m^3$ below the NAAQ Standard of 150 $\mu g/m^3$, but 7.1 $\mu g/m^3$ higher than the previous value.

This shows that the safety margin is at least 8.41 tons/day of NO_X (21.00 tons/day minus 12.59 tons/day) and 11.93 tons/day of PM_{10} (24.00 tons/day minus 12.07 tons/day). This maintenance plan allocates this portion of the safety margin to the mobile source budgets for Salt Lake County, and thereby sets the NO_X MVEB for 2030 at 21.00 tons/winter-weekday

(b) Net Effect to Maintenance Demonstration

Using the procedure described above, some of the identified safety margin indicated earlier in Subsection IX.A.11[~~10~~].c(6) has been allocated to the mobile vehicle emissions budgets. The results of this modification are presented below.

(i) Inventory: The emissions inventory was adjusted as shown below:

in 2030: PM_{10} was adjusted by adding 11.93 ton/day (tpd) of safety margin to 12.07 tpd inventory for a total of 24.00 tpd, and

NO_X was adjusted by adding 8.41 tpd of safety margin to 12.59 tpd inventory for a total of 21.00 tpd,

(ii) Modeling:

The effect on the modeling results throughout the domain is summarized in the following Table IX.A.11[~~10~~]. 9 (which shows predicted concentrations in $\mu g/m^3$). It demonstrates

that with the allocation of the safety margin, the NAAQS is still maintained through 2030 in all areas.

Table IX.A.11[~~10~~]. 9 Modeling of Attainment in 2030, Including the Portion of the Safety Margin Allocated to Motor Vehicles

Air Quality Monitor	Predicted Concentrations in 2030 µg/m3	
	A	B
Hawthorne	113.0	120.1
Magna	81.1	82.5

Notes: Column A shows concentrations presented previously as part of the modeled attainment test. Column B shows concentrations resulting from allocation of a portion of the safety margin.

(7) Nonattainment Requirements Applicable Pending Plan Approval

CAA 175A(c) - *Until such plan revision is approved and an area is redesignated as attainment, the requirements of CAA Part D, Plan Requirements for Nonattainment Areas, shall remain in force and effect.* The Act requires the continued implementation of the nonattainment area control strategy unless such measures are shown to be unnecessary for maintenance or are replaced with measures that achieve equivalent reductions. Utah will continue to implement the emissions limitations and measures from the PM_{10} SIP.

(8) Revise in Eight Years

CAA 175A(b) - *Eight years after redesignation, the State must submit an additional plan revision which shows maintenance of the applicable NAAQS for an additional 10 years.* Utah commits to submit a revised maintenance plan eight years after EPA takes final action redesignating the Salt Lake County area to attainment, as required by the Act.

(9) Verification of Continued Maintenance

Implicit in the requirements outlined above is the need for the State to determine whether the area is in fact maintaining the standard it has achieved. There are two complementary ways to measure this: 1) by monitoring the ambient air for PM_{10}, and 2) by inventorying emissions of PM_{10} and its precursors from various sources.

The State will continue to maintain an ambient monitoring network for PM_{10} in accordance with 40 CFR Part 58 and the Utah SIP. The State anticipates that the EPA will continue to review the ambient monitoring network for PM_{10} each year, and any necessary modifications to the network will be implemented.

Additionally, the State will track and document measured mobile source parameters (e.g., vehicle miles traveled, congestion, fleet mix, etc.) and new and modified stationary source permits. If

these and the resulting emissions change significantly over time, the State will perform appropriate studies to determine: 1) whether additional and/or re-sited monitors are necessary, and 2) whether mobile and stationary source emission projections are on target.

The State will also continue to collect actual emissions inventory data from all sources of PM_{10}, SO_2, and NO_X in excess of 25 tons (in aggregate) per year, as required by R307-150.

(10) Contingency Measures

CAA 175A(d) - Each maintenance plan shall contain contingency measures to assure that the State will promptly correct any violation of the standard which occurs after the redesignation of the area to attainment. Such provisions shall include a requirement that the State will implement all control measures which were contained in the SIP prior to redesignation.

Utah has implemented all measures contained in the nonattainment plan, however for the purposes of this maintenance plan the list of stationary sources included in SIP Section IX. Part H. was updated. Some of the sources identified in the nonattainment SIP are no longer operational or no longer rise to the emission thresholds established for such inclusion. In such instances, the emission limits belonging specifically to these sources were not carried forward. Where such a source is still operational, the prior SIP limits from the nonattainment plan are identified below as potential contingency measures. Some of the specific limits within may no longer apply and would need to be reevaluated at that time.

This Contingency Plan for Salt Lake County supersedes Subsection IX.A.8, Contingency Measures, which is part of the original PM_{10} SIP.

The contingency plan must also ensure that the contingency measures are adopted expeditiously once triggered. The primary elements of the contingency plan are: 1) the list of potential contingency measures, 2) the tracking and triggering mechanisms to determine when contingency measures are needed, and 3) a description of the process for recommending and implementing the contingency measures.

(a) Tracking

The tracking plan for the Salt Lake County, Utah County, and Ogden City areas consists of monitoring and analyzing PM_{10} concentrations. In accordance with 40 CFR 58, the State will continue to operate and maintain an adequate PM_{10} monitoring network in Salt Lake County, Utah County, and Ogden City.

(b) Triggering

Triggering of the contingency plan does not automatically require a revision to the SIP, nor does it necessarily mean the area will be redesignated once again to nonattainment. Instead, the State will normally have an appropriate timeframe to correct the potential violation with implementation of one or more adopted contingency measures. In the event that violations continue to occur, additional contingency measures will be adopted until the violations are corrected.

Upon notification of a potential violation of the PM_{10} NAAQS, the State will develop appropriate contingency measures intended to prevent or correct a violation of the PM_{10} standard. Information about historical exceedances of the standard, the meteorological conditions related to the recent exceedances, and the most recent estimates of growth and emissions will be reviewed. The possibility that an exceptional event occurred will also be evaluated.

Upon monitoring a potential violation of the PM_{10} NAAQS, including exceedances flagged as exceptional events but not concurred with by EPA, the State will take the following actions.

- The State will identify the source(s) of PM_{10} causing the potential violation, and report the situation to EPA Region VIII within four months of the potential violation.

- The State will identify a means of corrective action within six months after a potential violation. The maintenance plan contingency measures to be considered and selected will be chosen from the following list or any other emission control measures deemed appropriate based on a consideration of cost-effectiveness, emission reduction potential, economic and social considerations, or other factors that the State deems appropriate:

  - Re-evaluate the thresholds at which a red or yellow burn day is triggered, as established in R307-302;

  - Further controls on stationary sources; to include the [~~prior SIP~~] controls previously approved into PM_{10} SIP by EPA (effective August 8, 1994) at the following sources listed below:

Prior SIP Source Controls	**Reference to Prior SIP**
Crysen Refining (now Silver Eagle)	IX.H.2.b.L
Hercules (now ATK/Bacchus)	IX.H.2.b.S
Interstate Brick	IX.H.2.b.U
Kennecott / Barney's Canyon	IX.H.2.b.AA
LDS Welfare Square	IX.H.2.b.CC
LDS Hospital	IX.H.2.b.DD
Mountain Bell	IX.H.2.b.HH
Mountain Fuel, 100 S. 1078 W. (now Questar)	IX.H.2.b.II
Murray City Power	IX.H.2.b.KK
Utah Metal Works	IX.H.2.b.ZZ
UP&L (now PacifiCorp) 40N. 100W.	IX.H.2.b.AAA
V.A. Hospital	IX.H.2.b.CCC

The State will then hold a public hearing to consider the contingency measures identified to address the potential violation. The State will require implementation of such corrective action no later than one year after a violation is confirmed. Any contingency measures adopted and implemented will become part of the next revised maintenance plan submitted to the EPA for approval.

It is also possible that contingency measures may be pre-implemented, where no violation of the 2006 PM_{10} NAAQS has yet occurred.

Comments and Responses: PM10 Maintenance Plan

Comments and Responses: PM10 Maintenance Plan

Table of Contents

General Comments 2
EPA's Comments 3
Western Resource Advocates Comment 8
Part H Comments and Responses 15
EPA Comments 16
Big West Oil, LLC Comments 51
Western Resource Advocates Comments 54
Kennecott's Comment 59
Narrative SIP Comments and Responses 61
EPA Comments 62
Hexcel's Comments 68
TSD Comments and Responses 70
EPA Comments 71
Kennecott Comment 80

General Comments

EPA’s Comments

G1. Comment: Section 4.d) of the TSD shows, in Table 4.d.1, the monitored design values for each of the monitoring locations in the modeling analysis. These values are based on all available data in AQS. If any PM10 data from 2011-2014 are invalid, these baseline design values and therefore any future design values will need to be recalculated. (EPA; Enclosure 5, 1.e)

UDAQ Response: As noted by the commenter, the PM10 data underlying these maintenance plans was obtained from EPA's AQS database. UDAQ cannot now determine what, if any, data EPA may invalidate at some future point in time. A more appropriate time to consider such an evaluation would seemingly be whenever EPA reviews and takes action on Utah's SIP submittals.

G2. Comment: Emission Inventory Tables 7 and 8 of the Salt Lake County and Utah County plans (pages 41 and 40 respectively) show values that do not agree with the tables in the modeling TSD. This should be explained or corrected. See also the comment from Enclosure 5, 1.d. [Comment T2.] (EPA; Enclosure 1, 1.q)

UDAQ Response: The tables in the PM10 maintenance plan reflect a reporting error that was discovered shortly after submitting the plans for review. For Salt Lake County and Utah County maintenance plan tables, notice how "area" source totals are repeated year-to-year for each county. This demonstrates a systemic reporting error.

Specifically, a bug was found in a script that extracts emissions totals from SMOKE. This bug was fixed and the resulting emission totals were checked against SMOKE reports for accuracy. The tables referenced in the PM10 maintenance plans will be corrected prior to final submission.

G3. Comment: For Salt Lake County, EPA observed that there are inconsistencies between the on-road mobile source NOx and PM_{10} emissions for 2019 and 2024 when comparing the inventories prepared for this SIP revision to those used to demonstrate transportation conformity for 2019 and 2024.

For Utah County, EPA observed similar inconsistencies when comparing the 2019 and 2030 SIP inventories with transportation conformity analyses for 2020 and 2030.

EPA recommends that any inconsistencies be evaluated and documented in the TSD. (EPA; Enclosure 4, 2.a & 2.b)

UDAQ Response: The Wasatch Front Regional Council (WFRC) submitted SIP related mobile source emissions inventories for 2019 and 2024 NOx and PM_{10} that are higher than what were utilized to demonstrate transportation conformity for 2020 and 2024.

The Mountainland Association of Governments (MAG) submitted SIP related mobile source emissions inventories for 2019 and 2030 NOx and PM_{10} that are higher than what were utilized to demonstrate transportation conformity for 2020 and 2030.

Federal rule 40 CFR 93.124 (a) indicates that SIP and conformity inventories do not need to match. Discrepancies are allowed as long as the inventories produced for the SIP are quantified and do not cause or contribute to any new air quality violations. Both MPOs provided conservative mobile source emissions inventory estimates utilizing the latest planning assumptions at the time the SIP was developed and following FHWA guidance. Furthermore this practice is commonly used by states and planning entities for SIP inventory development. The inputs utilized in the modeling effort are discussed within the PM_{10} TSD and no further review is necessary.

The Utah Division of Air Quality (UDAQ) demonstrated attainment of the PM_{10} standard utilizing conservative mobile source emissions budgets submitted by each MPO within the constraints of 40 CFR 93.124(a). EPA's conformity regulation allows the implementation plan to quantify explicitly the amount by which motor vehicle emissions could be higher while still demonstrating compliance with the maintenance requirement.

40 CFR 93.124

> **(a)** In interpreting an applicable implementation plan (or implementation plan submission) with respect to its motor vehicle emissions budget(s), the MPO and DOT may not infer additions to the budget(s) that are not explicitly intended by the implementation plan (or submission). Unless the implementation plan explicitly quantifies the amount by which motor vehicle emissions could be higher while still allowing a demonstration of compliance with the milestone, attainment, or maintenance requirement and explicitly states an intent that some or all of this additional amount should be available to the MPO and DOT in the emissions budget for conformity purposes, the MPO may not interpret the budget to be higher than the implementation plan's estimate of future emissions. This applies in particular to applicable implementation plans (or submissions) which demonstrate that after implementation of control measures in the implementation plan:
>
> **(1)** Emissions from all sources will be less than the total emissions that would be consistent with a required demonstration of an emissions reduction milestone;
>
> **(2)** Emissions from all sources will result in achieving attainment prior to the attainment deadline and/or ambient concentrations in the attainment deadline year will be lower than needed to demonstrate attainment; or
>
> **(3)** Emissions will be lower than needed to provide for continued maintenance.

[62 FR 43801. Aug. 15, 1997, as amended at 69 FR 40081, July 1, 2004]

The Federal Highway Administration (FHWA) has also weighed in on the ability of any MPO to produce SIP mobile source emissions inventories that do not match exactly what has been constructed within the statutory confines of transportation conformity.

> "The allocation of emissions reductions and control strategies results in an emission reduction target for all sources. For on-road mobile sources, this target can be translated into an area's motor vehicle emissions budget (MVEB), which identifies the allowable on-road emissions levels to attain the air quality standards. These budgets are, in effect, a cap on emissions and represent the "holding capacity" of the area. Although these budgets are based on the emissions inventory projections, they may not be identical."

(http://www.fhwa.dot.gov/environment/air_quality/publications/air_quality_planning/aqplan09.cfm)

The application of the conformity rule also allows for SIP and conformity inventories not to match. 40 CFR 93.118 plainly states conformity can be demonstrated when "the pollutants or pollutant precursors described in paragraph (c) of this section are less than or equal to the motor vehicle emissions budget(s) established in the applicable implementation plan or implementation plan submission." (emphasis added) Clearly 40 CFR 93.124(a) was established to allow for a situation in which conservative mobile source emissions estimates were used in the SIP budgetary process.

Environmental research organization, Resources for the Future, published a report discussing how to solve SIP and transportation conformity interactions. The report titled Exhausting Options: Assessing SIP-Conformity Interactions discusses on page 34 how safety margins can be utilized within the SIP.

> "The One way of avoiding conformity problems is to build a safety margin into the mobile source emissions reductions in the SIP, so that unexpected increases in emissions can be handled without violating the motor vehicle emissions budget. Some MPOs already use a safety margin applied to the total budget. An aggregate safety margin could also be available to the mobile sources, but only after a SIP revision. Thus it would require more time and would not be under the control of the MPO. EPA and some state air quality officials observed that safety margins are a luxury for areas with serious emissions problems: if meeting the total emissions reduction target is difficult, there will be strong pressures on the SIP process to allocate all available emissions and not allow for safety margins." (http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-RPT-exhaustopt.pdf)

UDAQ demonstrated attainment of the PM_{10} standard utilizing a conservative mobile source emissions budget within the constraints of 40 CFR 93.124(a). UDAQ worked with each MPO to design a safety margin, for the year of 2030, in the respective portions of the PM_{10} modeling domain. The result of using a conservative inventory approach for 2030 produced, for Salt Lake County, a safety margin of 37.0 µg/m. In Utah County, the resulting safety margin is 6.9 µg/m.

This is a specific example where the defined budget within the SIP utilized a conservative inventory approach to estimating mobile source emissions that will not cause or contribute to any new air quality violations. The inputs utilized in the modeling effort are discussed within the PM_{10} TSD and no further review is necessary.

G4. Comment: The proposed plan for Salt Lake County includes (on pp. 48) a list of candidate contingency measures, and includes the existing SIP conditions for a number of sources that are no longer specifically regulated by the plan. The contingency measure section of the proposed Utah County plan includes no such list, even though the TSD (in section 5.c.v) lists two such sources; General Refractories (A.P. Green Inc. / Utah Refractories Corp.) and Heckett (Harsco Metals America). These two sources should be included in the Utah County contingency measure section, or an explanation should be provided. (EPA; Enclosure 1, 1.s)

UDAQ Response: The list of sources to be carried forward into the contingency measure portion of each plan is the subset of (minor) sources being removed from source-specific SIP regulation that is still operational. Many of the sources from the 1994 SIP were already removed from source-specific SIP regulation when the Utah County PM10 SIP was revised in 2003. Geneva Steel is the only (non Sand & Gravel) source from the 2003 SIP that will not be retained. Since Geneva Steel is no longer operational, it will not be necessary to have its current SIP regulations available for consideration should the contingency measures become necessary.

Western Resource Advocates Comment

G5. Comment: Once EPA has approved a SIP, A State cannot unilaterally change the federally enforceable version of that SIP. Yet, the Director has claimed the authority unilaterally to modify specific provisions that apply to stationary sources in the context of the existing PM10 SIP, and has done so by amending various Approval Orders. The proposed SIP actions must include an explicit denunciation of this approach and an explicit procedure for modifying a federally approved SIP. The SIP actions must ratify that until such time as EPA has approved any SIP changes, the original EPA-approved provisions are enforceable as state and federal law. (Western Resource Advocates, comment II)

UDAQ Response: UDAQ agrees with the commenter that a state cannot unilaterally change the federally enforceable version of that SIP.

Concerning, however, the claim regarding the Director's claimed authority and amended Approval Orders, the following must be noted. The federally approved PM10 SIPs for Salt Lake and Utah Counties included provisions in federally approved R307-1.3.2. It allowed that "Specific limitations for installations within a source may be adjusted by order of the Board provided the adjustment does not adversely affect achieving the applicable NAAQS."

When UDAQ first (in 2005) prepared maintenance plans for its PM10 nonattainment areas, this rule was removed by agreement with EPA. Since Utah withdrew, and EPA never acted upon the 2005 SIP revision, the provisions of R307-1.3.2 remain part of the federally approved SIP. Nevertheless, the Air Quality Board no longer has this authority under State law.

The proposed SIP revision need not explicitly denounce this approach, and ironically the federally approved SIP will still contain this provision until such time as EPA replaces it.

G6. Comment: The maintenance plans for Salt Lake and Utah Counties include (on pp. 3) an excerpt from a guidance memorandum, issued by EPA's Office of Air Quality Planning and Standards, concerning requests to extend an attainment date. Clarifying that the authority delegated to the Administrator for extending moderate area attainment dates is discretionary, it states [in part] that, "The EPA will expect the State to have adopted and substantially implemented control measures submitted to address the requirement for implementing RACM/RACT in the moderate nonattainment area, as this was the central control requirement applicable to such areas."

Because R307-403-5 represents RACM/RACT, failing to amend R307-403 generally and 405-3 specifically, to encompass PM10 maintenance areas rather than only nonattainment areas, leaves the proposed maintenance plans inadequate to ensure maintenance of the NAAQS. (Western Resource Advocates, comment IV)

UDAQ Response: UDAQ agrees with the commenter that, within the context of a nonattainment SIP, as recounted in the background sections of these proposed maintenance

plans, the implementation of RACM/RACT is not only required explicitly by CAA Section 172, but is vital to attaining the relevant NAAQS.

The role of RACM/RACT within the context of a maintenance plan, however, is somewhat implicit. Here, the Administrator may not re-designate the area back to attainment without finding that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan. Implied by that requirement is that RACM/RACT, as approved in the nonattainment SIP, was at least partly responsible for the attendant improvement in air quality. Explicitly however, RACM/RACT is not a required element of a maintenance plan.

None of this, however, concerns R307-403-5. The PM10 offset requirements detailed therein were in fact adopted by the State in the original PM10 SIPs, but they were neither included as part of RACM/RACT, nor approved by EPA in its review of same. Rather, the rule is discussed in section of the SIP dealing with maintenance of the NAAQS after such time as the standard had been achieved (see SIP Section IX.A.7.) It was introduced only as a hedge against growth. Furthermore, the rule was not explicitly relied upon by these proposed maintenance plans.

Going forward, the State will have to decide whether to retain the utility of this rule should these areas be re-designated to attainment. There is no requirement, one way or the other. The rule affects only minor source permitting. Utah is required, under 40 CFR Part 51, to have a minor source permitting program, but the content of such program is entirely left to the states. Utah's minor source permitting program already requires Best Available Control Technology, and has been quite valuable in mitigating air pollution. As a matter of opinion only, UDAQ continues to see utility in the application of R307-403-5 and may argue to retain it throughout PM10 maintenance areas. That will be a matter to be taken up with the Air Quality Board at some future point in time.

G.7 Comment A-F: The following comments concern Utah's fugitive dust rule at R307-309. (Western Resource Advocates, comment A-F)

<u>A – Enforceability:</u>

The commenter has stated that the fugitive dust rule R307-309 is not adequately enforceable because it lacks specific requirements that would be commonly associated with Title V sources.

UDAQ Response: First, we must recognize that R307-309 is intended to regulate a broad array of sources, from single home construction of 1/4 acre, to major mining sources. As such, it is a challenge to develop a rule that is not overly burdensome to small sources while assuring proper controls for major sources. It is for this reason that the rule is designed to provide RACT level air quality control across all sources while using the permitting process to specifically address major sources with provisions that are beyond those in R307-309.

UDAQ undertook a yearlong study in 2010 of the fugitive dust rule. A workgroup composed of engineers and scientists conducted a fugitive dust RACT analysis of R307-309 and of other western non-attainment air quality rules. That analysis included a review of past EPA comments on R307-309. The workgroup members concluded that a major revision was necessary. Subsequently, the Air Quality Board amended the rule in line with all of the workgroup recommendations. Today, all sources are required to apply best management practices (BMPs) derived by the workgroup for every conceivable type of fugitive dust sources. The BMPs are reflective of general engineering practices and our staff experience.

The commenter stated that certain requirements (referring to BMP's) are embedded within the dust plans which are not subject to EPA or public comment review and may be changed by UDAQ.

UDAQ Response: In fact, this is not the case, the past rule amendment included the BMP's directly within the rule (R307-309-6(4)). UDAQ cannot amend BMP's without going through rulemaking. EPA and the public had an opportunity to comment on the BMP's. UDAQ received no comments on the BMP's during that public comment period.

Nonetheless, UDAQ realizes that further work is necessary on R307-309. In fact, many of the issues raised by the commenter have been the subject of discussions with EPA. UDAQ has submitted a draft rule amendment proposal to EPA dealing with many of the items noted by the commenter.

Again, we point out that the rule is intended to cover sources of all sizes such that our proposed amendments are intend to be a reasonable compromise. For example, the commenter proposes that the rule be amended to require:

"The records must include a description of how a source proposes to comply with all applicable requirements, log sheets for hourly and daily emission and dust control, and schedules for compliance activities and submittal of progress reports."

This level of planning and recordkeeping is beyond a reasonable or realistic expectation for a construction project of a home or small structure on 1/4 acre. It is however reasonable to expect detailed recordkeeping for a Title V mining operation therefore; this type of recordkeeping requirement should be defined in an operating permit which would be subject to public comment review.

The commenter stated that additional requirements such as, site inspections, should be defined in the rule. Compliance and planning are programs outside the realm of area source rules.

UDAQ Response: These programs are managed under long term plans established by air agencies with concurrence by EPA.

B. Collection of Fees

The commenter stated that UDAQ should collect fees for the compliance monitoring of R307-309.

UDAQ Response: Again, R307-309 is an area source rule. UDAQ does not collect fees for any area source rules because area source rules apply to a broad population who are often times de minimis. The fee structure must be approved by the Legislature, who does not support agencies charging minor fees.

C. Fugitive Emissions

The commenter states that the rule is not sufficiently stringent regarding fugitive emissions, nor does it include monitoring for fugitive emissions.

UDAQ Response: Fugitive emissions of particles are not the same as fugitive emissions of VOC's and cannot be addressed in line with the commenters suggested requirements. Fugitive particulate emissions are generally characterized as intermittent short-term emissions. For example, the loading of a hopper with product may create a short-term fugitive emission that normally quickly disburses. UDAQ believes that the rule adequately addresses these intermittent sources.

D. RACM or RACT

The commenter stated that UDAQ should adopt a South Coast Air Quality District (SCAQMD) standard as RACT or RACM.

UDAQ Response: RACT is not defined by what other air districts promulgate, but rather by what is necessary for an air district to achieve an attainment demonstration by considering technological and economic feasibility (EPA OAQPS No. 1.2-103). With the exception of exceptional events, there have not been any exceedances in the PM_{10} nonattainment area. Therefore, there is no reason to explore fugitive dust standards beyond those in R307-309.

E. Wind Speed

The commenter stated that:

"R307-309-5(3) is inadequate to ensure maintenance of the NAAQS. For example, the rule exempts a source from the opacity requirements when wind speeds exceed 25 miles per hour if the source has implemented "at least one" of the relevant measures, including "pre-event watering" and "hourly watering."

UDAQ Response: R307-309-5(3) also requires that the source must "continue to implement" fugitive emission controls during the high wind period in order to be exempt from the opacity requirements. Sources are not exempt from all control measures under high wind conditions, just

the reality that the very low opacity requirements in the rule cannot be met with engineering controls when wind speeds exceed 25 mph. The WRAP Fugitive Dust Handbook cites 25 mph as a limiting wind speed throughout the document because engineering controls diminish when wind speed exceeds 25 mph. In fact, the commenter acknowledges this fact by stating that, "moreover, in some instances, the mere cessation of dust producing activities will not guarantee that emissions will be adequately controlled.." during high wind conditions. Given the engineering limitations during high wind conditions, some level of fugitive dust is unavoidable during prolonged high wind conditions.

T**he commenter further stated that the conditions for the exemption is open ended and vague.**

UDAQ Response: We disagree with this position. The high wind opacity exemption requirement clearly states that engineering controls must be implemented and we offer standard engineering controls as optional control measures.

<u>Comment F. Other Issues</u>

The commenter stated: "The rule should address how emissions will be controlled during inactive operations (after work, weekends, holidays, etc.) and require that R307-309 apply and emissions be controlled and monitored at all times."

UDAQ Response: R307-309 applies at all times. The opacity requirements are not limited to work hours.

The commenter stated: "As they are an important component of the proposed maintenance plan, fugitive dust plans must be subject to public notice and comment."

UDAQ Response: The BMP's in R307-309-6(4) were subject to public notice and comment. These BMP's are the basis for the majority of the dust plans. The few sources that have complex operations beyond what is covered by the BMP's are major sources that require an operating permit. The permit, inclusive of the dust plan, would be subject to public notice and review.

The commenter stated: "The use of the term "accepted" throughout the rule is vague and subject to abuse. E.g. see R307-309-6(2)."

UDAQ Response: The word accepted in the rule is one of the items in review included in the proposed amendment to the rule currently being discussed with EPA.

The commenter stated: "The rule should establish that a source must comply with mandated practices or plans until the source has formally notified the Director that all fugitive emissions and emission generating activities have permanently ceased."

UDAQ Response: This area source rule applies to as many as thousands of sources in any given year. Most of those sources are short-term construction projects. The dust plan form asks sources

to estimate the project completion date. Beyond that level of tracking would be impractical, as well as fruitless, for one of more than twenty area source rules.

Part H Comments and Responses

EPA Comments

H.1 Comment: IX.H.1.c is relied upon as the recordkeeping and reporting requirements for sources addressed in Subsections IX.H.2 and IX.H.3. While recordkeeping to determine compliance, as well as records retention, is addressed, periodic reporting is not. Periodic reporting should be provided to ensure compliance with emission limitations and other applicable provisions of the SIP. See 40 CFR 51.211 and CAA section 110(a)(2)(F)(ii). It is understood that R307-107 provides for self-reporting of excess emissions during periods of breakdown and malfunctions, but periodic reporting of emissions beyond the scope of breakdowns as well as other information that is necessary to determine compliance with other SIP provisions is not provided for in the draft SIP, and should be included.

UDAQ Response: The commenter refers to additional periodic reporting of emissions and emissions inventory requirements as outlined in a specific section of the CAA and in 40 CFR 51.211.

CAA section 110(a)(2)(F)(ii) requires:

> *(ii) periodic reports on the nature and amounts of emissions and emissions-related data from such sources.*

While 40 CFR 51.211 requires:

> *The plan must provide for legally enforceable procedures for requiring owners or operators of stationary sources to maintain records of and periodically report to the State —*
> *51.211(a)*
> *Information on the nature and amount of emissions from the stationary sources; and*
> *51.211(b)*
> *Other information as may be necessary to enable the State to determine whether the sources are in compliance with applicable portions of the control strategy.*

Both of these requirements are satisfied by R307-150 Emission Inventories. Each of the sources listed in Subsections IX.H.2 and IX.H.3 are included in the applicability requirements outlined in R307-150-3, and therefore are required to (at a minimum) submit "an inventory every third year … for all emissions units including fugitive emissions."

The rule goes on to require:

> *(a) The inventory shall include PM10, PM2.5, oxides of sulfur, oxides of nitrogen, carbon monoxide, volatile organic compounds, ammonia, other chargeable pollutants, and hazardous air pollutants not exempted in R307-150-8.*
>
> *(b) For each pollutant, the inventory shall include the rate and period of emissions,*

excess or breakdown emissions, startup and shut down emissions, the specific emissions unit which is the source of the air pollution, composition of air contaminant, type and efficiency of the air pollution control equipment, and other information necessary to quantify operation and emissions and to evaluate pollution control efficiency. The emissions of a pollutant shall be calculated using the source's actual operating hours, production rates, and types of materials processed, stored, or combusted during the inventoried time period.

(2) Sources identified in R307-150-3(3) shall submit an inventory for each year after 2002 in which the total amount of PM10, oxides of sulfur, oxides of nitrogen, carbon monoxide, or volatile organic compounds increases or decreases by 40 tons or more per year from the most recently submitted inventory. For each pollutant, the inventory shall meet the requirements of R307-150-6(1)(a) and (b).

Although the inventory rule is included in the Utah SIP generally, it has not been included as a part of the PM10 nonattainment/maintenance provisions specifically.

Finally, the reporting requirements under R307-415-6a(3)(c)(ii) specifically addresses the reporting of deviations including those from breakdown and other upset conditions.

Therefore, the following language will be included in IX.H.1.c as follows:

c. Recordkeeping and Reporting

i. Any information used to determine compliance shall be recorded for all periods when the source is in operation, and such records shall be kept for a minimum of five years. Any or all of these records shall be made available to the Director upon request, and shall include a period of two years ending with the date of the request.

ii. Each source shall comply with all applicable sections of R307-150 Emission Inventories.

iii. Each source shall submit a report of any deviation from the applicable requirements of this 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 to the Director no later than 24-months following the deviation, or earlier if specified by an underlying applicable requirement. Deviations due to breakdowns shall be reported according to the breakdown provisions of R307-107.

H.2 Comment: IX.H.1.e.i.C reads "...If a method other than 201a is used, the portion of the front half of the catch considered PM10 shall be based on information in Appendix B of the fifth edition of the EPA document, AP-42, or other data acceptable to the Director." The clause "other data acceptable to the Director" is a form of director's discretion and should be removed or amended to allow for additional EPA-approved information, outside of the fifth edition of AP-42. For general discussion of

director's discretion provisions, please see EPA's final rule, "Response to Petition for Rulemaking; Restatement and Update of EPA's SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls To Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction" ("SSM SIP Call"), 80 FR 33840, 33927-29 (June 12, 2015). While the SSM SIP Call primarily addresses director discretion to modify emission limitations, it notes that director discretion to change other SIP requirements may be problematic. See id. at 33927 n.297.

UDAQ Response: The entirety of IX.H.1.e.i.C (rather than just the portion quoted by EPA), will be replaced with the following text.

> PM10:
> The following methods shall be used to measure filterable particulate emissions: 40 CFR 51, Appendix M, Method 201 or 201A, or other EPA-approved testing method, as acceptable to the Director. If other approved testing methods are used which cannot measure the PM10 fraction of the filterable particulate emissions, all of the filterable particulate emissions shall be considered PM10.
>
> The following methods shall be used to measure condensable particulate emissions: 40 CFR 51, Appendix M, Method 202, or other EPA-approved testing method, as acceptable to the Director.

The concern over "Director's Discretion" has been removed with the application of this updated language. UDAQ has no desire to approve new testing methods.

H.3 Comment: IX.H.1.g.iv .A refers to natural gas curtailments, without defining the term. References to natural gas curtailments can be found in several instances throughout IX.H, with varying degrees of specificity. EPA recommends that natural gas curtailments be defined in IX.H.l to provide consistency and enforceability in provisions using the term.

UDAQ Response: UDAQ will add the definition as requested to Subsection IX.H.1.b. That requirement will now read as follows:

> b. Definitions.
>
> i. The definitions contained in R307-101-2, Definitions, apply to Section IX, Part H.
>
> ii. Natural gas curtailment means a period of time during which the supply of natural gas to an affected facility is halted for reasons beyond the control of the facility. The act of entering into a contractual agreement with a supplier of natural gas established for curtailment purposes does not constitute a reason that is under the control of a facility for the

purposes of this definition. An increase in the cost or unit price of natural gas does not constitute a period of natural gas curtailment.

H.4 Comment: IX.H.1.v.A states that "Beginning January 1, 2018, all hydrocarbon flares at petroleum refineries located in or affecting a designated PM10 nonattainment area within the State shall be subject to the flaring requirements of NSPS [...]." Applicability of this requirement should extend to maintenance areas. As drafted this provision would be inapplicable to the PM10 nonattainment area upon redesignation to attainment and could not be relied on to show maintenance of the PM10 NAAQS and non-interference with other NAAQS.

UDAQ Response: UDAQ agrees with this comment. This was an oversight. The language in question was inadvertently skipped during editing and should have read similarly to the other refinery general provisions – applying equally to PM10 nonattainment and PM10 maintenance areas alike. The requirement will be updated to read as follows:

A. Beginning January 1, 2018, all hydrocarbon flares at petroleum refineries located in or affecting a designated PM10 nonattainment area or maintenance area within the State shall be subject to the flaring requirements of NSPS Subpart Ja (40 CFR 60.100a–109a), if not already subject under the flare applicability provisions of Subpart Ja.

H.5 Comment: IX.H.1.v.B provides for the use of an "equivalent flare gas minimization process(es)," which is a form of director's discretion. If Utah wishes to retain this provision, EPA recommends that it be revised so that it is sufficiently specific, provides for sufficient public process and is sufficiently bounded, so that it is possible to anticipate at the time of the EPA's review of the provision how that provision will actually be applied and the potential adverse impacts thereof. See SSM SIP Call, 80 FR 33927.

UDAQ Response: UDAQ is removing IX.H.1.v.B. as a requirement. This requirement is not necessary for PM10 maintenance purposes, as it was written for the PM2.5 nonattainment area and only brought forward from SIP Section IX.H.11 for consistency.

H.6 Comment: IX.H.1.v.B also provides for an exemption from the flare gas recovery system during periods of SSM. As explained in the SSM SIP call, exemptions during periods of SSM are not consistent with the CAA requirement that emission limitations be continuous. EPA recommends that the exemptions be removed. For periods of startup and shutdown, Utah may be able to provide an alternative emission limitation, such as usage of a work practice standard. EPA's policy for acceptable alternative emission limitations for periods of startup and shutdown is explained in the SSM SIP Call at 80 FR 33913-14.

UDAQ Response: UDAQ is removing IX.H.1.v.B. as a requirement. This requirement is not

necessary for PM10 maintenance purposes, as it was written for the PM2.5 nonattainment area and only brought forward from SIP Section IX.H.11 for consistency.

H.7 Comment: It is noted that an initial stack test date is not specified for many of the sources listed in Part H, including all of the refineries. This is particularly pertinent for those provisions that rely upon stack testing to determine emission factors (e.g. refinery FCC default emission factors). It is EPA's understanding that default emission factors may already be established through stack testing and the stack test emission factor may be updated between now and the approval of the SIP. As such, the state has omitted default emission factors in several instances. Furthermore, it is EPA's understanding that at a minimum, stack testing would be required within three years of approval of the SIP, as outlined under IX.H.1.e. It is EPA's recommendation that a schedule indicating whether an initial stack test has been performed, or when the first stack test should be performed, be provided. The stack testing provision from the University of Utah (IX.H.2.1.ii) provides a good example for this recommendation. In this provision, initial testing is indicated where it has occurred, and provides a date for when testing will need to be performed for units that have not already been tested.

UDAQ Response: For sources where initial testing has been performed, a notation has been made in the individual source specific listings of IX.H.2 and IX.H.3 indicating that an initial stack test has been performed. This notation reads as follows:

> Initial tests have been performed and the next test shall be performed within ** years of the last stack test.

Where ** represents the appropriate number of years based on the stack testing frequency specified by the individual source.

For new sources which have not been previously tested, or existing sources installing new equipment, a notation similar to the following will be inserted indicating that testing will take place no later than 3-years following issuance of the SIP.

> Initial stack testing to demonstrate compliance with the above limit(s) shall be performed no later than January 1, 2019/three (3) years following issuance of the SIP, and every ** years thereafter.

Again, where ** is the appropriate stack test frequency for each individual source.

General Refinery Comments

H.8 Comment: It is suggested that the source wide PM10 cap explicitly specify that the cap includes both filterable as well as condensable PM, as done with the Holly refinery (e.g. "filterable + condensable"). Doing so would explicitly specify that all PM10 emission limits include both filterable and condensable PM.

UDAQ Response: UDAQ agrees with this comment. However, since all PM10 emission limits found in IX.H.2 and IX.H.3 include both filterable and condensable PM, UDAQ will apply this comment to the general requirements of IX.H.1 so that it affects all listed sources (as opposed to just the four refineries). Therefore, IX.H.1.d will be updated as follows:

d. Emission Limitations.

i. All emission limitations listed in Subsections IX.H.2 and IX.H.3 apply at all times, unless otherwise specified in the source specific conditions listed in IX.H.2 and IX.H.3.

ii. All emission limitations of PM10 listed in Subsections IX.H.2 and IX.H.3 include both filterable and condensable PM, unless otherwise specified in the source specific conditions listed in IX.H.2 and IX.H.3.

And the specific mention of "filterable+condensable" found in the requirements for the Holly Refinery under IX.H.2.f will be removed, as it is now redundant.

H.9 Comment: Throughout the source specific refinery portions, there are repeated references to the mass flow and molar flow of the flue gas. It is unclear how these flow values are measured. In order to ensure emission limitations that rely on these values are enforceable, specific provisions regarding metering should be included for determining flue gas flow.

UDAQ Response: UDAQ agrees with this comment. In each case where either of the terms "mass flow" or "molar flow" have been used, these are incorrect. The appropriate terminology is "flow rate." For context, the terms were used in reference to determining the emission rate of SO2 from the sulfur recovery units at each refinery. In each case, the text of the condition read essentially as follows:

The emission rate shall be determined by multiplying the sulfur dioxide concentration in the flue gas by the mass flow of the flue gas.

The concentration of SO_2 is determined on a lb of SO_2/ft^3 of exhaust gas basis (standard units of concentration). To determine a rate of SO_2 emission in terms of mass per unit time (such as lb of SO_2/hour) the concentration should be multiplied by the gas flow rate, which would be given in terms of volume per unit time (such as ft^3/hour). Both "mass flow" and "molar flow" would be incorrect for this application.

Therefore, in each instance where these terms have been used, they will be replaced with the simplified term "flow rate."

H.10 Comment: Omission of the phrase "fuel oil parameters (density and wt. %S, recorded each day any fuel oil is burned)," occurs in several of the refineries' source

wide SO2 caps. The full phrase can be found in IX.H.2.f.iii.B, which reads "Results shall be tabulated for each day, and records shall be kept which include CEM readings for H2S (averaged for each one-hour period), all meter reading (in the appropriate units), fuel oil parameters (density and wt%S for each day any fuel oil is burned), and the calculated emissions." EPA recommends including fuel oil parameters in the recordkeeping provisions for compliance with the source-wide SO2 cap.

UDAQ Response: UDAQ agrees with this comment, and the suggested language has been included.

H.11 Comment: PacifiCorp Energy, Gadsby Power Plant: The averaging time should be specified when relying upon CEM data. Averaging time is specified at the PacifiCorp Lakeside Plant, and it is recommended that the Gadsby Power Plant be structured in a similar fashion.

UDAQ Response: This comment refers to conditions IX.H.2.j.i.A, IX.H.2.j.ii.A and IX.H.2.j.iii.A.I & II. These conditions were originally included in the 1991 version of the PM10 SIP, and (as currently written) are unchanged from that document. At that time no averaging period was specified, because compliance was demonstrated via stack test. As outlined in 40 CFR 60.8, most stack tests (unless otherwise specified in an individual NSPS or NESHAP) were based on three 1-hour test runs. Therefore, basing the existing NOx limits on a three-hour block average basis would be appropriate. This has been brought forward into the source's current Title V permit which includes monitoring language which reads "based on the arithmetic average of three contiguous one-hour periods" as a logical continuation of this thought process.

Thus, the updated limitation in each case will now read as follows:

> Emissions of NOx shall be no greater than ** lbs/hr on a three (3) hour block average basis.

Where ** is the appropriate value for units #1-3.

H.12 Comment: The use of a 30-day rolling average found in IX.H.2.j.v has not been justified as adequate for the protection of a 24-hour standard. The emission limit should be revised to be protective of the 24-hour standard, or justification provided as to why a 30-day rolling average is adequate.

UDAQ Response: Condition IX.H.2.j.v.A. will be removed. It is not required as demonstration of compliance with the 24-hour standard is accomplished with the 600 lb/day limit listed in condition IX.H.2.j.v.B (which will subsequently be renumbered to IX.H.2.j.v.A.).

H.13 Comment: In IX.H.2.j.iv, it is unclear how unit load or output is determined.

EPA recommends that provisions specifying a metering device be added to this section, along with adequate recordkeeping to ensure enforceability.

UDAQ Response: The comment actually refers to condition IX.H.2.j.vi, as both subparagraphs B and C of the *Turbine Startup / Shutdown Emission Minimization Plan* contain references to unit output or unit load. As requested, a new condition IX.H.2.j.vi.F will be added to include installation and operation of an electrical output metering device as follows:

> F. Turbine output (turbine load) shall be monitored and recorded on an hourly basis with an electrical meter.

H.14 Comment: Tesoro Refining & Marketing Company: In IX.H.2.k.i.C, emissions from the SRU/TGTU/TGI are to be included in the compliance calculation for the source wide PM10 cap. However, no calculation methodology is provided for. If the inclusion of the SRU/TGTU/TGI in the PM10 cap is in error, reference to it should be removed; otherwise an emission factor and calculation methodology should be provided.

UDAQ Response: As with comment 2.c. above, UDAQ will verify each sub-entity that contributes to a specific source-wide pollutant cap and verify it for inclusion. Entities that are not currently listed that should be included will be added. This applies for all four refineries (Big West Oil, Chevron, Holly and Tesoro). A complete listing of changes made can be found below:

Big West Oil changes:
Added the language for combination fuels missing from the PM10 section but otherwise found under both NOx and SO2.

Under PM10, changed one line to read "from these units" rather than "for the boilers and furnaces". This allowed the inclusion of the SRU incinerator in the general statement.

Multiple places, corrected "FCC Catalyst Regenerator", "Catalyst Regenerator", or "Catalyst Regeneration System" (or similar) to just read as "FCC". All of these represent the same emission unit and the same emission point/stack .

Removed incorrect equation for plant gas calculation of emission factor under NOx Cap. Replaced with simpler reference to "use of a CEM as outlined in IX.H.1.f." (see reference to mass flow rate comment above for more details)

Removed incorrect equation for plant gas calculation of emission factor under SO2 Cap. Replaced with simpler reference to "use of a CEM as outlined in IX.H.1.f." (see reference to mass flow rate comment above for more details)

Chevron changes:
Under PM10, removed reference to SRU in the summation of emissions for the PM10 Cap. The SRU incinerator is fired on a combination of plant gas and natural gas, and uses the

emission factors for those fuels for PM10 emission calculations as outlined in combination fuels under IX.H.2.d.i.C. (see below)

Added the language for combination fuels missing from the PM10 section but otherwise found under NOx and SO2.

Under NOx calculations, changed "FCCU" to "FCC" for consistency.

Under SO2 removed "Regenerator" from the FCC reference, again for consistency purposes.

Removed incorrect equation for plant gas calculation of emission factor under SO2 Cap. Replaced with simpler reference to "use of a CEM as outlined in IX.H.1.f." (see reference to mass flow rate comment above for more details)

<u>Holly changes:</u>
Under PM10 calculations final paragraph, removed the reference to fuel oil parameters. These are not required for this particular calculation as only the total amount consumed is required.

Removed incorrect equation for plant gas calculation of emission factor under SO2 Cap. Replaced with simpler reference to "use of a CEM as outlined in IX.H.1.f." (see reference to mass flow rate comment above for more details)

<u>Tesoro changes:</u>
Minor typographical change to remove the "s" from FCC Wet Scrubber under PM10. Tesoro is only installing a single wet scrubber.
Added the language for combination fuels missing from the PM10 section but otherwise found under SO2.

Removed the reference to the SRU/TGTU/TGI from the PM10 Cap calculations. The SRUTGTU/TGI is fired on a combination of plant gas and natural gas, and uses those emission factors for PM10 Cap calculations as outlined under IX.H.2.k.i.A.

Under SO2 setting of emission factors, corrected the plant gas emission factor "direct measurement" to remove reference to the incorrect equation relying on molar/mass flows.

H.15 Comment: West Valley Power Holding, LLC, West Valley Power Plant: The use of a 30-day rolling average found in IX.H.2.j.v has not been justified as adequate for the protection of a 24-hour standard. The emission limit should be revised to be protective of the 24-hour standard, or justification provided as to why a 30-day rolling average is adequate.

UDAQ Response: UDAQ agrees with this comment. Both conditions IX.H.2.m.i and IX.H.3.m.ii will be removed. They will be replaced with a single plant wide cap on NOx emissions that will limit total emissions over a 24-hour period. The new cap will be defined to cover

m. West Valley Power Holdings, LLC.: West Valley Power Plant.

i. Total emissions of NOx from all five (5) turbines combined shall be no greater than 1050 lb of NOx on a daily basis. For purposes of this subpart, a "day" is defined as a period of 24-hours commencing at midnight and ending at the following midnight.

ii. Total emissions of NOx from all five (5) turbines shall include the sum of all periods in the day including periods of startup, shutdown, and maintenance.

iii. The NOx emission rate (lb/hr) shall be determined by CEM. The CEM shall operate as outlined in IX.H.1.f.

H.16 Comment: Kennecott Utah Copper (KUC), Mine: IX.H.2.g.i.A provides for a system equivalent to a GPS for recording daily track haul mileage, but does not specify how such equivalency is to be determined. For purposes of enforceability, EPA recommends that an equivalent tracking system be clearly defined.

UDAQ Response: Currently KUC uses a Global Positioning System that tracks haul trucks and records the miles traveled by the hauls trucks on real time. An equivalent system would have to record the trucks and the mileage on real time.

The modified limit is listed below:

> KUC shall keep records of daily total mileage for all periods when the mine is in operation. KUC shall track haul truck miles with a Global Positioning System or equivalent. The system shall use real time tracking to determine daily mileage.

H.17 Comment: IX.H.2.g.i.C.II requires the use of "ore conveyors as the primary means for transport of crushed ore," but does not define a method for determining "primary means." To make the provision enforceable, EPA recommends that "primary" be clearly defined (for example, numerically), and a corresponding recordkeeping provision be included within this provision.

UDAQ Response: KUC uses conveyors as a primary means of crushed ore transport from the mine to the Copperton Concentrator. The use of the conveyor as a primary means of transport reduces both fugitive dust and tailpipe emissions to the atmosphere. The ore conveyer is, by default, the primary means to transport ore to the concentrator, because the use of haul trucks for this operation would quickly put KUC over the daily mileage limit. This condition was not included in the 1994 PM_{10} State Implementation Plan but originated in the 2011 AO for the Bingham Canyon Mine so back sliding is not at issue.

The limit was not modified but is defined above and is listed below:

A. To minimize emissions at the mine, the owner/operator shall:

I. Control emissions from the in-pit crusher with a baghouse.

II. Use ore conveyors as the primary means for transport of crushed ore from the mine to the concentrator.

H.18 Comment: IX.H.2.g.D requires the use of watering on active haul roads "as weather and operational conditions warrant." This provision does not specify what weather and operational conditions would warrant watering of haul roads, and EPA recommends that these conditions be clearly defined. If watering is to be applied except when conditions would prevent or obviate the need for watering, it is recommended that this provision be reworded to capture these conditions (e.g. except during precipitation or freezing weather conditions) along with means (such as specific weather reports) to determine whether these conditions exist.

KUC has implemented a comprehensive fugitive dust control plan to minimize emissions from active haul roads. Specifically, Best Available Control Technologies are implemented which include application of commercial dust suppressants at least twice per year, road base and watering. While the use of watering to the active haul roads is essential to dust mitigation, its application is primarily managed based on weather and operational conditions and conditions "on the ground". This is necessary for the safety of haul truck drivers and other vehicles operating on these roads. KUC has numerous large water trucks that operate continuously and apply water on these roads. Additional trucks are dispatched during dry days as necessary. KUC uses "ground conditions" to determine the frequency of watering in addition to ambient conditions and weather reports. A weather report may be used as a guideline but the actual road conditions determine the frequency of the watering schedule. This allows for effective management of dust from the active haul roads.

The modified limit is listed below:

A. To minimize fugitive dust on roads at the mine, the owner/operator shall perform the following measures:

I. Apply water to all active haul roads as weather and operational conditions warrant **except during precipitation or freezing weather conditions**, and shall apply a chemical dust suppressant to active haul roads located outside of the pit influence boundary no less than twice per year.

II. Water and chemical dust suppressant shall be applied as weather and operational conditions warrant **except during precipitation or freezing weather conditions** on unpaved access roads that receive haul truck traffic and light vehicle traffic.

H.19 Comment: IX.H.2.g.D.II appears to restate the provisions of IX.H.2.g.D.I, but refers to "unpaved access roads" instead of "active haul roads." If these two roads are the same, it is recommended that IX.H.2.g.D.II be consolidated into D.1. If these road types are distinct from each other, then EPA recommends that these road types be clearly defined.

UDAQ Response: Active unpaved access roads and active unpaved haul roads are operationally different. A haul road is used primarily to haul ore to the crusher and waste material out of the pit by haul trucks that are at least 240 tons. These roads are more heavily used than the access roads. They require more maintenance than an access road. Dust mitigation activities are planned independently and implemented based on the requirements of the specified conditions for either the production haul roads or the other plant access roads. An access road normally receives less vehicle traffic in weight and quantity than a haul road. Therefore, an access road requires less water and chemical dust suppressant. It is important that these roads remain separate.

KUC has implemented a comprehensive fugitive dust control plan to minimize emissions from active haul roads, including implementation of Best Available Control Technology. Implementation of BACT controls includes application of road base and watering. While the use of watering to the unpaved access roads is essential to dust mitigation, its application is primarily managed based on weather and operational conditions and conditions “on the ground”. This is necessary for the safety of vehicles operating on these roads. KUC has numerous water trucks that operate at regular frequency and apply water on these roads. Additional trucks are dispatched during dry days as necessary. KUC uses “ground conditions” to determine the frequency of watering in addition to ambient conditions and weather reports. This allows for effective management of dust from the unpaved access roads.

The limit was not modified but is defined above and is listed below:

D. To minimize fugitive dust on roads at the mine, the owner/operator shall perform the following measures:

I. Apply water to all active haul roads as weather and operational conditions warrant **except during precipitation or freezing weather conditions**, and shall apply a chemical dust suppressant to active haul roads located outside of the pit influence boundary no less than twice per year.

II. Water and chemical dust suppressant shall be applied as weather and operational conditions warrant **except during precipitation or freezing weather conditions** on unpaved access roads that receive haul truck traffic and light vehicle traffic.

H.20 Comment: IX.H.2.g.i.E refers to the 1994 federally approved Fugitive Emissions and Fugitive Dust Rule. While we recognize that the 1994 rule is the current federally approved rule, the federally approved rule may be updated in the future. We suggest

that this provision refer to the most recent federally approved rule, as well as specifying where this rule may be found.

UDAQ Response: This has been changed to the most recent federally approved Fugitive Emissions and Fugitive Dust Rule.

The modified limit is listed below:

KUC is subject to the requirements in the most recent federally approved Fugitive Emissions and Fugitive Dust rules.

H.21 Comment: Kennecott Utah Copper (KUC): Copperton Concentrator: EPA notes that the Copperton Concentrator is no longer included in the draft SIP, but was included as part of the original SIP. Based on the TSD, the Concentrator's potentials to emit (PTEs) for the relevant pollutants are small (i.e. PM10: 25.3 tons per year (tpy), S02: 0.10 tpy; NOx: 10.66 tpy). Despite the relatively small PTEs, the Concentrator was included as part of the old SIP, and the current PTEs are due to control technologies employed at the Concentrator (e.g. baghouse filters). As such, it is recommended that the Concentrator be brought back into the new SIP, with requirements that account for control technologies being employed. Otherwise, the Concentrator's PTEs should not assume the use of control technologies, and should be accurately reflected as such in the TSD and the 110(1) demonstration.

UDAQ Response:40 CFR Part 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants) limits all stack emissions to 0.05 grams of particulate matter per dry standard cubic meter The PM_{10} portion of this limit is less than 0.05 grams per dry standard cubic meter. The opacity limit for all stacks is 7% except when a scrubber is being used and the opacity for fugitive emissions is 10%.

Subpart LL requires KUC, on a weekly basis, to monitor the change in pressure of the gas stream through the scrubber and the scrubbing liquid flow rate of the scrubber. KUC is required to submit semiannual reports to the Administrator of occurrences when the measurements of the scrubber pressure loss (or gain) or liquid flow rate differ by more than ±30 percent from the average obtained during the most recent performance test. KUC is also required to calibrate the monitoring devices on an annual basis in accordance with manufacturer's instructions. These requirements are the same or more stringent than the 1994 SIP requirements.

No changes were made to Part H as a result of this comment. The TSD will include a discussion that documents no backsliding as a result of the concentrator operation.

H.22 Comment: Kennecott Utah Copper (KUC), Power Plant and Tailing Impoundment: For clarification purposes, EPA suggests that IX.H.2.h.i.A state that Boilers #1, #2, and #3 "cease operations permanently" upon commencing operation of Unit #5.

UDAQ Response: The requirement to cease operations has been included when Unit #5 starts operation.

The modified limit is listed below:

A. Boilers #1, #2, and #3 shall cease operations permanently upon commencing operations of Unit #5 (combined-cycle, natural gas-fired combustion turbine).

H.23 Comment: EPA notes that an alternative emission limit, in the form of a work practice standard, is employed for NOx during startup/shutdown events. A discussion on how this alternative was selected should be discussed in the accompanying TSD. EPA's policy for acceptable alternative emission limitations for periods of startup and shutdown is explained in the SSM SIP Call at 80 FR 33913-14. Consistent with this, a discussion should be provided in the TSD evaluating the potential for worst-case emissions that could occur during startup and shutdown based on alternative emission limits (80 FR 33914). Additionally, the startup/shutdown limitations refer to the use of "manufacturer data," without specifying what this data may be. It is suggested that "manufacturer data" be further defined.

UDAQ Response: SIP condition IX.H.2.h.i.B limits NOx emissions from startup and shutdown at 395 lb/event and the number of startup and shutdown events to 690 per calendar year. Both the emissions and number of events have been established based on expected operation of Unit # 5. The combined cycle unit is currently under construction and the limitations have been established using best available information. Because no operational data is available at this time for Unit 5, emissions limitations have been established based on manufacturer data.

40 CFR Part 60 Subpart KKKK states the following for a source to comply with during startup, shutdown of a turbine:

You must operate and maintain the stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction. [Origin: 40 CFR 60 Subpart KKKK]. [40 CFR 60.4333(a)]

The modified limits are listed below:

B. Boilers #1, #2, and #3 shall cease operations permanently upon commencing operations of Unit #5 (combined-cycle, natural gas-fired combustion turbine).

C. Unit #5 shall not exceed the following emission rates to the atmosphere:

Pollutant	lb/hr	lb/event	ppmdv (15% O_2 dry)
I. PM_{10} with duct firing:			
Filterable + condensable	18.8		
II. NO_x:			2.0
Startup/shutdown		395	

III. Startup / Shutdown Limitations:

1. The total number of startups and shutdowns together shall not exceed 690 per calendar year.

2. The NO_x emissions shall not exceed 395 lbs from each startup/shutdown event, which shall be determined using manufacturer data.

3. Definitions:

(i) Startup cycle ends when the unit achieves half of the design electrical generation capacity.

(ii) Shutdown cycle begins with the initiation of turbine shutdown sequence and ends when fuel flow to the gas turbine is discontinued.

H.24 Comment: EPA notes that emission rates and concentrations are not specified for condensables in IX.H.2.h.E, but are provided for in previous sections. EPA recommends that condensables be accounted for in the limits under IX.H.2.h.E.

UDAQ Response: Condensables have been added to the limits in XI.H.2.h.E.

H.25 Comment: EPA notes that the allowed sulfur content of fuel burned in IX.H.2.h.F (0.66 lb sulfur per MMBTU) is greater than is allowed in the current approved SIP (0.52 lb sulfur per MMBTU). A discussion pertaining to this relaxation should be provided for in the TSD, and should be accounted for in the calculated allowable emissions attributable from requirements in the SIP, in the 110(1) demonstration.

The sulfur limit in the 1994 PM10 SIP was actually two limits. The limits in 1994 SIP Condition 2.b.Z.6 are as follows:

- The sulfur content of any fuel burned shall not exceed 0.52 lb of sulfur per million Btu (annual running average), nor shall any one test exceed 0.66 lb of sulfur per million Btu.

- The first limit was an annual limit and the PM_{10} annual standard was revoked in 2007. The primary and secondary standard for PM_{10} is now a 24-hour standard. To protect the 24-hour standard, the limit for coal sulfur content in the coal (content per test) was carried forward into the PM_{10} Maintenance Plan. The annual limit does not protect the PM_{10} 24-hour standard.

The modified limit is listed below:

F. The sulfur content of any fuel burned shall not exceed 0.66 lb of sulfur per million BTU per test.

I. Coal increments will be collected using ASTM 2234, Type I conditions A, B, or C and systematic spacing.

II. Percent sulfur content and gross calorific value of the coal on a dry basis will be determined for each gross sample using ASTM D methods 2013, 3177, 3173, and 2015.

III. KUC shall measure at least 95% of the required increments in any one month that coal is burned in Units #1, #2, #3 or #4.

H.26 Comment: IX.H.2.h.ii.A.I reads "Wind erosion potential is the area that is not wet, frozen, vegetated, crusted, or treated and has the potential for wind erosion." EPA suggests that this provision be reworded, to define "areas with wind erosion potential" vs "wind erosion potential." Additionally, EPA recommends that the conditions, such as "crusted or treated," be clearly defined and appropriate methods for determining whether the conditions exist be provided so that provisions relying on this definition are enforceable.

A crusted surface is when a surface has had precipitation (rainfall) and has a hard film or is crusted over.

- Treated means to treat with chemical dust suppressant.
- The control of windblown dust from being crusted is reviewed in AP-42 Section 13.2.5-9
- "Of greater concern is the likelihood of over prediction of wind erosion emissions in the case of surfaces disturbed infrequently in comparison to the rate of crust formation." Section 13.2.5-9.
- And
- Iron and Steel Plant Open Source Fugitive Emission Control Evaluation report. This report was prepared for EPA Research Triangle Park. In section 4 page XIV of the Summary and Conclusions it states “Also, crusts on piles and exposed surfaces are very effective inhibitors of wind erosion as long as the crust remains unbroken”. This document has more discussion on crusts.

The limit was not modified and is listed below:

A. No more than 50 contiguous acres or more than 5% of the total tailings area shall be permitted to have the potential for wind erosion.

I. Wind erosion potential is the area that is not wet, frozen, vegetated, crusted, or treated and has the potential for wind erosion.

H.27 Comment: EPA recommends that IX.H.2.h.ii.A.II be reworded to "calculate areas with wind erosion potential" as opposed to "used to determine wind erosion potential."

UDAQ Response: The limit has been reworded to include calculate areas.

The modified limit is listed below:

> KUC shall conduct wind erosion potential grid inspections monthly between February 15 and November 15. The results of the inspections shall be used to calculate areas with wind erosion potential.

H.28 Comment: IX.H.2.h.ii.A.III requires the development and implementation of a corrective action plan, following verbal notification, followed by a meeting to discuss corrective action plan and implementation schedule. EPA notes that this provision was carried forward from the current approved SIP, but that the provision is convoluted and does not necessarily require corrective actions to be undertaken. EPA recommends that this provision require that immediate action to eliminate the exceedance of areas with wind erosion potential be undertaken as soon as an acreage exceedance has been calculated.

UDAQ Response: UDAQ has revised this condition as "If KUC or the Director of Utah Division of Air Quality (Director) determines that the percentage of wind erosion potential is exceeded, KUC shall meet with the Director, to discuss additional or modified fugitive dust controls/operational practices, and an implementation schedule for such, within five working days following verbal notification by either party."

The modified limit is listed below:

III. If KUC or the Director of Utah Division of Air Quality (Director) determines that the percentage of wind erosion potential is exceeded, KUC shall meet with the Director, to discuss additional or modified fugitive dust controls/operational practices, and an implementation schedule for such, within five working days following verbal notification by either party.

H.29 Comment: IX.H.2.h.ii.B triggers certain actions by KUC, when KUC's weather forecast is for a wind event. However, this provision does not require that KUC make

weather forecasts. EPA recommends that this provision be revised to require weather forecasts to be made daily, and should identify the location of the weather station. Additionally, the measures triggered for wind events requires the "surveillance and coordination of appropriate measures." It is unclear what would constitute an "appropriate measure," and EPA recommends defining these measures.

UDAQ Response: A KUC Weather Forecast includes a review of short range and long range weather forecasts. Using the KUC Tailings Impoundment station along with other monitoring data in the area, a specific forecast is issued for the Tailings site. If the analysis forecasts a high wind event (a wind event is defined as wind gusts exceeding 25 mph for more than one hour), the KUC weather forecasts are sent to the Utah Division of Air Quality for necessary surveillance and coordination.

The tailings specific conditions in IX.H.2.h.ii.A &B are comprehensive of tailings operations, are effective in minimizing emission and are applicable at all times. Dust minimization requirements are applicable regardless of wind forecast and are required at all operational areas of the site. The conditions also require additional notification to UDAQ and coordination prior to a wind event.

The modified limit is listed below:

A. If between February 15 and November 15 KUC's daily weather forecast using local met stations is for a wind event (a wind event is defined as wind gusts exceeding 25 mph for more than one hour) the procedures listed below shall be followed within 48 hours of issuance of the forecast. KUC shall:

I. Alert the Utah Division of Air Quality promptly.

II. Continue surveillance and coordination of appropriate measures.

H.30 Comment: IX.H.2.h.ii.C refers to the 1994 federally approved Fugitive Emissions and Fugitive Dust Rule. While we recognize that the 1994 rule is the current federally approved rule, the federally approved rule may be updated in the future. We suggest that this provision refer to the most recent federally approved rule, as well as specifying where this rule may be found.

UDAQ Response: KUC is subject to the requirements in the most recent federally approved Fugitive Emissions and Fugitive Dust rules.

The modified limit is listed below:

A. KUC is subject to the requirements in the most recent federally approved Fugitive Emissions and Fugitive Dust rules.

H.31 Comment: EPA notes that stack testing at the KUC Power Plant shall be

performed once every three years for Units 1, 2 , 3, 4 and 5. Given the length of time between stack tests, EPA recommends including a provision for additional monitoring (e.g. use of a portable exhaust gas analyzer), to ensure that the NOx emission assumptions remain valid.

UDAQ Response:

The modified limits are listed below:

D. Upon commencement of operation of Unit #5*, stack testing to demonstrate compliance with the emission limitations in IX.H.2.h.i.B shall be performed as follows for the following air contaminants

* Initial compliance testing for the natural gas turbine and duct burner is required. The initial test date shall be performed within 60 days after achieving the maximum heat input capacity production rate at which the affected facility will be operated and in no case later than 180 days after the initial startup of a new emission source.

The limited use of natural gas during maintenance firings and break-in firings does not constitute operation and does not require stack testing.

Pollutant	Test Frequency
I. PM_{10}	every year*
II. NO_x	every year*

~~*An EPA approved test method must be performed at least once every three years. Additional compliance tests must be performed at least once every year using either an EPA approved test method or perform annual portable analyzer testing. If portable analyzer testing is employed, the portable analyzer test must be subsequent to the initial EPA approved test method. A correlation must be established during the initial EPA approved tests to calibrate the portable testing analyzer to the initial EPA approved test. The portable analyzer must be calibrated as per the manufacturer's specification prior to each test. Notification of each annual portable test must be provided.~~

E. The following requirements are applicable to Units #1, #2, #3, and #4 during the period November 1 to February 28/29 inclusive:

I. During the period from November 1, to the last day in February inclusive, only natural gas shall only be used as a fuel, unless the supplier or transporter of natural gas imposes a curtailment. The power plant may then burn coal, only for the duration of the curtailment plus sufficient time to empty the coal bins following the curtailment. The Director shall be notified of the curtailment within 48 hours of when it begins and within 48 hours of when it ends.

II. When burning natural gas the emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

Pollutant	grains/dscf	ppmdv (3% O_2)
68°F, 29.92 in. Hg		
1. PM_{10} Units #1, #2, #3 and #4		
filterable	0.004	
filterable + condensable	0.03	
2. NOx:		
Units #1, #2 and #3 (each)		336
3. NO_x		
Unit #4		336
(Unit 4 after January 1, 2018)		60

III. When using coal as a fuel during a curtailment of the natural gas supply, emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

Pollutant	grains/dscf	ppmdv (3% O_2)
68°F, 29.92 in Hg		
1. Units #1, #2 and #3		
(i) PM_{10}		
filterable	0.029	
filterable + condensable	0.29	

(ii) NO_x Units 1, 2 & 3 426.5

2. Unit #4

(i) PM_{10}

filterable	0.029
filterable + condensable	0.29

(ii) NO_x 384

IV. If the units operated during the months specified above, stack testing to show compliance with the emission limitations in H.2.h.i.D.II and III shall be performed as follows for the following air contaminants:

	Pollutant	Test Frequency	Initial Test
1.	PM_{10}	every year*	#
2.	NO_x	every year*	#

Initial compliance testing is required for Unit #4 after low NO_x burner installation. The initial test date shall be performed within 60 days after achieving the maximum heat input capacity production rate at which the affected facility will be operated and in no case later than 180 days after the initial startup of a new emission source.

The limited use of natural gas during maintenance firings and break-in firings does not constitute operation and does not require stack testing.

~~*An EPA approved test method must be performed at least once every three years. Additional compliance tests must be performed at least once every year using either an EPA approved test method or perform annual portable analyzer testing. If portable analyzer testing is employed, the portable analyzer test must be subsequent to the initial EPA approved test method. A correlation must be established during the initial EPA approved tests to calibrate the portable testing analyzer to the initial EPA approved test. The portable analyzer must be calibrated as per the manufacturer's specification prior to each test. Notification of each annual portable test must be provided.~~

Kennecott Utah Copper (KUC): Smelter and Refinery

H.32 Comment: EPA notes that the PM10 emission limits for the smelter main stack are expressed as daily averages, but compliance is determined by a stack test every year. It is not clear how the stack test will produce a daily average. EPA recommends that the calculation methodology for determining a daily average be specified.

UDAQ Response: The daily averaging period for the Main Stack limits has been removed. This test is for a one hour average using an EPA approved method test. The limit was incorrectly labeled. It is now listed as other sources are listed with an hour limit that has an annual test requirement.

The modified limit is listed below:

A. Emissions to the atmosphere from the indicated emission points shall not exceed the following rates and concentrations:

I. Main Stack (Stack No. 11)

1. PM10
   a. 89.5 lbs/hr (filterable~~, daily average~~)
   b. 439 lbs/hr (filterable + condensable, ~~daily average~~)

2. SO2
   a. 552 lbs/hr (3 hr. rolling average)
   b. 422 lbs/hr (daily average)

3. NO_X
   a. 154 lbs/hr (daily average)

H.33 Comment: The Holman boiler's averaging time is 30 days, which has not been justified as protective of a 24-hour standard. The averaging time for the Holman boiler should be revised to be protective of the 24-hour standard, or justification provided as to why an averaging time of 30 days is adequate.

UDAQ Response: To protect the daily standard for PM_{10}, a NO_x daily average limit was added for the Holman Boiler.

H.34 Comment: IX.H.2.i.B requires the Holman Boiler to utilize either a CEM or an alternate method applicable under new source performance standards (NSPS). EPA suggests specifying which NSPS standard is applicable to the Holman Boiler so that the alternate method may be identified.

UDAQ Response: The limit for the Holman boiler was changed from 9.34 lbs/hr based on a 30-day average to 14.0 lbs/hr based on a calendar day average. Testing is now by a CEM and stack testing once every year.

This will increase annual emissions from 40.9 TPY to 83.2 TPY.

The modified limits is listed below:

II. Holman Boiler

1. NO_X

a. 14.0 ~~9.34~~ lbs/hr, calendar day average ~~30-day average~~

~~b. 0.05 lbs/MMBTU, 30-day average~~

B. Stack testing to show compliance with the emissions limitations of Condition (A) above shall be performed as specified below:

Emission Point		Pollutant	Test Frequency
I.	Main Stack (Stack No. 11)	PM10	every year
		SO2	CEM
		NOx	CEM
II.	Holman Boiler	NOx	every year

H.35 Comment: IX.H.2.i.ii.C and IX.H.2.i.iii.C require standard operating procedures to be followed during startup and shutdown operations. This is not an enforceable provision without details on what standard operating procedures entail. EPA recommends including language to make this provision enforceable.

UDAQ Response: The requirements in IX.H.2.i.ii.C and IX.H.2.i.iii.C are for turbines at the refinery and the MAP. 40 CFR Part 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines) states the following for a source to comply with during startup, shutdown of a turbine:

You must operate and maintain the stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.

The limits for the turbines at the refinery and MAP have been changed to comply with the Subpart KKKK.

The modified limit is listed below:

C. KUC must operate and maintain the stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.

H.36 Comment: EPA notes that stack testing for the KUC Refinery's two tankhouse boilers shall be performed once every three years. Given the length of time between stack tests, EPA recommends including a provision for additional periodic monitoring (e.g. use of a portable exhaust gas analyzer), to ensure that emission assumptions remain valid.

UDAQ Response: The tank house boilers are operated as a backup to the Combined Heat and Power unit at the Refinery. The boilers provide steam to the refinery processes during the CHP downtime. These boilers are required to perform a stack test if they have operated for at least 300 hours during a 3 year period. Based on this, the requirement has been changed to reflect this and a test is only required if the boilers operate more than 300 hours in a three year period. Maintenance of a boiler usually requires that they be started up periodically. Operation of a boiler during maintenance firings will not cause an exceedance of a 24-hour standard. Since the operation of the boilers is very limited, the proposed testing frequency is more than adequate.

The modified limit is listed below:

B. Stack testing to show compliance with the above emission limitations shall be performed as follows:

Emission Point	Pollutant	Testing Frequency
Tankhouse Boilers	NO_x	every three years*
Combined Heat Plant	NO_x	every year

*Stack testing shall be performed on boilers that have operated at least 300 hours during a three year period.

<u>University of Utah: University of Utah Facilities</u>

H.37 Comment: EPA notes that stack testing for the listed emission points at the University of Utah, shall be performed once every three years. Given the length of time between stack tests, EPA recommends including a provision for additional periodic monitoring (e.g. use of a portable exhaust gas analyzer), to ensure that the NOx emission assumptions remain valid.

UDAQ Response: Stack testing for the boilers and turbine listed in IX.H.2.l.ii has been changed to require testing every year. The test may be either an EPA approved method test or a portable analyzer. A method test is required at least every three years.

The modified limit is listed below:

ii. Testing to show compliance with the emissions limitations of Condition i above shall be performed as specified below:

	Emission Point	Pollutant	Initial Test	Test Frequency**
A.	Boiler #3	NO_x	*	every year#
B.	Boilers #4a & 4b	NOx	2018	every year#
C.	Boilers #5a & 5b	NOx	2017	every year#
D.	Turbine	NO_x	*	every year#
E.	Turbine and WHRU Duct burner	NO_x	*	every year#

* Initial tests have been performed and the next method test using EPA approved test methods shall be performed within 3 years of the last stack test.

A compliance test shall be performed at least once every three years from the date of the last compliance test that demonstrated compliance with the emission limit(s). Compliance testing shall be performed using EPA approved test methods acceptable to the Director. The Director shall be notified, in accordance with all applicable rules, of any compliance test that is to be performed. Beginning January 2018, annual screening with a portable monitor must be conducted in those years that a compliance test is not performed. Screening with a portable monitor shall be performed in accordance with the portable monitor manufacturer's specifications. If screening with a portable monitor indicates a potential exceedance of the concentration limit, a compliance test must performed within 90 days of that screening. Records shall be kept on site which indicate the date, time, and results of each screening and demonstrate that the potable monitor was operated in accordance with manufacturer's specifications.

<u>Brigham Young University: Main Campus</u>

H.38 Comment: IX.H.3 .a.i does not specify the methodology for determining sulfur content in fuel oil. A provision specifying how the weight percent of sulfur is determined should be included in this section, and adequate recordkeeping should be specified.

UDAQ Response: IX.H.3.a.i has been modified to include language specifying the methodology of how the sulfur content in the coal is determined. Record keeping is required under the General Requirements listed in IX.H.1.c.

The modified limit is listed below:

All central heating plant units shall operate on natural gas from November 1 to February 28 each season beginning in the winter season of 2013-2014. Fuel oil may be used as backup fuel during periods of natural gas curtailment. The sulfur content of the fuel oil shall not exceed 0.0015 % by weight. BYU must maintain a fuel specification certification document from the fuel supplier with the sulfur content guarantee. Alternatively, sulfur content may be verified through testing completed by BYU or the fuel supplier using ASTM Method D-4294-10 or EPA approved equivalent acceptable to the Director.

The general rule for the record keeping is listed below:

IX.H.1.c. Any information used to determine compliance shall be recorded for all periods when the source is in operation, and such records shall be kept for a minimum of five years. Any or all of these records shall be made available to the Director upon request, and shall include a period of two years ending with the date of the request.

H.39 Comment: IX.H.3.a.ii specifies the allowable emission concentration in ppm, as well as a lb/hr emission allowable. The header for this condition should say "the following rates and concentrations" rather than "the following concentrations," as is done elsewhere in the maintenance plan.

UDAQ Response: IX.H.3.a.ii has been modified to add the language “rates and” to the concentration requirement. It now reads “Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:”.

The modified limit is listed below:

Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

H.39.A Comment: EPA notes that the original SIP contained S02 limits, while the current draft SIP does not have S02 limits. S02 will be controlled by limiting the times

at which coal can be used as a fuel, as well as by limiting the sulfur content of the coal or coal mixtures being burned. However, in the absence of an S02 limit, it is not clear through the regulatory text or the accompanying TSD, how an emission estimate of S02 is derived. The TSD pulls PTE values from the most recent approval order (AO), which does not reflect emissions reductions achievable directly and solely from the draft SIP provisions. It is suggested that S02 limits be retained.

UDAQ Response: IX.H.3.a.ii has been modified to include the requirement to test for SO_2 in boilers Unit #2, Unit #3 and Unit #5. These boilers are allowed to burn coal. Unit #1, Unit #4 and Unit #6 are now required to burn natural gas as a fuel with fuel oil as a backup fuel. In the 1994 PM_{10} SIP, these boilers were not restricted on the type of fuel that could be burned. Unit #1 is a backup boiler and was not listed in the 1994 SIP.

The modified limit is listed below:

ii. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

Emission Point	Pollutant	ppm (7% O_2 dry)*		lb/hr	
A.	Unit #1	NO_x	95	36	9.55
	5.44				
B.	Unit #4	NO_x	127	36	38.5
	19.2				
C.	Unit #6	NO_x	127	36	38.5
	19.2				

* Unit #1 NO_x limit is 95 ppm (9.55 lb/hr) until it operates for more than 300 hours during a rolling 12-month period, then the limit will be 36 ppm (5.44 lb/hr). The NO_x limit for units #4 and #6 is 127 ppm (38.5 lb/hr) and starting on December 31, 2018, the limit will then be 36 ppm (19.2 lb/hr).

Emission Point	Pollutant	ppm (7% O_2 dry)	lb/hr	
D.	Unit #2	NO_x	331	37.4
	SO_2	597	56.0	
E.	Unit #3	NO_x	331	37.4
	SO_2	597	56.0	
F.	Unit #5	NO_x	331	74.8
	SO_2	597	112.07	

iii. Stack testing to show compliance with the above emission limitations shall be performed as follows:

Emission Point	Pollutant	Initial test	Test Frequency
A. Unit #1	NO_X	&	every year*

B.	Unit #2	NO_X	#	every year*
C.	Unit #3	NO_X	#	every year*
D.	Unit #4	NO_X	#	every year*
E.	Unit #5	NO_X	#	every year*
F.	Unit #6	NO_X	#	every year*

H.40 Comment: Both IX.H.3.a.iv.B.I and II contain the phrase "or approved equivalent" when specifying methodology for determining sulfur content. This is a form of director's discretion. It is suggested that this phrase be changed to "or EPA-approved equivalent," as can be found in other portions of Part H (e.g. IX.H.2.f.iii). Additionally, the testing methods that a laboratory may use for determining sulfur content, see IX.H.3.f.iv, should be specified. Lastly, it is recommended that BYU not only inspect documentation of sulfur content of coal for each delivery, but also keep the documentation, under IX.H.3.f.iv.B.IV and V.

UDAQ Response: IX.H.3.a.iv.B.I and II have been modified to add the word "EPA" to the requirement. It now reads "EPA-approved equivalent acceptable to the Director".

IX.H.1.c in the General Requirements section requires BYU to keep and maintain the records for the sulfur content of the coal. See response to comment #a above.

3.a.iv.B.I and II have been modified to add the word "EPA" to the requirement. It now reads "EPA-approved equivalent acceptable to the Director".

IX.H.3.a.iv was incorrectly titled. It now reads "Central Heating Plant Natural Gas-Fired Boilers" it should have read "Central Heating Plant Coal-Fired Boilers". This requirement pertains to the burning of coal and not natural gas. It has been corrected to apply to the coal-fired boilers.

The modified limit is listed below:

Central Heating Plant Coal-Fired Boilers

A. Startup and shutdown events shall not exceed 216 hours per boiler per 12-month rolling period.

B. The sulfur content of any coal or any mixture of coals burned shall not exceed either of the following:

I. 0.54 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-85, or EPA-approved equivalent acceptable to the Director.

II. 0.60% by weight as determined by ASTM Method D-4239-85, or EPA-approved equivalent acceptable to the Director.

H.41 Comment: EPA notes that stack testing for the listed emission points at BYU, shall be performed once every three years. Given the length of time between stack tests, EPA recommends including a provision for additional periodic monitoring (e.g. use of a portable exhaust gas analyzer), to ensure that the NOx emission assumptions remain valid.

UDAQ Response: Stack testing for the boilers has been changed to require testing every year. The test may be either an EPA approved method test or a portable analyzer. A method test is required at least every three years.

The modified limit is listed below:

An EPA approved test method must be performed at least once every three years. Additional compliance tests must be performed at least once every year using either an EPA approved test method or perform annual portable analyzer testing. If portable analyzer testing is employed, the portable analyzer test must be subsequent to the initial EPA approved test method. A correlation must be established during the initial EPA approved tests to calibrate the portable testing analyzer to the initial EPA approved test. The portable analyzer must be calibrated as per the manufacturer's specification prior to each test. Notification of each annual portable test must be provided.

1. Geneva Nitrogen Inc.: Geneva Nitrogen Plant

   a. **For consistency purposes, EPA suggests that IX.H.3.b.v, "Testing," be structured similarly to IX.H.3.b.ii, "Testing."**

      The testing in IX.H.3.b.v has been reformatted.

      The modified limit is listed below:

      v. **Testing**

         A. Stack testing for NO_x shall be performed as specified below:

            I. Stack testing to show compliance with the NOx emission limitations shall be performed as specified below:

               1. Testing and Frequency. Emissions shall be tested every three years using an EPA approved test method.

            II. NOx concentration (ppmdv) shall be used as an indicator to provide a reasonable assurance of compliance with the NOx

emission limitation as specified below:

1. Measurement Approach: NOx concentration (ppmdv) shall be determined by using a continuous NOx monitoring system.

2. Performance Criteria:
   (i) QA/QC Practices and Criteria: The continuous monitoring system shall be operated, calibrated, and maintained in accordance with manufacture's recommendations. Zero and span drift tests shall be conducted on a daily basis.

II. The EPA approved method test for the Montecatini Plant shall be performed as soon as possible and in no case later than December 31, 2017, and the test for the Weatherly Plant shall be performed as soon as possible and in no case later than December 31, 2018.

H.42 Comment: EPA notes that stack testing for the Prill Tower, Montecatini Plant, and the Weatherly Plant, shall be performed once every three years. Given the length of time between stack tests, EPA recommends including a provision for additional periodic monitoring (e.g. use of a portable exhaust gas analyzer), to ensure that the emission assumptions remain valid.

In the Prill Tower, it is physically impossible to perform periodic monitoring between the three year method tests. The pressure in the tower is too low to check for a pressure drop as could be normally performed in a stack that has a bag house. This is not a conventional stack but is a 220’ tall tower that exhausts through louvers on all four sides of the 18’ wide by 22’ long tower.

A requirement for a CEM has added to the limits. This requires Geneva Nitrogen to monitor their NOx emissions for the Montecatini Plant and Weatherly Plant with a CEM on a continuous basis. This will verify the emissions between the method stack tests.

The modified limits are listed in the comment above.

2. PacifiCorp Energy: Lake Side Power Plant

a. Startup/Shutdown limitations are employed as an alternative emission limitation at the Lake Side Power Plant. A discussion on how these alternative emission limitations were selected should be discussed in the accompanying TSD. EPA's policy for acceptable alternative emission

limitations for periods of startup and shutdown is explained in the SSM SIP Call at 80 FR 33913-14. Consistent with this, a discussion should be provided in the TSD, evaluating the potential for worst-case emissions that could occur during startup and shutdown based on alternative emission limits (80 FR 33914). Additionally, there appears to be a typo in IX.H.3.c.iii.B.IV, where "Block #1" should read as "Block #2."

UDAQ Response: Two commenters pointed out the typographical error in IX.H.3.c.iii.B.IV. UDAQ agrees that the reference to Block #1 should reads as Block #2 and will make the correction as suggested by the commenters.

UDAQ also agrees with the commenter's request that a discussion on startup/shutdown limitations must be included in the technical support. This accompanying documentation can be found in the document titled "PM10 SIP/Maintenance Plan Evaluation Report: PacifiCorp Energy – Lake Side Power Plant." Generally, Section 6 of that document discusses the requirements specific to the Lake Side Power Plant, while Section 6.3 covers both the worst case emissions aspect and historical development of the startup/shutdown requirements.

H.43 Comment: It is recommended that the word "include" be changed to "consists of," if the accompanying list of conditions are a comprehensive list of transient load conditions.

UDAQ Response: UDAQ agrees with this comment and will make the requested change in condition IX.H.3.c.iii.C.III.

<u>Central Valley Water Reclamation Facility: Wastewater Treatment Plant</u>

H.44 Comment: EPA notes that stack testing at Central Valley shall be performed on each engine, at least once every three years. Given the length of time between stack tsts, EPA recommends including a provision for additional monitoring (e.g. use of a portable exhaust gas analyzer), to ensure that the NOx emission factor at each engine remains valid.

UDAQ Response: As described in Central Valley Water Reclamation Facilities letter on November 10, 2015, stack testing conducted in 2010, 2012, and 2015 showed consistent NOx emission levels well below the limit, and so the increased cost of additional stack testing is not economically reasonable. Further, it is unclear how adding a portable exhaust analyzer would assure that the NOx emission factors calculated from the reference method continue to be applicable. A portable analyzer test does not apply the same or equivalent rigorous testing methodologies of a reference method test. Therefore, an emission factor calculated from the results of a portable exhaust gas analyze is not as statistically valid as the reference method test.

UDAQ recommends stack testing by a reference method at least once every three years. No changes were made to the limits

<u>Hexcel Corporations: Salt Lake Operations</u>

H.45 Comment: Natural gas consumption is to be determined through the use of billing records. Will monthly billing records be able to show daily natural gas consumption? If not, EPA recommends that consumption be recorded daily through another means.

UDAQ Response: The requirement has been updated from "Natural gas consumption shall be determined by examination of natural gas billing records for the plant" to "Natural gas consumption shall be determined by examination of natural gas billing records for the plant and onsite pipe-line metering."

H.46 Comment: IX.H.2.e.ii requires the operation of control equipment prior to startup and until shutdown is completed on each fiber line. However, there is no requirement for any particular type of control equipment that may be on a fiber line. In order to take credit for emission reductions attributable to control equipment for each fiber line, the control equipment should be specified as a requirement, along with adequate recordkeeping (for example, of control equipment operating parameters) for enforceability.

UDAQ Response: The baghouses at Hexcel control PM_{10} emissions for fiber lines 13, 14, 15, and 16. Other lines do not have PM_{10} specific control equipment. The requirement has been updated to include this equipment. In addition recordkeeping requirements have been added.

The requirement has been updated to the following:

ii. After a shutdown and prior to startup of fiber lines 13, 14, 15, and 16, the line's baghouse(s) shall be started and remain in operation during production.

a. During fiber line production, the static pressure differential across the filter media shall be within the manufacturer's recommended range and shall be recorded daily.

b. The manometer or the differential pressure gauge shall be calibrated according to the manufacturer's instructions at least once every 12 months.

Interim Emission Limits and Operating Practices Comments

H.47 Comment: IX.H.4.a reads "As the control technology for the sources listed in this section is installed and operational, the terms and conditions listed in IX.H.1 through 3 become applicable and those limits replace the limits in this subsection."

While the apparent intent of this provision is to transition between the interim emissions limits and those found in IX.H.1 through 3, in practice implementation could be difficult, as the refinery source specific provisions are source wide caps. As such, it is recommended that a sunset provision be included in this section, to clearly identify how the transition is to be completed. In addition, EPA recommends that sources be specifically required to report on installation and initial operation of the control technology so that the effectiveness and enforceability of the replacement provisions in IX.H.1 through 3 are clearly established.

UDAQ Response: UDAQ agrees with this comment generally. Establishment of one or more sunset provisions in IX.H.4 does allow for the emission limitations included in that Subsection to expire. To some degree, the limits in IX.H.4 expire automatically by no later than January 1, 2019, as on this date every condition, limitation or requirement in IX.H.4 has been superseded by another requirement found either in IX.H.1 or IX.H.2. However, UDAQ agrees that providing clear language expressing this point would be helpful.

Thus, condition IX.H.4.a shall be rewritten to apply more specifically only to those sources listed in IX.H.4 (the refineries), and to clearly state that the limits which follow have a limited lifespan that shall not extend beyond January 1, 2019. This new language can be found below:

a. The terms and conditions of this Subsection IX.H.4 shall apply to the sources listed in this section on a temporary basis, as a bridge between the 1991 PM10 State Implementation Plan and this PM10 Maintenance Plan. For all other point sources listed in IX.H.2 and IX.H.3 the limits apply upon approval by the Utah Air Quality Board of the PM10 Maintenance Plan. These bridge requirements are needed to impose limits on the sources that have time delays for implementation of controls. During this timeframe, the sources listed in this section may not meet the established limits listed in IX.H.1 and IX.H.2. As the control technology for the sources listed in this section is installed and operational, the terms and conditions listed in IX.H.1 and IX.H.2 become applicable and those limits replace the limits in this subsection. In no case, shall the terms and conditions listed in this Subsection IX.H.4 extend beyond January 1, 2019.

In terms of reporting on the installation and initial operation of the equipment and controls, this is already a requirement under the existing language for each listed source. For each listed source, the equipment being changed is specifically included in the emission caps listed in IX.H.4, and automatically included in the combined plant-wide emission caps of IX.H.2. These are 24-hour emission caps and must be determined for each day of operation. Stack testing and other monitoring provisions for determining the emissions are included in IX.H.1.e and IX.H.1.f, while recordkeeping and emission inventory provisions are found in IX.H.1.c.

The requirement to submit a one-time report on installation and initial operation of the equipment is best handled through UDAQ 's existing NSR permitting program, as the submission of such a report does not, in and of itself, contribute to maintenance of the PM10 standard.

H.48 Comment: An instance of director's discretion is found in IX.H.4.b.i.B.I, in the provision on sulfur content of fuel oils. It is suggested that the provision be reworded from "or approved equivalent" to "or EPA-approved equivalent."

UDAQ Response: UDAQ agrees with this comment and will make the requested change.

H.49 Comment: Throughout IX.H.4, there are a total of 12 references to section IX.H.4.a.(2). This section does not exist, and it appears that the correct section reference should be IX.4.b.i.B. These corrections should be made.

UDAQ Response: UDAQ agrees with this comment. This was a typographical error and will be corrected as suggested.

Big West Oil, LLC Comments

H.50 Comment: Big West Oil, LLC Comment: "We are requesting an alternate limit during startup (or shutdown) of the MSCC Unit that would involve either a block or rolling 24-hour plant-wide SO2 emission limit of 1.2 tons. This alternative limit would apply only during periods of startup (or shutdown) of the MSCC Unit, not to exceed a certain number of instances per year (say 8-10)..."

UDAQ Response: The above is an excerpt of Big West Oil, LLC's (BWO) complete comment. In summary, BWO's comment addresses a period during startup when oil feed is introduced into the MSCC, BWO's unique FCCU design. Reaction has begun, yielding emissions, but before the wet gas compressor can be brought into service to compress the off-gas and route it back into the plant. This initial plug of gas has to be sent to the flare. As explained by BWO, normally this condition only lasts for a few hours and the emissions generated will fall inside the plant's 24-hour emission cap. However, BWO can anticipate a situation where this condition may need to be extended, resulting in additional flaring emissions and a possible exceedance of the daily emission cap.

These extended startup periods are anticipated to be infrequent, and therefore few in number. Given the relatively low amount of SO2 emissions released on a daily basis (0.6 tpd), the anticipated increase seems high when viewed on an individual per day basis, as daily emissions double to 1.2 tpd. However, this amounts to only 6 tons annually. UDAQ has included this increase in the modeled attainment demonstration and sees no anticipated effect.

Therefore, new condition IX.H.2.a.v. Alternate Startup and Shutdown Requirements will be added to BWO's PM10 maintenance plan conditions. This new condition will read as follows:

v. Alternate Startup and Shutdown Requirements

A. During any day which includes startup or shutdown of the FCCU, combined emissions of SO2 shall not exceed 1.2 tons per day (tpd). For purposes of this subsection, a "day" is defined as a period of 24-hours commencing at midnight and ending at the following midnight.

B. The total number of days which include startup or shutdown of the FCCU shall not exceed ten (10) per 12-month rolling period.

H.51 Comment: 18.a EPA Comment: The source specific TSDs are helpful for understanding the process units at each facility, and do a good job of comparing old SIP

and new SIP provisions. However, EPA notes that for several sources, the comparison between old SIP limits and new SIP limits is lacking. Specifically, for those sources that do not rely upon a source wide cap, supporting PTE calculations are not provided. These calculations are necessary, as they rely upon operating assumptions that are not immediately clear to EPA. As such, EPA requests that additional information, showing how PTE values are calculated, be included as part of the final SIP submittal.

UDAQ Response: The PTE calculations for each source are based on the latest AO issued to that source. Unfortunately, for many of the listed sources, the PTE calculations are spread out over multiply modified AOs that span a period of multiple years (in some cases decades).

However, for each listed source, the emission values used for the specific attainment demonstration were included in the spreadsheets used to feed the pre-processor step of the overall modeling effort. These emission values detail a "trued-up" 2019 emission inventory for each component at the listed sources. The trued up values were then adjusted for economic growth and other factors as outlined in the modeling section of the TSD.

Further specifics of the calculations for each spreadsheet are included in the TSD for each listed source and in the notes on that particular spreadsheet (included as an appendix to the TSD for that source).

H.52 Comment: The source specific TSDs list out the process equipment and in many instances identify the control technology employed at a facility through narrative discussion, or as part of the process equipment list. However, it would be helpful to see a list of control technologies installed at a facility in a separate section. EPA recommends that an additional section be added after the "Facility Criteria Air Pollutant Emissions Sources" section, listing out control technologies and measures currently employed for each source.

UDAQ Response: As a RACT demonstration is not required as part of a maintenance plan (see the response to WRA comment VI.) the inclusion of a listing of all the controls and control measures being used at each source is also not required. While the inclusion of such a listing in the limitations and control measures section of the maintenance plan itself (Section IX.H of the SIP) would artificially bind and limit the sources – preventing a source from upgrading technology in the future – the inclusion of a simple listing of current control techniques being included in the TSD for informational purposes would not impose this same hardship. UDAQ will include such an update to the TSD for each listed source.

Western Resource Advocates Comments

H.53 Comment: WRA Comment V – R307-165-2: **This comment is summarized. The full text of the comment can be found in WRA's comment letter, dated November 2, 2015.**

"R307-165-2 gives the Utah Air Quality Board apparent discretion to grant exceptions to the requirement that 'emission testing is required at least once every five years'" …

"In any case, 'five years is not frequent enough to satisfy the requirements of the Act and our regulations for practical enforceability and periodic testing and inspection of stationary sources " …

"Thus, this rule must be amended to require more frequent stack testing. R307-165-2 notwithstanding, stack testing to show compliance the proposed SIP emission limitations is often as rare as once every three to five years. Examples include: 1) Central Valley Water Reclamation Facility, H.2 at 10; 2) Kennecott Smelter, H.2 at 27; 3) Brigham Young University, H.3 at 37; 4) Geneva Nitrogen, H.3 at 39; 5) Provo City Power, H.3 at 43; 6) University of Utah, H.2 at 35; 7) Tesoro, H.2 at 31-32; 8) Holly, H.2 at 16-19; 9) Chevron, H.2 at 11-14; and, 10) Kennecott Power Plant and Tailings H.2 at 22-23." …

UDAQ Response: UDAQ disagrees with this comment. The commenter expresses dissatisfaction with R307-165-2, which establishes the minimum required stack testing frequency for sources with emission limitations specified under both Section IX, Part H of the Utah state implementation plan and in approval orders issued under R307-401.

The UDAQ rarely relies on this rule because we establish an appropriate testing frequency rather than a minimum testing frequency. The UDAQ determines sampling frequency using engineering judgement to establish monitoring requirements in approval orders. The project engineer considers technological feasibility, operation consistency, fuel consistency, stringency of the limit and cost when determining monitoring requirements.

R307-165-2 has been approved by the EPA and thus is federally enforceable and reference to this rule in the PM10 maintenance plan satisfies a requirement for an approvable SIP.

H.54 Comment: For each listed source, the specific stack testing requirements are found within the terms and conditions of IX.H.1.e, IX.H.1.f, IX.H.1.g and the individual source requirements of Subsections IX.H.2 and IX.H.3 – none of which contain any reference to R307-165-2.

Of the sources mentioned by the commenter, none has a stack testing requirement less frequent than once every three years. Many of the sources also include alternate monitoring requirements in addition to this periodic stack test in order to demonstrate compliance with the establish emission limit or plant-wide emission cap. These alternate monitoring requirements include such items as: hourly flow rate monitoring, continuous parameter monitoring systems, portable analyzers to be used during off-years (see response to comments on Central Valley Water Reclamation Facility, Kennecott, etc), and daily fuel consumption recordkeeping.

UDAQ has determined that many of the smaller emission units located at these facilities have

consistent emissions. This is based on the sources' history of compliance-based stack testing, emission inventory reporting requirements under R307-150, and engineering evaluation of equipment and fuel type (such as gas-fired boilers). After a demonstration of consistent emissions over a period of several years, continuing to require annual stack tests do not result in a decrease in emissions – rather they merely serve to consume UDAQ resources and impose a regulatory burden on the source.

Indeed, most of the emitting units commenter is expressing concern over, such as the "natural gas/refinery fuel gas combustion equipment above 40 MMBtu/hr" located at the refineries, are actually relatively small boilers and heaters/furnaces, with similarly small daily and annual emissions. For example, the largest of these units is located at one of the refineries, and has an estimated potential of emitting about 0.27 tons per day of NOx, although it operates consistently at approximately 1/3 of this or 0.09 tpd. Units with emission potentials larger than this have more frequent stack testing requirements, or are monitored by CEM. UDAQ's minimum stack testing frequency of no less than once every three years is satisfactory for purposes of this maintenance plan.

WRA Comment VI. Control Measures for Area and Point Sources
H.55 Comment (A-C): This comment is summarized. The full text of the comment can be found in WRA's comment letter, dated November 2, 2015.

A. FCCU Emissions
"H.1.g(i)(B) (Petroleum Refineries, FCCU Emissions does not reflect RACT and should be amended" …

B. Averaging Times
"To protect a short-term NAAQS requires short-term emission limits. Emission limitations must also reflect RACT" …
"Yet, the SIP determines expresses emission limits in periods longer than 24-hours and/or determines compliance with SIP emission limits with averaging times longer than 24-hours.
Examples include: 1) H.1.g.iii.C (Sulfur Removal Units, Compliance); 2) West Valley Power Plant, H.2 at 36; 3) FCCU SO2 emissions; 4) limits on Refiner Fuel Gas, H.1 at 2; 5) Kennecott Hollman Boiler, H.2 at 26; 6) PacifiCorp, H.2 at 29; and, 7) Bingham Canyon Mine, H.2 at 20."

UDAQ Response: UDAQ disagrees with this comment. The document being commented on is a maintenance plan demonstrating continued attainment of the 24-hour PM10 standard. There is no requirement for the application of RACT under a maintenance plan. Neither a re-designation request nor a maintenance plan requires a RACT/RACM report. In general, EPA has interpreted RACT and RACM requirements as not "applicable" for purposes of CAA section 107(d)(3)(E)(ii) once an area is attaining the NAAQS. Therefore, this plan is to show that the RACT and RACM already imposed as a part of the previous PM10 SIP have achieved attainment of the standard, and through continued application of the requirements listed within

this new maintenance plan: no backsliding will occur, contingency measures remain in place, and continued demonstration of attainment is projected.

UDAQ does agree that emission limitations required as a part of this attainment demonstration need to be protective of the 24-hour standard, and thus must have averaging periods in-line with that standard. Please see UDAQ 's responses to EPA comments on individual listed sources for further details. However, UDAQ disagrees that this is a requirement of RACT as part of the maintenance plan.

C. Fugitive Emissions and Rules
"The SIP makes references to the repealed and/or renumber and/or amended fugitive dust and fugitive emissions rules."

UDAQ Response: In Part H.11-13 the references to R307-1-4.5. Fugitive Emissions and Fugitive Dust have been removed and replaced with "the most recent federally approved fugitive emissions and fugitive dust rule".

The reference to a federally approved rule is required for EPA to approve the SIP. With this change, until the EPA approves the State approved rule R307-309; SIP listed sources will be required to comply with the most stringent requirements from both R307-309 and R307-1-4.5.

Western Resources III - Kennecott PM10 Monitors

H.56 Comment: "The Director stated on the Division of Air Quality website that a permit recently issued to Kennecott Utah Copper will require Kennecott to monitor for PM10 at two locations. The monitors will be placed at locations that UDAQ determines to be modeled as the highest impacted. These stations will provide validation that PM10 NAAQS are not being violated as a result of mine operations. Kennecott will submit quarterly monitoring reports.

Despite this promise and the fact that Kennecott's permit was conditioned on installation of the referenced monitors and the successful reporting of the collected data, the SIP Actions do not mention or address the data from this monitors. Without this data, moreover, the Director cannot assure that he has implemented RACT/RACM relative to Kennecott's mining operations."

UDAQ Response: The commenter is referring to UDAQ E-AN0105710028-11, Condition II.B.4.A. This AO was approved on June 27, 2011. This condition requires KUC to operate two ambient monitoring stations to monitor PM10. The purpose of the monitors is to help validate the modeling for a study that was conducted to verify the pit escape fraction of 20% PM10 from the pit.

The results of this study showed reasonable agreement with the concentrations measured at the monitors and the concentrations predicted by the model. The current National Ambient Air

Quality Standard (NAAQS) for PM10 (135 micrograms per cubic meter [µg/m3]) has not been exceeded since the monitors began operation.

This study shows that the emission controls at the Bingham Canyon Mine are adequate to protect the PM10 NAAQS. This data however is not useful in the overall determination of attainment for the Salt Lake PM10 non-attainment area.

Kennecott's Comment

H.57 Comment and UDAQ Response: Comment #1 was in reference to the fugitive dust rule approved by EPA in 1994. This reference has been changed based on EPAs comments. See the reply to EPAs comments and changes in the limits for Kennecot. The rule reference has been changed to most current approved rule.

Narrative SIP, Part A Comments and Responses

EPA Comments

A.1 Comment: On page 5 of all three plans, the commenter takes issue with the statement that "Utah never violated the annual standard at any of its monitoring stations,…" and suggests that a more accurate statement would be "Utah has not recently violated the annual standard at any of its monitoring stations." As the basis for this recommendation, the commenter states that the North Salt Lake monitor violated the annual standard from 1991-1993 through 1993-1995, although the area was not designated a nonattainment area for the annual standard. (EPA; Enclosure 1, 1.a)

UDAQ Response: The point to be made in this (2nd) paragraph on pp. 5 is that, although there is no longer an annual standard for PM10, the data still provides a useful metric for trends evaluation. The commenter is correct that none of Utah's nonattainment areas was ever designated as such for the annual standard.
The SIP narrative will be revised as shown to address the concern: "None of Utah's areas was ever designated nonattainment for the annual NAAQS[~~Utah never violated the annual standard at any of its monitoring stations~~], and the annual average was not retained as a PM_{10} standard when the NAAQS was revised in 2006."

A.2 Comment: On page 5 of all three plans, the commenter can find no source citation for the statement (in the 4th paragraph) that "EPA discounts these gaps if the highest recorded PM_{10} reading at the affected monitor on the day before or after the gap is not more than 75 percent of the standard, and no measured exceedance has occurred during the year.", and recommends that it be stricken from the proposed narrative. (EPA; Enclosure 1, 1.b)

UDAQ Response: UDAQ agrees, and since the statement is not at all critical to the point made in the narrative, it will be stricken from the narrative.

A.3 Comment: On page 5 of all three plans, the commenter notes that the Aerometric Information and Retrieval System (AIRS) is obsolete terminology and should be replaced with a reference to AQS. (EPA; Enclosure 1, 1.c)

UDAQ Response: UDAQ agrees and will make the necessary correction.

A.4 Comment: On page 5 of all three plans, the commenter notes that Appendix N to Part 50 – Interpretation of the National Ambient Air Quality Standards for Particulate Matter" is no longer the correct citation for PM_{10}, and should be changed to Appendix K (of the same title). (EPA; Enclosure 1, 1.d)

UDAQ Response: UDAQ agrees but intends to strike this entire sentence. See response to Comment MP5 below.

A.5 Comment: On page 5 of all three plans, the commenter states that the quoted text spanning lines 37-40 no longer appears in Appendix N (since 2013), and should be removed. (EPA; Enclosure 1, 1.e)

UDAQ Response: The point to be made with this language on pp. 5 is that EPA acknowledges

that there are valid reasons for excluding data from regulatory consideration. This language may have been removed from Appendix N, but similar language can be found in the federal rules. The maintenance plans will be revised as follows:

[~~Appendix N to Part 50 – "Interpretation of the National Ambient Air Quality Standards for Particulate Matter" anticipates this and states: "Data resulting from uncontrollable or natural events, for example structural fires or high winds, may require special consideration. In some cases, it may be appropriate to exclude these data because they could result in inappropriate values to compare with the levels of the PM standards."~~] 40 CFR 50.14 "Treatment of air quality monitoring data influenced by exceptional events" anticipates this, and says that a State may request EPA to exclude data showing exceedances or violations… that are directly due to an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event, from use in determinations.

A.6 Comment: On page 5 of all three plans, the commenter states that the term "outlier" (in paragraph 6) is not relevant and should be changed to "event." (EPA; Enclosure 1, 1.f)

UDAQ Response: UDAQ will make the necessary correction.

A.7 Comment: Table IX.A.10.2 on page 6 is unnecessarily complicated by a double set of zeros. Since there is no difference because of flagged data, the Table should be simplified using only one set of zeros. (EPA; Enclosure 1, 1.g)

UDAQ Response: UDAQ will make the necessary correction to Table 2 of all three maintenance plans.

A.8 Comment: On page 7 of the Salt Lake County plan, the list of monitoring stations should also include Beach (two sites, 1988-1990 and 1991-1997) and Magna Breeze Drive (1988-1990). (EPA; Enclosure 1, 1.h)

UDAQ Response: The following site descriptions will be added to the narrative, and the map in Figure 1 will be updated accordingly:
8. Beach #2 (AQS number 49-035-0005): This site, from 1988-1990, was located near the Great Salt Lake.
9. Beach #3 (AQS number 49-035-2003): This site, from 1991-1992, was located at the Great Salt Lake Marina.
10. Beach #4 (AQS number 49-035-2004): This site, from 1991-1997, was located at the Great Salt Lake Marina.

A.9 Comment: On page 7 of the Utah County plan, the list of monitoring stations should also include Pleasant Grove (1985-1987) and Orem (1991-1993). (EPA; Enclosure 1, 1.i)

UDAQ Response: The following site descriptions will be added to the narrative, and the map in Figure 1 will be updated accordingly:
14. Pleasant Grove (AQS number 49-049-2001): This site, from 1985-1987, was located in a

suburban area.
15. Orem (AQS number 49-049-5004): This site, from 1991-1993, was located next to a through highway in a business area.

A.10 Comment: On page 9 of all three plans, the titles of the annual and 5-year documents should be changed as follows: Information concerning PM_{10} monitoring in Utah is included in the <u>Annual Monitoring Plan</u> [~~Annual Monitoring Network Review~~] and the <u>5-Year Monitoring Network Assessment</u> [~~The 5 Year Network Plan~~]. (EPA; Enclosure 1, 1.j)

UDAQ Response: UDAQ will make the necessary correction.

A.11 Comment: On page 10 of the Salt Lake County plan (line 27), "nor" should be changed to "not." (EPA; Enclosure 1, 1.k)

UDAQ Response: UDAQ will make the necessary correction.

A.12 Comment: On page 10 of both the Salt Lake and Utah County plans (lines 28-30 and 37-39 respectively) include the following statement: "From 2001 to present, the areas have experienced strong growth while at the same time achieving continuous attainment of the 24-hour and annual PM_{10} NAAQS." The commenter notes that Salt Lake County was in violation of the NAAQS from 2001 – 2010 and Utah County was in violation from 2008 – 2010. Additionally, such violation is actually shown in Table 3 of the respective plans. (EPA; Enclosure 1, 1.l)

UDAQ Response: UDAQ agrees that this statement is in error, and will strike it from both plans. The point to be made in this paragraph is that the overall improvement in air quality is not merely the result of economic downturn. UDAQ acknowledges that the statement referred to by the commenter is in error. Nevertheless, all of the noncompliance identified by the commenter may be attributed to events flagged by UDAQ as exceptional yet not concurred with by EPA. These events were, almost without exception, wind events. Only one of the 21 events even occurred within the winter PM10 season. Within the context of a discussion of how the data may be indicative of the economy, one would have to conclude that such events would be uncharacteristic of day-to-day trends and not useful for comparison.

Without delving into a lengthy discussion of event flagging, UDAQ will revise the statement to read as follows: From 2001 to present, the areas have experienced strong growth [~~while at the same time achieving continuous attainment of the 24-hour and annual PM_{10} NAAQS~~].

A.13 Comment: Table IX.A.10. 3 of the proposed plan for Salt Lake County shows no data in 2010 for the Cottonwood monitor. Earlier (pp. 8) it said that this monitor closed in 2011. There were 3.0 expected exceedances at Cottonwood in 2010. The omission should be explained or included in the table. (EPA; Enclosure 1, 1.m)

UDAQ Response: The Cottonwood monitoring station was failing the criteria for siting a monitor, and was finally shut down on Oct 1, 2011.

Some of the immediate issues at the site were local impacts from an adjacent to ball diamond, a neighbor to the east who burned wood every day and kept chickens immediately next to the monitor. Dirt from the infield and chicken feathers were found in the monitors.

After the station was shut down it was determined that the PM measurements from 2010 and 2011 where compromised. A null code was placed on the affected data. A network modification form was sent to EPA on September 23, 2011 and the station was shut down on Oct 1.

A.14 Comment: On pages 11 and 12 of the Salt Lake County and Utah County plans respectively, the term "outlier" should be changed to "event." (EPA; Enclosure 1, 1.n)

UDAQ Response: Language in all three plans will be modified as follows: Data is flagged when circumstances indicate that it would [~~represent an outlier in the data set and~~] not be indicative of the entire airshed or the efforts to reasonably mitigate air pollution within.

A.15 Comment: Figure 2 on page 12 of the proposed Salt Lake County plan shows 24-hour data from the Cottonwood monitor. The figure should include data from 2010. An explanation of the 2010 data including Cottonwood's highest ever PM10 value (492 µg/m3) should also be provided. (EPA; Enclosure 1, 1.o)

UDAQ Response: The Cottonwood monitoring station was failing the criteria for siting a monitor, and was finally shut down on Oct 1, 2011.

Some of the immediate issues at the site were local impacts from an adjacent to ball diamond, a neighbor to the east who burned wood every day and kept chickens immediately next to the monitor. Dirt from the infield and chicken feathers were found in the monitors.

After the station was shut down it was determined that the PM measurements from 2010 and 2011 where compromised. A null code was placed on the affected data. A network modification form was sent to EPA on September 23, 2011 and the station was shut down on Oct 1.

Cottonwood's highest ever PM10 value (492 µg/m3) was not uniquely local. It was measured on March 30, 2010, a day when winds reached almost 60 miles per hour and the entire network recorded extremely high values. The Lindon station recorded 424 µg/m3, North Provo measured 395 µg/m3, Hawthorne was only 166 µg/m3, but North Salt Lake hit 385 µg/m3, and Magna measured 605 µg/m3, Ogden also was high, at 216 µg/m3. These values are all shown in the Figures depicting the 3 highest 24-hour values at the respective stations. Utah flagged and documented all of these data points as exceptional, but EPA does not concur.

A.16 Comment: Figure 7 on page 15 of the proposed Salt Lake County plan shows annual data from the Cottonwood monitor. An explanation should be included on why data from 2010 was omitted. (EPA; Enclosure 1, 1.p)

UDAQ Response: The Cottonwood monitoring station was failing the criteria for siting a monitor, and was finally shut down on Oct 1, 2011.

Some of the immediate issues at the site were local impacts from an adjacent to ball diamond, a neighbor to the east who burned wood every day and kept chickens immediately next to the monitor. Dirt from the infield and chicken feathers were found in the monitors.

After the station was shut down it was determined that the PM measurements from 2010 and 2011 where compromised. A null code was placed on the affected data. A network modification form was sent to EPA on September 23, 2011 and the station was shut down on Oct 1.

A.17 Comment: For all three plans, Section c.(6), "Mobile Source Budget for Purposes of Conformity" includes the following statement: "Utah has determined that mobile sources are not significant contributors of SO_2 for this maintenance plan. As such, this maintenance plan does not establish a motor vehicle emissions budget for SO_2." (See pp. 43, 42, and 39 for Salt Lake, Utah, and Ogden respectively.)
The commenter references 40 CFR 93.102(b)(v), and offers that the language is not necessary and can be removed. (EPA; Enclosure 4, 1. a.i, b.i, and c.i)

UDAQ Response: UDAQ agrees, and will make the necessary correction in all three plans.

A.18 Comment: For all three plans, Section c.(6)(a)(i), "Direct PM10 Emissions Budget" states in the last sentence of the first color-coded paragraph: "However, and as discussed below, the modeled concentration is 37.0 µg/m^3 below the NAAQS of 150 µg/m^3, and <u>represents potential PM_{10} emissions that may be considered for</u> allocation to the PM_{10} MVEB." (See pp. 44, 43, and 40 for Salt Lake, Utah, and Ogden respectively.)
The commenter notes it would be more proper to state that the modeled headroom …<u>indicates the potential for PM_{10} emissions to be considered for</u> allocation to the PM_{10} MVEB." (EPA; Enclosure 4, 1. a.ii, b.ii, and c.ii)

UDAQ Response: UDAQ agrees and will make the necessary correction in all three plans.

A.19 Comment: For all three plans, Section c.(6)(a)(ii), "NOx Emissions Budget" states in the last sentence of the first color-coded paragraph: "However, and as discussed below, the modeled concentration is 37.0 µg/m^3 below the NAAQS of 150 µg/m^3, and <u>represents potential NOx emissions that may be considered for</u> allocation to the NOx MVEB." (pp. 45, 43, and 41 for Salt Lake, Utah, and Ogden respectively.)
The commenter notes it would be more proper to state that the modeled headroom …<u>indicates the potential for NOx emissions to be considered for</u> allocation to the NOx MVEB." (EPA; Enclosure 4, 1. a.iii, b.iii, and c.iii)

UDAQ Response: UDAQ agrees and will make the necessary correction in all three plans.

A.20 Comment: On page 48 of the Salt Lake County plan, it would be helpful to include the date on which the prior PM10 SIP was federally approved. (EPA; Enclosure 1, 1.r)

UDAQ Response: UDAQ agrees and will make clarify that the SIP referred to on pp. 48 was approved by EPA on July 8, 1994. It became effective on August 8, 1994.

Hexcel's Comments

A.21 Comment: Hexcel commented on the proposed natural gas consumption limit. The natural gas consumption limit needed to be increased to 5.5 MMscf/day, as requested on November 9, 2015 in an email titled SIP Comments. This limit is based on the yearly natural gas consumption limit given in its AO. This yearly limit is converted to a daily limit by dividing by 365 days per year and multiplying by a peaking factor of 30%.

UDAQ 's Response: The natural gas consumption limit was increased to 5.5 MMscf/day for this maintenance plan. However, the natural gas limit, 4.42 MMscf/day, given in Section IX, Part H, Subsection 12, i Hexcel Corporation: Salt Lake Operations of the Utah State Implementation Plan still applies to Hexcel. Hexcel has not requested an increase in its PTE or its yearly natural gas consumption limit. Additional information on this change can be reviewed in the TSD.

TSD Comments and Responses

EPA Comments

<u>Section 110(l) Requirements; Backsliding</u>

T.1 Comment: For plan revisions that modify or revoke emission limitations in an approved SIP, EPA has suggested that one approach to showing non-interference with attainment or maintenance of the NAAQS is a demonstration that permanent, enforceable, contemporaneous and surplus equivalent emissions reductions will be achieved. Substitute control measures may be used to show that there will be no net emissions increase under the plan revision.
The 110(l) demonstration [in TSD Section 6.c] shows significant emission reductions when comparing allowable emissions from the approved SIP to current actual emissions. While commendable, the demonstration should compare emissions allowed under the federally approved SIP with emissions that are allowed for under this maintenance plan. See also the comment from Enclosure 3, 1.a.vi [Comment T7.] (EPA; Enclosure 2, 17.a & b)

UDAQ Response: UDAQ agrees with the commenter, and has attempted to show the efficacy of the substitute measures, both in the modeled demonstration of continued maintenance and in the document discussed in section 6.c of the TSD.
TSD section 6.c considers two groups of sources: those retained source specific regulation by the proposed maintenance plans, and those that had been regulated in the federally approved SIP but which will not be retained by the proposed maintenance plans.
As presented, section 6.c compares the "before-and-after" emissions of each group, and allows the reader to conclude that the proposed maintenance plans will indeed not interfere with attainment or maintenance of the NAAQS.
UDAQ also agrees that this comparison would be more applicable to the context of CAA section 110(l) if the "after" emissions were not presented as the actual emissions (from 2011), but instead reflected the emissions that would be allowed for under the proposed maintenance plan.
UDAQ will revise TSD section 6.c to compare emissions allowed for under the federally approved SIP with emissions that are allowed for under this maintenance plan. The revisions will affect the first two Tables as well as the surrounding text, and will point to the same conclusion: that the proposed maintenance plans will not interfere with attainment or maintenance of the NAAQS.

T.2 Comment and UDAQ Response: Comment Answered at T.16.

T.3 Comment: It appears there are some inconsistencies, concerning the sources listed, within several of the documents presented in the TSD. See also Comment G4.
Section 5.c.v) "Minor Sources Removed from Original SIP"

- **Is missing (for Salt Lake County) an analysis of Ostler Rocky Mountain and Utah Power & Light (40 N. 1st W.)**
- **Includes (for Utah County) the following sources: Bonneville Pacific Corp. (Lehi Cogeneration), General Refractories (A.P.Green Refractories Inc. / Utah Refractories Corp.), Geneva Steel, Heckett (Harsco Metals America), Reilly Industries, and UP&L Hale.**

Section 6.a.i) "Overview Contingency Measures"

- **Is missing (for Salt Lake County) Centrex (Lone Star) and Hercules (ATK / Bacchus).**
- **Also, the list of sources does not match the source list in the Salt Lake County maintenance plan on page 48.**
- **Includes no sources from Utah County.**

Section 6.a.ii) "PM10 SIP"

- **Does not reflect the sources found in Section 5.c.v) "Minor Sources Removed from Original SIP," and appears to be missing Centrex (Lone Star) and Hercules (ATK / Bacchus).**

(EPA; Enclosure 3, 1.a.vii, viii, and ix)

UDAQ Response: UDAQ agrees that there are inconsistencies between these several documents.

Collectively, these documents are intended to show that: 1) there are certain sources that are currently regulated in a federally approved PM10 SIP which will not be specifically regulated in the PM10 maintenance plan, 2) not all of these sources are still operational, and 3) for those that do remain viable, the list of potential contingency measures identified in the maintenance plan is to include the current conditions from the federally approved SIP.

To make sure all this is done correctly, and explained in the technical support, the following revisions will be made to each of the documents identified above:

<u>Maintenance Plan for Salt Lake County</u> – The list of sources (at Section c.(10)) with current SIP limitations that may be considered as candidate contingency measures will be revised to include Utah Power & Light (40 N. 1st W.)

<u>Section 5.c.v) "Minor Sources Removed from Original SIP"</u> – This document addresses sources that are presently regulated in a federally approved SIP, but which will not be carried forward into the revised Part H as part of the maintenance plan. Within the context of backsliding, these sources would not be part of a comparison between the old SIP and the new. Nevertheless, UDAQ sees value in discussing each source in order to provide confidence that their removal from the SIP is appropriate and that they still will be regulated under their approval orders. Revisions will include the following:

- The introduction to this document will be revised to clarify its purpose.

- Ostler Rocky Mountain Refractories and Utah Power & Light (40 N. 1st W.) will be added, as per the comment, to the Salt Lake County section.

- The Utah County section however, will be revised to include only the discussion on Geneva Steel. The commenter lists five other sources presently included in the proposed TSD section 5.c.v, and suggests they should be cross-matched with section 6.a.i.

The confusion here is due to EPA approval of a revised PM10 SIP for Utah County. In this revision, which became effective on January 22, 2003, the number of sources to be specifically regulated was pared down to include only: Geneva Nitrogen, Geneva Rock Products (Orem), Geneva Steel, Provo City Power, and Springville City Corp. From this list, only Geneva Steel belongs in TSD section 5.c.v
The original PM10 SIP for Utah County had been federally enforceable since August 8, 1994.

Section 6.a.i) "Overview Contingency Measures" – The introduction to this document will be revised to clarify that the sources listed therein, for each county, will include all sources (other than Sand & Gravel sources) not to be carried forward for specific regulation in the proposed maintenance plans.

It will also be made clear that some of these sources are no longer even operational. Only after taking this into consideration is it then appropriate to identify the subset of sources to be carried forward into the contingency measures section of each maintenance plan. This subset should match, not only the sources listed in each plan, but the source list for TSD section 6.a.ii. It is in this document that the current federally enforceable SIP conditions have been included should these contingency measures ever become triggered.
In addition:

- Centrex and Hercules will be added, as per the comment, to the list for Salt Lake County.

- A section will be added for Utah County, and that section will list Geneva Steel as the only source to be dropped from specific regulation.

Section 6.a.ii) "PM10 SIP" – This document contains the current federally enforceable SIP conditions belonging to sources to be carried forward into the contingency measures section of each maintenance plan.
The title of this document will be revised to clarify its purpose, and the list of sources to be included will follow from TSD section 6.a.i.

T.4 Comment: The document titled "Backsliding TSD" at Section 6.c should also include a discussion about transport, both interstate and intrastate. (EPA; Enclosure 3, 1.a.xi)

UDAQ Response: From a backsliding perspective, we need only look at any potential differences in emissions due to any potential relaxation of control strategies. From the previous discussion of control strategies, it has been shown that the only difference in controls concerns the stationary point sources located in Salt Lake County. Furthermore, it was shown that the aggregate of allowable point source emissions for Salt Lake County is lower in the proposed maintenance plan than it had been in the 1994 SIP. This is true for each of the pollutants regulated by the PM10 SIP (PM10, SO2 and NOx). Thus, one would not expect any interference issues down-wind of the nonattainment area with respect to any of these pollutants; whether interstate or intrastate. The same could be said for PM2.5, since: 1) at least part of the PM10 would also be PM2.5 and 2) since both SO2 and NOx act as precursors to PM2.5. Finally, NOx is also an ozone precursor, and a net reduction in NOx should not create any interference issues for ozone.

Comment T.5: An explanation should be provided for why the modeling shows increases in PM10 in future years, and how this is consistent with the section 110(l) demonstration of non-interference with the NAAQS. (EPA; Enclosure 5, 1.a)

UDAQ Response: UDAQ will add the following discussion to the TSD at Section 6.c:

Projected Trend of PM10 Concentrations: As required by the Clean Air Act, a maintenance plan must demonstrate compliance with the NAAQS for a period of 10 years from the point of approval by EPA. In this plan, concentrations are modeled in a base year (2011) and then projected forward in 2019, 2024, 2028, and 2030.

Within the context of CAA section 110(l), one might wish to look at the projected trend of PM10 concentrations throughout this period. For the purpose of such discussion, these results are shown below.

Monitor	2011 BDV	2019 RRF	2019 FDV	2024 RRF	2024 FDV	2028 RRF	2028 FDV	2030 RRF	2030 FDV
Ogden	88.2	1.05	92.6	1.04	91.7	1.04	91.7	1.05	92.6
Hawthorne	100.9	1.09	110.0	1.09	110.0	1.11	112.0	1.12	113.0
Magna	70.5	1.14	80.4	1.13	79.7	1.14	80.4	1.15	81.1
Lindon	111.4	1.16	129.2	1.12	124.8	1.14	127.0	1.16	129.2
North Provo	124.4	1.15	143.1	1.12	139.3	1.13	140.6	1.15	143.1

Results across each of the 5 years are very consistent throughout the array of 5 monitors. First, there is an initial jump in concentrations between 2011 and 2019. This can largely be explained by the fact that 2011 is a baseline year and not a projection year. As such, the emissions run through the model are actual emissions. By contrast, all other years rely on emission estimates using projected data which is always more conservative (larger numbers.)

Next is a downward trend from 2019 to 2024 followed by a rise again in 2028 and 2030. This is likely explained by the combination of a downward trend in on-road mobile source tailpipe emissions and an upward trend in area source emissions. Mobile source emissions reflect the continuing effectiveness of Tier 2 and the introduction in 2017 of Tier 3, while area source emissions are tied to population increase.
Still, compared to the first projection year (2019), the concentrations in 2030 represent an increase of less than 3%. Also in this final year, the station closest to the NAAQS still shows a fair degree of headroom beneath the NAAQS, even after the allocation of safety margin discussed in IX.A.12.c.(6).

It should be recalled that the federally approved SIPs also projected PM10 concentrations to increase (from 1993 – 2003), and were only able to demonstrate continued attainment through the year 2003.

Thus, from a backsliding perspective, it is fair to say that the proposed maintenance plans will

not interfere with attainment or maintenance of the NAAQS.

T.6 Comment: The source specific TSDs do a good job of comparing old SIP provisions and new SIP provisions; however, such comparison is lacking for several sources. Specifically, for those sources that do not rely upon a source-wide cap, supporting PTE calculations are not provided. These calculations are necessary, and should be included as part of the final SIP. (EPA; Enclosure 2, 18.a)

UDAQ Response: *See* comment H.51.

T.7 Comment: Table 4.b.4 and 4.b.5 of the TSD (showing area-wide emissions for Salt Lake and Utah Counties respectively) appear to contain math errors; 30.3 to 30.4 tons of S02 appear in the Salt Lake totals in the Table for 2019, 2024, 2028 and 2030 that are above the total of the component emissions shown; 2028 Utah County N02 total is 3.6 tons lower than the sum of the 4 components. The totals shown in the TSD do not match the totals in the respective tables shown in the maintenance plans (IX.A.10, IX.A.11, and IX.A.12). Within table 4.b.4 for Salt Lake County: the S02 Year Total for 2019 shows 39.2 and should be 8.8, the S02 Year Total for 2024 shows 39.8 and should be 9.4, the S02 Year Total for 2028 shows 40.2 and should be 9.7, and the S02 Year Total for 2030 shows 40.4 and should be 9.9. Within table 4.b.5 for Utah County: the S02 Year Total for 2028 shows 11.3 and should be 14.9. These apparent errors should be checked and possibly corrected. See also the comment from Enclosure 1, 1.q [Comment G2.] (EPA; Enclosure 5, 1.d)

UDAQ Response: Point source NOx emissions were not initially modelled for the 2028 projection year. This oversight was corrected after the maintenance plan was submitted for comment, but before the TSD was submitted.
An inventory formatting script did not account for the 2028 point source NOx data. This omission occurred because the label name for "NOx" used in the 2028 point source workbook differed from other years. SMOKE reports were thoroughly examined at great length; it was found that all other pollutants were correctly processed through SMOKE.
After including the missing NOx, the 2028 projection year was re-modelled. Final point source NOx totals were manually added to the TSD tables (4.b.4 and 4.b.5).
When combined with the correction discussed in response to Comment G2, the Tables in the TSD will match the Tables in the maintenance plans

T.8 Comment: At Section 5.a) of the TSD, a document labeled "Background and Overview" discusses CAA requirements for nonattainment plans. The document appears to be a legacy from the moderate PM2.5 SIP, and should be revised to instead support this re-designation request / maintenance plan. (EPA; Enclosure 3, 1.a.i)

UDAQ Response: The commenter is correct. This document is a legacy from the moderate PM2.5 SIP. It will be removed, and the link will be replaced with a label that says "Intentionally Left Blank." Additionally, the label in the table of contents for section 5), "Control Strategies" will be changed to "PM10 SIP/Maintenance Plan Evaluation Reports."

T.9 Comment: At Section 5.b.ii.A of the TSD, the document labeled "Intentionally Left Blank" appears to be out of place, and appears to be a legacy from the moderate PM2.5 SIP. If so, it should be removed or replaced. (EPA; Enclosure 3, 1.a.ii)

UDAQ Response: The commenter is correct. This document is a legacy from the moderate PM2.5 SIP. It will be removed, and so will its place in the table of contents, along with 5.b.ii.B.

T.10 Comment: At Section 5.b.iii) of the TSD, the document labeled "Ammonia Reasonable Available Control Technology (RACT)" appears to be a legacy from the moderate PM2.5 SIP. If so, it should be removed or replaced with a document supporting the PM10 maintenance plan. **(EPA; Enclosure 3, 1.a.iii)**

UDAQ Response: The commenter is correct. This document is a legacy from the moderate PM2.5 SIP. It will be removed, and so will its place in the table of contents.

T.11 Comment: At Section 5.c.iii) of the TSD, the document labeled "RACT/RACM Evaluation Reports" appears to be mislabeled. If so, the title of the document should be corrected. It should be noted that a RACT/RACM report would not be required as part of a redesignation request and maintenance plan, where the area is attaining the NAAQS. (EPA; Enclosure 3, 1.a.iv)

UDAQ Response: This document is also a legacy from the moderate PM2.5 SIP. It will be removed, and so will its place in the table of contents, along with 5.c.ii.

T.12 Comment: At Section 5.c.iv) of the TSD, the document labeled "Aggregate Sources" contains tables that discuss emission reductions from post SIP allowables to current emission limits. The column heading "Actuals/Current AO Allowables" is unclear. Additionally, a review of "allowables" to "allowables" would be a better representation of a net benefit for this SIP revision. See also the comment from Enclosure 2, 17.b. (EPA; Enclosure 3, 1.a.vi)

UDAQ Response: *See* comment and response T.16.

T.13 Comment: There appears to be a typo on page 15 of the document titled "Backsliding TSD" at Section 6.c. Within a discussion concerning PM2.5, the paragraph beginning: "Again, the most significant source category for NOx emissions is On-road Mobile Sources" concludes, in the last sentence, that there "is nothing to suggest that the proposed PM10 Maintenance Plans would interfere with Reasonable Further Progress toward attainment of the *ozone* standard." In this last sentence, the word "ozone" should be replaced with "PM2.5." (EPA; Enclosure 3, 1.a.x)

UDAQ Response: UDAQ agrees, and will make the necessary correction.

T.14 Comment: Within the Inventory Preparation Plan, at TSD section 1.b), Tables 4 and 5 provide information showing what percentages of area and population respectively belong, for each county, within the air quality modeling domain. The commenter notes

that Table 5 includes 100% of the population from Uintah County, but Table 4 omits the County entirely (0% area). If Uintah County is not included in the modeling domain, it should be removed from Table 5 of the IPP. (EPA; Enclosure 5, 1.b)

UDAQ Response: The commenter is correct that the modeling domain does not include any part of Uintah County, Utah. However, even though Table 5 lists an entry for Uintah County, no emissions from Uintah County ever made it into the air quality modeling. The SMOKE emissions processor only processes emissions located within the modeling domain.

Comment T15: Within the on-line table of contents for the TSD there are two links; 3.b.ii.D "Table 4: 2028 Projected Inventory Emissions for 23 Major Point Sources" and 3.c.ii "Post SMOKE Area Source Summary Tables: 2010, 2015" that lead to the same document. The link at 3.c.ii should be corrected, and if the change is found to be substantive the comment period should be extended. (EPA; Enclosure 5, 1.c)

UDAQ Response: The commenter is correct, and the link at 3.c.ii has been corrected to now show the Area Source emission summary tables as intended. This is not a substantive correction.

T.16 Comment: Under section 5.c.iv), within the document titled "Aggregate Sources" the fugitive dust rule, R307-309, is discussed. However, the discussion of these revisions does not appear to be intended to be submitted as part of the maintenance plan for approval into the SIP. Given this, those revisions should not be relied upon for reductions in order to show that that the maintenance plan revisions do not interfere with applicable requirements regarding attainment of the NAAQS. EPA at this point views the discussion of those revisions as general information only.

UDAQ Response:
The reference to R307-309 has been removed. It was not the UDAQ 's intention to reference this regulation. Also, all aggregate, asphalt, and concrete facilities are subject to the requirements found in the most recent federally approved Fugitive Emissions and Fugitive Dust rules.

T.17 Comment: vi. Under section 5.c.iv), the document titled "Aggregate Sources" contains tables that discuss emission reductions from post SIP allowables to current emission limits. However, the current emission limits column is titled "Actuals/Current AO Allowables" which is unclear. What limits are "Actuals" and which are "Allowables" ? Or are they one and the same? To show a net benefit for this SIP revision, a review of "allowables" to "allowables" would be a better representation than "allowables" vs. "actuals." Additionally, what does the column "Post SIP Allowables" mean? Are these emission limits from the original federally approved SIP? See comment from Enclosure 2, 15.b. above for more detailed information about this analysis.

UDAQ Response: Actuals/Current, AO Allowables , and all emissions presented in Table 3 (Utah County Emission Reductions/Increases) and Table 4 (Davis and Salt Lake County Emission Reductions/Increases) are meant to represent current AO Allowable emissions. Therefore, the column heading "Actuals/Current AO Allowables" in the Aggregate Sources

document are defined as Allowable emissions from the current SIP listed source AOs. Actuals were listed in the table as "0" for sources which are no longer in operation. All emissions are recognized to be allowable.

The column heading "Post SIP Allowables" is defined as the approved allowable emission limits from the original federally approved SIP.

Therefore, this exercise is a comparison of Post SIP Allowable emissions from the original federally approved SIP versus the current allowable emissions for the federally approved SIP sources. This exercise does show a net benefit as there are reductions in both the Utah, Davis and Salt Lake County SIP listed source emissions.

Kennecott Comment

T.18 Comment: Kennecott's second comment was in reference to discussion in the Technical Support Document for Barneys Canyon mine being closed.

UDAQ Response: See the TSD for the changes based on this comment.