State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

Air Quality Board
Stephen C. Sands II, *Chair*
Kerry Kelly, *Vice-Chair*
Tammie G. Lucero
Erin Mendenhall
Robert Paine III
Amanda Smith
Michael Smith
Karma M. Thomson
Kathy Van Dame
Bryce C. Bird,
Executive Secretary

DAQ-083-14a

UTAH AIR QUALITY BOARD MEETING

FINAL AGENDA

Wednesday, October 1, 2014 - 1:30 p.m.
195 North 1950 West, Room 1015
Salt Lake City, Utah 84116

I. Call-to-Order

II. Date of the Next Air Quality Board Meeting: November 5, 2014

III. Approval of the Minutes for September 3, 2014, Board Meeting.

IV. Final Adoption: New Rules R307-501. Oil and Gas Industry: General Provisions; R307-502. Oil and Gas Industry: Pneumatic Controllers; R307-503. Oil and Gas Industry: Flares; and R307-504. Oil and Gas Industry: Tank Truck Loading. Presented by Mark Berger.

V. Final Adoption: Amend R307-202. Emission Standards: General Burning. Presented by Mark Berger.

VI. Final Adoption: Amend R307-335, R307-342 through R307-350, and R307-352 through R307-355. Presented by Mark Berger.

VII. Propose for Public Comment with Department Fee Schedule: Operating Permit Program Fee for Fiscal Year 2016. Presented by David Beatty.

VIII. Propose for Public Comment: Amend Utah SIP. Section XX.D.6. Regional Haze. Long-Term Strategy for Stationary Sources. Best Available Retrofit Technology (BART) Assessment for NOx and PM. Add new Utah SIP Subsections IX.H.21 and 22. General Requirements: Control Measures for Area and Point Sources, Emission Limits and Operating Practices, Regional Haze Requirements; and Source Specific Emission Limitations: Regional Haze Requirements, Best Available Retrofit Technology. Presented by Colleen Delaney.

IX. Propose for Public Comment: Amend R307-110-17. General Requirements: State Implementation Plan. Section IX, Control Measures for Area and Point Sources, Part H, Emission Limits; and R307-110-28. General Requirements: State Implementation Plan. Regional Haze. Presented by Mark Berger.

X. Propose for Public Comment: Amend R307-401-19. General Approval Order. Presented by Mark Berger.

XI. Informational Items.
- A. Utah Clean Air Action Team Legislative Recommendations.
- B. Five-Year Progress Report for Utah's State Implementation Plan for Regional Haze. Presented by Mark Berger.
- C. Air Toxics. Presented by Robert Ford.
- D. Compliance. Presented by Jay Morris and Harold Burge.
- E. Monitoring. Presented by Bo Call.
- F. Other Items to be Brought Before the Board.

In compliance with the American with Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Dana Powers, Office of Human Resources at (801) 536-4413 (TDD 536-4414).

ITEM 3

State of Utah

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UTAH AIR QUALITY BOARD MEETING
September 3, 2014 – 1:30 p.m.
195 North 1950 West, Room 1015
Salt Lake City, Utah 84116

DRAFT MINUTES

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I. Call-to-Order

Steve Sands called the meeting to order at 1:30 p.m.

Board members present: Steve Sands, Kathy Van Dame, Kerry Kelly, Robert Paine, Michael Smith, Karma Thomson, Erin Mendenhall, and Tammie Lucero (attendance by telephone)

Excused: Amanda Smith

Executive Secretary: Bryce Bird

II. Date of the Next Air Quality Board Meeting: October 1, 2014

III. Approval of the Minutes for August 6, 2014, Board Meeting.

Ms. Kelly corrected the spelling of "de minimus" on page 3.

- Kathy Van Dame moved to approve the minutes as submitted with the correction. Erin Mendenhall seconded. The Board approved unanimously.

IV. Final Adoption: Amend R307-342-3. Adhesives and Sealants. Exemptions. Presented by Mark Berger.

Mark Berger, Environmental Planning Consultant at DAQ, stated that on June 4, 2014, the Board proposed amending this rule to exempt operations covered by Department of Defense military technical specifications and standards performed by Department of Defense contractors. There was a 30 day public comment period, during which no comments were received and no hearing was requested. Staff recommends the Board adopt R307-342-3, Adhesives and Sealants, Exemptions, as proposed.

- Robert Paine moved for final adoption to amend R307-342-3, Adhesives and Sealants, Exemptions. Kathy Van Dame seconded. The Board approved unanimously.

V. Propose for Public Comment: Repeal and Replace SIP Subsection IX.A.21: Control Measures for Area and Point Sources. Fine Particulate Matter. PM2.5 SIP for the Salt Lake City, UT Nonattainment Area. Presented by Bill Reiss.

Bill Reiss, Environmental Engineer at DAQ, combined the presentation of the Salt Lake City, Provo, and Logan SIPs in this agenda item and noted the changes that were made to the SIPs while stating that unique changes that were made to each SIP would be addressed under that specific agenda item. Mr. Reiss stated that rather than amend the previous state implementation plan (SIP) versions, it is requested the Board repeal the previous versions and replace with the versions presented today to the Board. During his presentation of each chapter, Mr. Reiss also addressed specific questions from the Board and noted any requested changes made to the text by the Board. These SIPs address the planning requirements of Subpart 4 with some refinements. Fundamentally, these SIPs are no different than what was previously adopted, especially with regard to the control strategies.

Subpart 4 requires that control requirements applicable to major stationary sources of $PM_{2.5}$ also would apply to major stationary sources of $PM_{2.5}$ precursors except where the administrator determines that such sources do not contribute significantly to exceedances of the national ambient air quality standards. This is different than what was under Subpart 1. The precursors to $PM_{2.5}$ that were considered were sulfur dioxide, oxides of nitrogen and volatile organic compound (VOC). Discussion was added about the new regulatory framework resulting from the D.C. Circuit Court of Appeal's (Court) decision, specifically which states that Subpart 4 now applies and that nonattainment areas are to be classified as either moderate or serious. Also, that EPA promulgated a deadlines rule which classified all of our nonattainment areas as moderate and set the due dates for these SIPs as December 31, 2014, and the attainment dates at December 31, 2015. Background information was added about the monitoring network, speciation sites, special studies, and discussion concerning the data collected in 2013.

Two phases of modeling from the standpoint of SIP development were discussed. The validation phase where prior episodes for years 2007 through 2010 were reviewed to get an understanding of what was going on and the attainment testing phase which replaced the years of 2014, 2017, and 2019 with the year 2015. With attainment demonstration a brief description about the photochemical model was introduced, specifically how community multi-scaled air quality (CMAQ) is approved for use as a regulatory model. Not specific to Subpart 4 but as one of the refinements made to the SIPs, revisions were made on the simulated speciation constructed at the three speciation trends network (STN) sites. Specific to each nonattainment area is the modeled attainment test. Mr. Reiss noted that the language in Subpart 4 of the Clean Air Act for the moderate area planning requirements allows you to submit either a demonstration of attaining the standard by the attainment date or that you submit an approvable demonstration that it is impracticable to achieve the standard by the attainment date. Subpart 4 required some minor edits to existing control measures and the projection dates were changed to match the new attainment date. Unique to each SIP were some changes reflected in stationary source controls.

Tammie Lucero exits meeting participation by telephone.

Previously, EPA's interpretation of reasonably available control measure (RACM) and reasonable available control technology (RACT) as given in all the vacated guidance was included in the general discussion section, to which the section has been rewritten to acknowledge that none of that applies anymore. The RACT implementation date for the Salt Lake City and Provo areas can no longer be extended under Subpart 4. The RACT implementation date is December 31, 2013.

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Since it's shown that it is impracticable to attain the standard by 2015, by leaving in the RACT control measures in the 2015 analysis it adds a degree of conservatism to the conclusion. The source list is different in each nonattainment area and a new paragraph was added to explain the permitting policy regarding emission reduction credits in the $PM_{2.5}$ nonattainment areas. The overall control in terms of pounds per day is unique to each nonattainment area.

The regional emissions analyses section of transportation conformity was edited to put it in the context of Subpart 4. It explains that the criteria to be addressed in a conformity demonstration can differ based on the specifics of each SIP. It further explains that for this type of SIP, with an impracticability demonstration, conformity is satisfied by applying the interim emissions test and that the interim emissions test will need to address the precursors. The new language replaces emissions budgets which had been established for 2014, 2017, and 2019 in the previous SIPs. Reasonable further progress, which general purpose is to ensure timely implementation of control strategies, is explained. Much of what was written in the SIPs was taken from the rules and guidance that has since been revoked as a result of the Court's decision.

- Kerry Kelly moved the Board propose for public comment to repeal and replace SIP Subsection IX.A.21: Control Measures for Area and Point Sources. Fine Particulate Matter. PM2.5 SIP for the Salt Lake City, UT Nonattainment Area. Robert Paine seconded. The Board approved unanimously.

VI. Propose for Public Comment: Repeal and Replace SIP Subsection IX.A.22: Control Measures for Area and Point Sources, Fine Particulate Matter, PM2.5 SIP for the Provo, UT Nonattainment Area. Presented by Bill Reiss.

Bill Reiss, Environmental Engineer at DAQ, combined the presentation of the Salt Lake City, Provo, and Logan SIPs in agenda Item V. In this item Mr. Reiss went over unique items that were specific to the Provo nonattainment area and addressed questions from the Board and noted any requested changes made to the text by the Board. It was noted that for the Provo ambient air quality data a recalculation from the 2008 data to the 2013 data showed that the design values at all three locations increased by a couple of micrograms which further supports the conclusion that attainment cannot be reached by 2015. There was some uniqueness of the stationary point source controls in Provo due to prior SIPs which were evaluated in the modeled demonstration.

- Erin Mendenhall moved the Board propose for public comment the repeal and replace of SIP Subsection IX.A.21: Control Measures for Area and Point Sources. Fine Particulate Matter. PM2.5 SIP for the Salt Lake City, UT Nonattainment Area. Michael Smith seconded. The Board approved unanimously.

VII. Propose for Public Comment: Repeal and Replace SIP Subsection IX.A.23: Control Measures for Area and Point Sources, Fine Particulate Matter, PM2.5 SIP for Logan, UT-ID Nonattainment Area. Presented by Bill Reiss.

Bill Reiss, Environmental Engineer at DAQ, combined the presentation of the Salt Lake City, Provo, and Logan SIPs in agenda Item V. In this item Mr. Reiss went over unique items that were specific to the Logan, Utah and Idaho nonattainment area and addressed questions from the Board and noted any requested changes made to the text by the Board. For the Logan SIP, demonstration of attainment is now December 31, 2015. The attainment demonstration of this SIP may also be considered to demonstrate that the area is achieving reasonable further progress. The slight increase in the design value was not significant enough to change the conclusion of a 2015

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attainment. Overall, in Logan the strategy to reduce emissions results in 2.66 tons per day in 2015. In addition, there are no point sources in Logan and additional information regarding the RACT analyses in the nonattainment area is found in the technical support document. In this SIP the state shows transportation conformity by December 2015 using the EPA motor vehicle emissions simulator (MOVES) 2010a model using the base year of 2010. Quantitative milestones are required to be achieved every three years beginning when the SIP is due, December 2014. This is when DAQ commits to provide EPA with a milestone report, which is December 31, 2017. In that report DAQ must show that all the SIP measures that were counted on are being implemented and that the milestones have been met.

- Kathy Van Dame moved the Board propose for public comment the repeal and replace of SIP Subsection IX.A.23: Control Measures for Area and Point Sources, Fine Particulate Matter, PM2.5 SIP for Logan, UT-ID Nonattainment Area. Robert Paine seconded. The Board approved unanimously.

VIII. Propose for Public Comment: Amend SIP Subsections IX.H.11, 12, and 13. Control Measures for Area and Point Sources, Emission Limits and Operating Practices, PM2.5 Requirements. Presented by Bill Reiss.

Bill Reiss, Environmental Engineer at DAQ, stated this amendment to Part H is substantially the same as what was previously adopted by the Board in January 2014. Because of the Court's ruling with regard to Subpart 4, the attainment dates and the implementation schedules have changed. Most of the revisions being proposed have to do with EPA's comments on the Subpart 1 submittal. The focus being that we needed to evaluate the start-up and shut-down emissions for all the RACT sources and address the timing of RACT implementation. Additional changes were also made to Part H to correct typographical errors and to clarify language. New language was added at Part H.11.g.vii to potentially not prevent refiners from producing gasoline that meets the sulfur specification of tier 3 of the federal motor vehicle control program. The Board also received a summary of changes made to Part H which will be added to the technical support document available at the beginning of the comment period. Staff recommends the Board propose SIP Subsections IX.H.11, 12, and 13, as amended. Mr. Reiss then briefly explained the material and addressed questions from the Board. Of particular concern was new language regarding tier 3 and approval orders to which it is suggested to put Part H out for comment and then submit concerns during the public comment so they are addressed on record.

- Kerry Kelly moved the Board Propose for public comment to amend SIP Subsections IX.H.11, 12, and 13, Control Measures for Area and Point Sources, Emission Limits and Operating Practices, PM2.5 Requirements. Kathy Van Dame seconded. The Board approved unanimously.

IX. Propose for Public Comment: Amend SIP Subsection IX.A.3. Control Measures for Area and Point Sources, Fine Particulate Matter, Utah County. Presented by Bill Reiss.

Bill Reiss, Environmental Engineer at DAQ, stated this PM_{10} SIP for Utah County was last revised in 2002 at which time it was demonstrated the area would continue to attain and maintain the PM_{10} standard in the years 2002 and 2003. In addition, the model run was for the years 2010 and 2020 in order to redefine the motor vehicle emissions budgets in those years. EPA has since revised the model used to estimate emissions from mobile sources. MOVES is the new tools states will use as the basis for their SIPs. The new model indicates there is much more NOx coming from motor vehicles than was previously believed. As a condition to receive federal transportation funding, the transportation conformity rules require metropolitan planning organizations (MPOs) to

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demonstrate that the emissions associated with transportation plans, programs, and projects conform to emission budgets established in SIPs. These demonstrations must be made using the latest EPA-approved emissions model even if the budgets were founded on an older model. To alleviate any problem EPA has issued guidance where areas can revise their motor vehicle emissions inventories and budgets using MOVES without revising the entire SIP or completing additional modeling. This can be the case as long as the SIP continues to meet the applicable requirements it was designed for and that the state document that the growth and control strategy assumptions for non-motor vehicle sources continue to be valid. DAQ based this SIP revision on EPA's guidance and the two criteria. The conclusions of this SIP remain the same and documentation and a new supplement IV-14 to the technical support document has been created and will be available at the beginning of the comment period. Staff recommends the proposal to amend SIP Subsection IX.A.3, Control Measures for Area and Point Sources, Fine Particulate Matter, Utah County, for public comment.

Susan Hardy of Mountain Association of Governments commented this plan is essential for the continuous work for Utah County as they make a new 30 year plan which is due Spring 2015. Ms. Hardy also added that since 1994 Utah County has not violated the PM10 standard.

- Kerry Kelly moved the Board propose for public comment to amend SIP Subsection IX.A.3, Control Measures for Area and Point Sources, Fine Particulate Matter, Utah. Karma Thomson seconded. The Board approved unanimously.

X. Propose for Public Comment: Amend R307-110-10. Section IX, Control Measures for Area and Point Sources, Part A, Fine Particulate Matter; and Amend R307-110-17. Section IX, Control Measures for Area and Point Sources, Part H, Emissions Limits. Presented by Mark Berger.

Mark Berger, Environmental Planning Consultant at DAQ, stated that the new SIPs for $PM_{2.5}$ and PM_{10}, along with the new emissions limits added to Part H, will need to be incorporated into the Air Quality Rules. R307-110-10 is the rule that does this for $PM_{2.5}$ and PM_{10}, while R307-110-17 is the rule that incorporates Part H into the rules. The public review and comment period for these rules should be held in conjunction with the recently proposed SIPs. Staff recommends the Board propose for public comment R307-110-10, Section IX, Control Measures for Area and Point Sources, Part A, Fine Particulate Matter, and R307-110-17, Section IX, Control Measures for Area and Point Sources, Part H, Emissions Limits, for public comment.

- Robert Paine moved the Board propose for public comment to amend R307-110-10, Section IX, Control Measures for Area and Point Sources, Part A, Fine Particulate Matter, and amend R307-110-17, Section IX, Control Measures for Area and Point Sources, Part H, Emissions Limits. Kerry Kelly seconded. The Board approved unanimously.

XI. Propose for Public Comment: Amend R307-121. General Requirements: Clean Air and Efficient Vehicle Tax Credit. Presented by Mark Berger.

Mark Berger, Environmental Planning Consultant at DAQ, stated that during the 2014 legislative session, the legislature passed House Bill 74, which modified the eligibility requirements to claim the clean air and efficient vehicle tax credit. The legislature only funds this tax credit one year at a time. This proposed rule implements the changes House Bill 74 made to statute. The most notable change to the rule is that traditional hybrid vehicles are no longer eligible for the credit, while "qualifying plug-in hybrids," remain eligible. Also to clarify, it was stated that eligibility is for new vehicles only. In addition, other technical changes were made throughout the rule to clarify

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requirements and help administer the credit. Staff recommends the Board propose R307-121, General Requirements, Clean Air and Efficient Vehicle Tax Credit, for public comment.

- Michael Smith moved the Board propose for public comment to amend R307-121, General Requirements, Clean Air and Efficient Vehicle Tax Credit. Erin Mendenhall seconded. The Board approved unanimously.

XII. Propose for Public Comment: New Rule R307-125. Clean Air Retrofit, Replacement, and Off-Road Technology Program. Presented by Mark Berger.

Mark Berger, Environmental Planning Consultant at DAQ, stated that during the 2014 legislative session, the legislature enacted the clean air retrofit, replacement, and off-road technology (CARROT) program through House Bill 61. CARROT provides funds and allows for grants or other programs such as exchange, rebate, or low-cost purchase programs for activities that reduce emissions from non-road or heavy-duty diesel, on-road engines. This rule specifies the requirements and procedures of the CARROT program. Staff recommends the Board propose R307-125, Clean Air Retrofit, Replacement, and Off-Road Technology Program, for public comment.

In response to questions, staff responded the projects that would be eligible are for non-road engines and heavy-duty diesel. The school bus retrofits were done through the clean diesel program and those types of projects would be eligible activities for this program as well. The program is open to individuals, business, and governmental agencies. The $200,000 was allocated as a one-time amount for this program to be spent by June 2015. The 50% allocation of funds as stated in the rule was based on research on other similar exchange rebate programs across the country and comparing the budgets needed to carry out their projects. Reporting requirements have not been established yet. DAQ administers a couple of grant program that require quarterly reporting and bi-annual reporting so it is likely that it will be the same with this program. Participants may also be required to report back to DAQ bi-annually or quarterly to keep DAQ apprised of the project status.

- Kathy Van Dame moved the Board propose for public comment the new rule R307-125, Clean Air Retrofit, Replacement, and Off-Road Technology Program. Kerry Kelly seconded. The Board approved unanimously.

XIII. Propose for Public Comment: Amend R307-302. Solid Fuel Burning Devices in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah, and Weber Counties. Presented by Mark Berger.

Mark Berger, Environmental Planning Consultant at DAQ, stated that earlier this year, at the request of the Board, DAQ conducted a wood smoke workshop with various stakeholders to get ideas on how wood smoke emissions could be reduced during the wintertime inversion season. In the May Board meeting, staff presented the results of that workshop to the Board. The Board then directed staff to draft an amendment to R307-302 to add commercial, industrial, and institutional sources to the rule applicability. This rule as amended now includes all solid fuel burning sources, exempting all commercial and industrial food preparation using solid fuels and also exempting existing commercial and industrial boilers and electrical generating facilities. During the public comment period for this rule, staff specifically sought public feedback on exempting only existing industrial boilers and electric generating facilities, as this would affect future biomass and waste-to-energy projects within the $PM_{2.5}$ nonattainment area. Also, as there is no proposed amendment to permit the transfer of non-EPA phase 2 certified stoves located within businesses and institutions as part of a real estate transaction, DAQ is also interested in the public's opinion on the

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possibility of including such a provision for businesses and institutions to the rule. Staff recommends the Board propose R307-302, Solid Fuel Burning Devices in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah, and Weber Counties, for public comment.

In discussion, it was noted the figures listed in the memorandum came from county health departments based on their inspections. In the case of allowances for a power outage or a major disaster, enforcement discretion is available to the state and they likely will not enforce restrictions in those situations. The Town of Alta submitted a letter to the Board requesting some exemptions. In response, staff stated it's important to remember that EPA designated the entire county as nonattainment and the rule is based on the county's nonattainment. Procedurally, it was recommended the Town of Alta submit their requests during the open comment period of this rule so they are part of the record. It was also noted that other mountain locations such as Solitude and Brighton where notified of this rule and no input was received from them other than they did not feel it would impact to their location. Approving the rule for public comment would encourage additional comments and language recommendations from interested parties. Staff could then thoroughly analyze the language for a final proposal to the Board.

- Robert Paine moved the Board propose for public comment amend R307-302, Solid Fuel Burning Devices in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah, and Weber Counties. Erin Mendenhall seconded. The Board approved unanimously.

XIV. Informational Items.

A. Air Toxics. Presented by Robert Ford.

B. Compliance. Presented by Jay Morris and Harold Burge.

It was requested that staff prepare a table or chart showing the past 12 months compliance activities to get an idea of any seasonal trends.

C. Monitoring. Presented by Bo Call.

Mr. Call updated the Board on the monitoring charts. In discussion regarding a visual of monitoring trends, it was determined that at the next Board meeting a copy of the raw monitoring trend chart data be displayed to the Board.

D. Other Items to be Brought Before the Board.

Attending visitors, Crystal Ostigaard, Steven Pratt, and Steve Odenhal, from EPA Region 8 were introduced to Board members.

Ms. Kelly reported back to the Board that from her inquiries about naturally occurring radioactive material, with regard to evaporation ponds, in the Uinta Basin the answers she got were that it is not a big problem in the Basin because of the properties of the rock. The rock just does not contain the radioactive material that other areas of the country are used to. Mr. Bird also reported that in North Dakota it is a state rule issue with what they consider radioactive materials. The levels for proper disposal are so low for North Dakota that they package them up and transport them to Montana for disposal. In addition, the reason for Danish Flats' facility being in Utah and not Colorado was more a matter of convenience. There are produced water facilities on both sides of the border and DAQ knows of 22 other facilities in the Uinta Basin that do not service Colorado wells.

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For future informational topics it was requested that DAQ put together for discussion, perhaps in terms of county level, an update on inspection and maintenance (I/M) testing programs on universities. Also suggested, was that the Board do a field trip to a facility to have a demonstration on how the infrared camera reads VOC emissions. And finally, that staff give an update on the ponds at Danish Flats and an update on compliance efforts in the Uinta Basin.

Comment from John Guldner, Town Administrator for Town of Alta, was introduced. Mr. Guldner expressed the town's appreciation of the Board's acknowledgement to their request to comment on R307-302.

Meeting adjourned at 5:05 p.m.

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ITEM 4

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-085-14

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Colleen Delaney, Environmental Scientist

DATE: September 18, 2014

SUBJECT: FINAL ADOPTION: New Rules R307-501. Oil and Gas Industry: General Provisions; R307-502. Oil and Gas Industry: Pneumatic Controllers; R307-503. Oil and Gas Industry: Flares; and R307-504. Oil and Gas Industry: Tank Truck Loading.

On June 4, 2014, the Air Quality Board proposed four new rules that apply to the oil and gas industry for public comment. A public comment period was held from July 1to July 31, 2014. A public hearing was not requested. Several written comments were received and are addressed in the attached Response to Comments document. The responses to several of those comments necessitated revisions to the proposed rules.

Staff Recommendation: Staff recommends the Board adopt R307-501, R307-502, and R307-503 as amended and R307-504 as proposed.

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Response to Comments - Proposed New Rules R307-501, R307-502, R307-503, R307-504

General Comments that Apply to all Four Rules

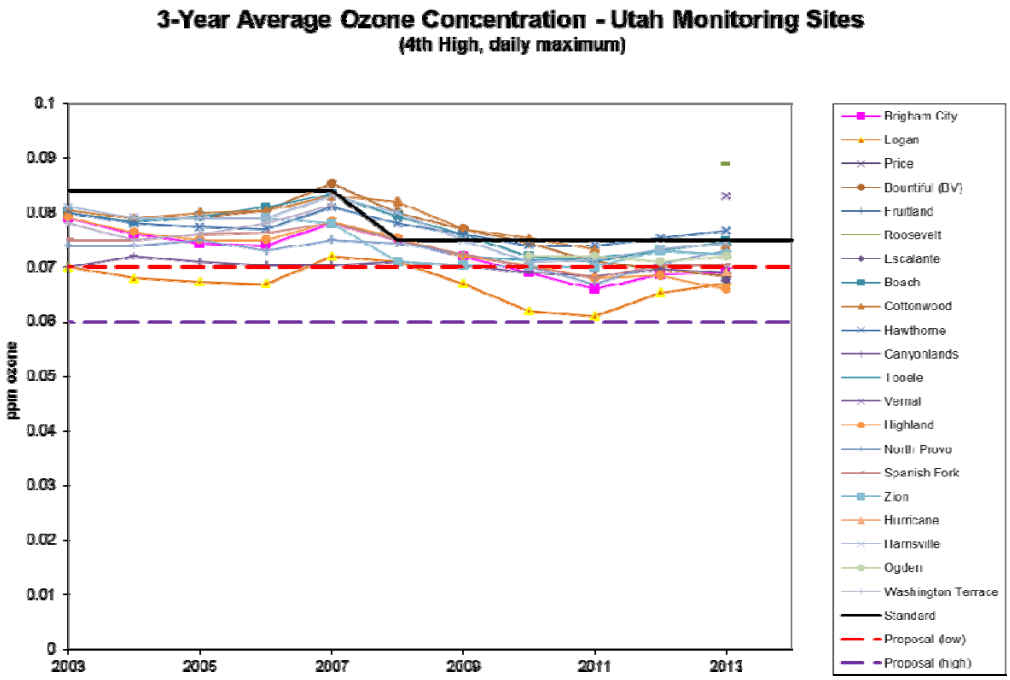
Comment: *While the Alliance recognizes the basis for applying the proposed rules with the counties that are part of Utah's voluntary Ozone Advance program for winter ozone, expanding the program statewide in anticipation of a possible decrease in the ozone NAAQS is purely speculative. There is simply no way to tell how long it will take EPA to implement a new, lower standard, or what that standard will be. UDAQ says "summertime ozone is currently below the NAAQS for ozone," and goes on to speculate about a possible new NAAQS. While EPA's Clean Air Science Committee has recommended lowering the ozone standard, UDAQ cannot say with certainty at this time which areas of Utah would be designated nonattainment or how airsheds might change prior to designation. (Western Energy Alliance)*

Response: EPA is currently under a Court order to propose a revision to the ozone standard by December 1, 2014, and to finalize that standard by October 1, 2015. Once the new standard has been set, the Clean Air Act mandates that designations must be completed within two years, by 2017. EPA's Clean Air Science Advisory Committee (CASAC) has recommended lowering the standard stating, "our policy advice is to set the level of the standard lower than 70 ppb within a range down to 60 ppb, taking into account your judgment regarding the desired margin of safety to protect public health, and taking into account that lower levels will provide incrementally greater margins of safety."[1] EPA's Final Policy Assessment recommends a primary standard within the range of 60-70 ppb[2]. Based on this information, it is highly likely that EPA will tighten the ozone standard to at least 70 ppb next year. The secondary standard must also be considered. CASAC recommended "retaining the current indicator (ozone) but establishing a revised form of the secondary standard to be the biologically-relevant W126 index accumulated over a 12-hour period (8 a.m. – 8 p.m.) over the 3-month summation period of a single year resulting in the maximum value of W126 (henceforth W126). The CASAC recommends that the level associated with this form be within the range of 7 ppm-hrs to 15 ppm-hrs to protect against current and anticipated welfare effects of ozone. The CASAC does not support a level higher than 15 ppm-hrs." EPA's Final Policy Assessment recommended a secondary W126 standard in the range of 7-17 ppm-hrs.

Utah monitoring trends shown in Figure 1 give a good indication of the areas of the state where ozone levels might exceed a tighter ozone standard. What is notable from this Figure 1 is that only one site, Logan, is consistently below the upper end of the expected range in recent years.

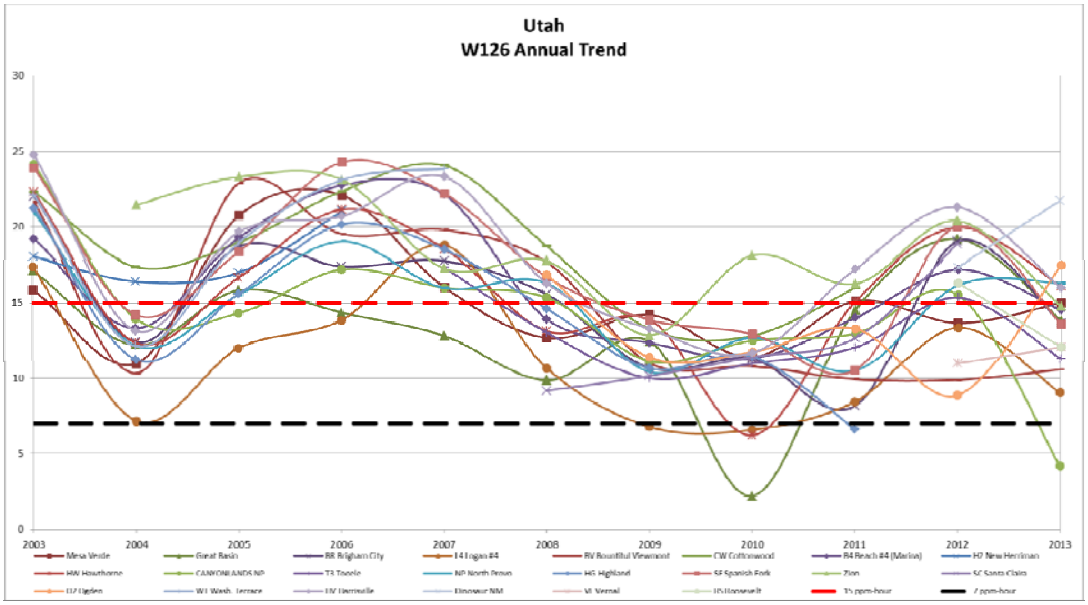
[1] June 26, 2014, CASAC Review of the EPA's Second Draft Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards.
[2] EPA-452/R-14-006, Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards, August 2014.

Figure 1



When looking at the expected range for the secondary standard it is also clear that many areas of Utah are above or near the upper end of the range in high ozone years. While the boundaries of future nonattainment areas have not been set, it is clear from the monitoring data that ozone will be an issue throughout the state.

Figure 2



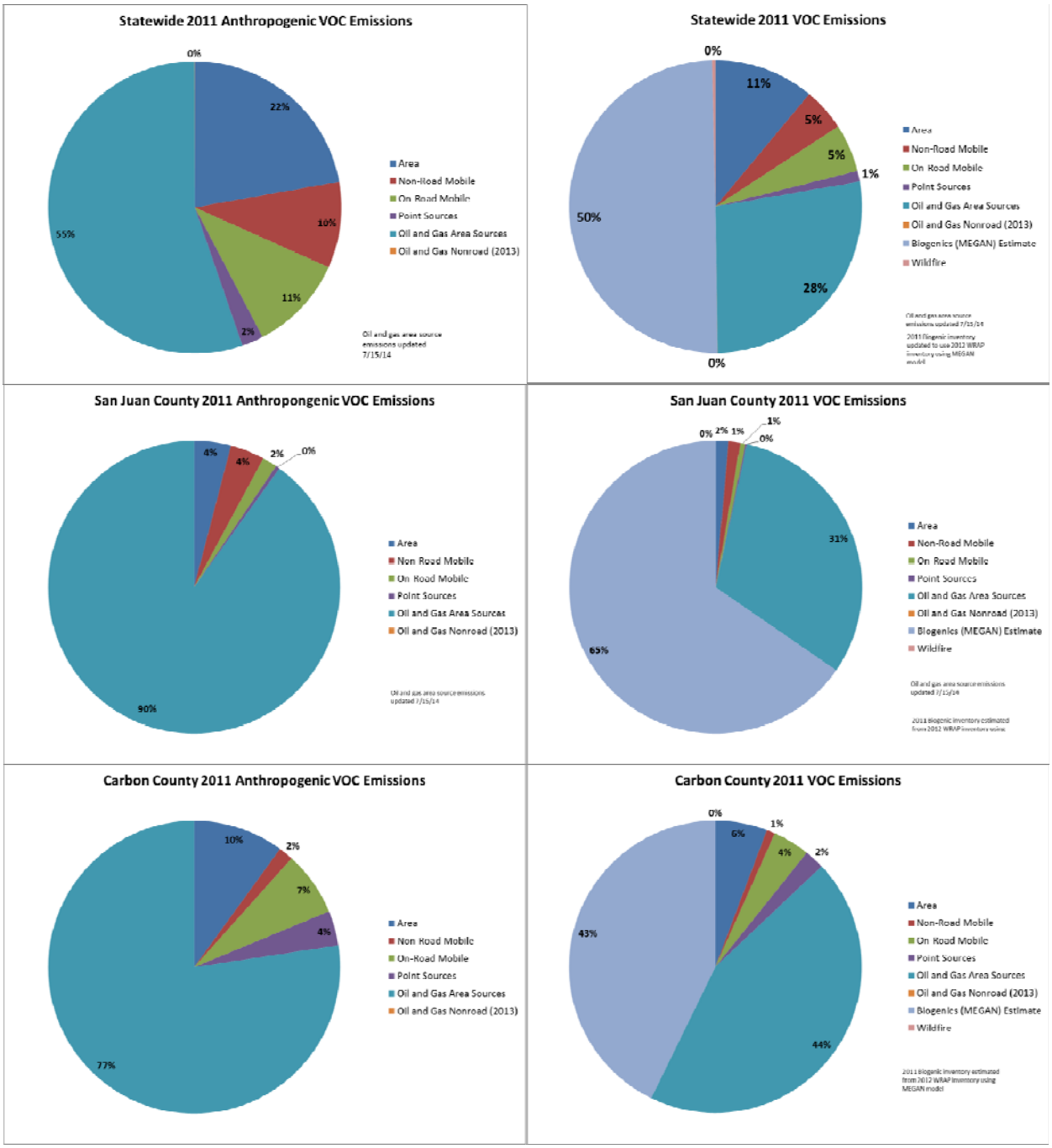
Comment: *Ultimately, any policies and rules applicable to existing source controls should be driven by official nonattainment designation, not by speculative analysis of future regulatory obligations that may or may not face the state. These four proposed rules should be limited to Uintah and Duchesne Counties. (Western Energy Alliance)*

> **Response:** It is reasonable to anticipate the effect of a tighter ozone standard in Utah and to work proactively to reduce emissions that contribute to ozone formation. Ozone levels above 70 ppb are routinely recorded throughout the state, even in remote areas such as Canyonlands and Great Basin National Park. When the secondary standard is considered, large areas of the state are likely to exceed a W126 standard of 15 ppm-hrs, the upper end of the expected range. The four proposed rules were selected as cost effective emission reduction strategies to reduce volatile organic compound (VOC) emissions and to ensure that existing pollution control equipment is operated effectively and as designed.

Comment: *It is inappropriate for UDAQ to apply the requirements of these rules, which primarily reduce VOC emissions, in attainment areas with no violations of the current ozone NAAQS. These four proposed rules should be limited to Uintah and Duchesne Counties. An analysis has not been completed that suggests that these rules, if implemented statewide, will have any impact on summer ozone formation. For example, the vast majority of summer ozone in the Wasatch Front appears to be driven by mobile sources, rather than the oil and natural gas industry. Winter ozone formation in the Uinta Basin is unrelated to summer ozone levels in other parts of Utah, and the atmospheric and geographical conditions and photochemical reactions leading to winter ozone in the Uinta Basin are vastly different from those that form summer ozone. UDAQ should not assume the same emissions reductions would reduce ozone formation in both winter and summer. (Western Energy Alliance, Utah Petroleum Association)*

> **Response:** DAQ staff agrees that mobile source emissions of VOC are a significant portion of the inventory along the Wasatch Front. Outside of the urban area, however, oil and gas production is the greatest anthropogenic contributor of VOC emissions. Even when non-anthropogenic emissions (biogenics and wildfire) are included, oil and gas VOC emissions are a substantial portion of the inventory. Figure 3 shows the total VOC emissions and anthropogenic VOC emissions statewide and also in San Juan County and Carbon County, the two counties with the greatest oil and gas production outside of the Uinta Basin. Within each of these counties, the oil and gas emissions are concentrated within oil fields, so in those portions of the county an even greater percentage of VOC emissions are from oil and gas sources. Summertime ozone is formed through a photochemical reaction between the precursors VOC and NOx. Reductions of both precursors are important to reduce local and regional ozone levels. Hazardous air pollutants that are a component of VOC, such as benzene, toluene, and xylene, will also be reduced providing additional benefits.

Figure 3


Statewide 2011 Anthropogenic VOC Emissions
0%
22%
10%
11%
2%
55%
Area
Non-Road Mobile
On Road Mobile
Point Sources
Oil and Gas Area Sources
Oil and Gas Nonroad (2013)
Oil and gas area source emissions updated 7/15/14
Statewide 2011 VOC Emissions
0%
11%
5%
5%
1%
28%
0%
50%
Area
Non-Road Mobile
On Road Mobile
Point Sources
Oil and Gas Area Sources
Oil and Gas Nonroad (2013)
Biogenics (MEGAN) Estimate
Wildfire
San Juan County 2011 Anthropongenic VOC Emissions
4%
4%
2%
0%
90%
Area
Non Road Mobile
On Road Mobile
Point Sources
Oil and Gas Area Sources
Oil and Gas Nonroad (2013)
Oil and gas area source emissions updated 7/15/14
San Juan County 2011 VOC Emissions
0%
2%
1%
1%
0%
31%
65%
Area
Non-Road Mobile
On Road Mobile
Point Sources
Oil and Gas Area Sources
Oil and Gas Nonroad (2013)
Biogenics (MEGAN) Estimate
Wildfire
Oil and gas area source emissions updated 7/15/14
2011 Biogenic inventory estimated from 2012 WRAP inventory using
Carbon County 2011 Anthropogenic VOC Emissions
10%
2%
7%
4%
77%
Area
Non Road Mobile
On-Road Mobile
Point Sources
Oil and Gas Area Sources
Oil and Gas Nonroad (2013)
Carbon County 2011 VOC Emissions
0%
6%
1%
4%
2%
43%
44%
Area
Non-Road Mobile
On Road Mobile
Point Sources
Oil and Gas Area Sources
Oil and Gas Nonroad (2013)
Biogenics (MEGAN) Estimate
Wildfire
2011 Biogenic inventory estimated from 2012 WRAP inventory using MEGAN model

Proposed Rule R307-501. General Provisions

Comment: *The Alliance has concerns about the applicability of the proposed rule. Notwithstanding the exemption for oil refineries, R307-501 as drafted would effectively apply from the wellhead to the burner tip and would encompass not just upstream and midstream oil and gas companies but bulk petroleum storage facilities and even local utilities who distribute natural gas to end users. The applicability of R307-501 should be limited to well production facilities, natural gas compressor stations, and natural gas processing facilities. (Western Energy Alliance, Utah Petroleum Association)*

> **Response:** The general provisions do not require the installation of any new pollution control equipment. Instead, the rule provides more detail to supplement the long-standing requirements in Utah's rules that air pollution control equipment must be adequately maintained. It is reasonable to require that equipment be adequately designed to meet the control efficiencies established in rules or approval orders, operated according to manufacturer's specifications, be adequately maintained, and be operated to minimize VOC emissions. DAQ staff did not intend that the rule would apply "to the burner tip," and therefore the term "distribution" has been removed from the applicability section. Mid-stream oil and gas operations should meet these minimum requirements for operating and maintaining equipment so the term "transmission" has been retained in the applicability section. The term "natural gas transmission" is defined in 40 CFR 60, Subpart OOOO for natural gas transmission.

Comment: *We suggest that UDAQ use the definitions for "natural gas processing plant" and "gas well or natural gas well" found in 40 CFR 60, Subpart OOOO. (Western Energy Alliance)*

> **Response:** R307-501-2(1) incorporates the definitions of 40 CFR 60 Subpart OOOO into this rule. The definition of "Natural gas processing plant (gas plant)" and "Gas well or natural gas well" are listed in 40 CFR 60 Subpart OOOO; therefore, defining these terms in R307-501 is not necessary.

Comment: *We suggest that UDAQ extrapolate the definition of gas well found in 40 CFR 60, Subpart OOOO to oil wells. (Western Energy Alliance)*

> **Response:** DAQ agrees that "Oil well" is not defined in R307-501 or 40 CFR 60 Subpart OOOO. DAQ will add the definition of "Oil well" to R307-501 as follows: "Oil well means an onshore well drilled principally for the production of crude oil."

Comment: *We suggest that UDAQ use the definition of an oil and gas production facility found in 40 CFR 98, Subpart W to replace the "well production facilities" definition in the proposed rule. (Western Energy Alliance)*

> **Response:** The term "oil and gas production facility" is not exactly defined in 40 CFR 98 Subpart W. DAQ assumes the commenter meant the term: "Onshore petroleum and natural gas production." The term "Onshore petroleum and natural gas production" applies to equipment on a single well-pad or associated with a single well-pad. R307-501 is intended to apply to more facilities than those located at a single well-pad or associated with a single well-pad. A tank battery may be located at a site not at or associated with a single well pad; therefore, the definition of "Well production facility" will not be changed to only include sites on or associated with a single well-pad. The definition of "Onshore petroleum and natural gas production" does

include some equipment descriptions that are not included in definition of "Well production facility." The definition of "Well production facility" in R307-501 will be updated to read as follows: "Well production facility" means all equipment at a single stationary source directly associated with one or more oil wells or gas wells. This equipment includes, but is not limited to, equipment used for production, extraction, recovery, lifting, stabilization, storage, separation, treating, dehydration, combustion, compression, pumping, metering, monitoring, and flowline.

R307-502. Pneumatic Controllers.

Comment: *We are concerned with adopting the NSPS standards in their entirety. The rule purpose is to reduce VOC emissions in the Uinta Basin and as such we feel that R307-502 should be focused on the emission rate standards in the NSPS. (Western Energy Alliance, Utah Petroleum Association)*

Response: The emission rate standards for pneumatic controllers would not be effective without adequate monitoring, reporting, and recordkeeping (MRR) requirements to verify compliance. This is especially true for emission sources such as pneumatic controllers that are widely distributed throughout the state. Compliance inspectors must be able to determine which controllers have been replaced and also which high-bleed controllers meet the requirements to continue operation under the provisions of the rule. DAQ considered several different ways to achieve adequate MRR for pneumatic controllers and determined that over the long term it would benefit producers and DAQ to have one set of MRR requirements, those in the new source performance standards (NSPS), rather than having separate requirements for the retrofitted controllers. Any separate MRR requirements developed by DAQ would have a substantial overlap with those required under the NSPS for new sources because the underlying purpose, to demonstrate compliance with the emission standards, is the same in both cases.

After further discussions with the commenter regarding the MRR requirements in the NSPS standard, DAQ agrees that R307-502-5 should be modified to mirror the NSPS requirement to report high-bleed controllers that could not be replaced rather than reporting for all controllers that were replaced. This would be consistent with the intent of the rule to accelerate implementation of the NSPS requirements rather than establishing new requirements for pneumatic devices.

Comment: *We also believe UDAQ's cost and economic analysis of the proposed rule is faulty. Section 7 of the Notice of Proposed New Rule states that "because the requirements of this new rule apply to businesses with more than 50 employees, there are no anticipated costs for small businesses." The vast majority of oil and natural gas producers in Utah are independent exploration and production companies, and the median size of independent exploration and production companies is 14 employees. (Western Energy Alliance, Utah Petroleum Association)*

Response: The economic analysis concluded that over time the rule would provide a cost savings to companies due to recapture of product. This conclusion is valid for small businesses as well as larger companies. DAQ will modify the description regarding the impact to small businesses in the Notice of Change to Proposed Rule to reflect that the rule will provide a cost savings for small businesses.

Comment: *The costs references by UDAQ are too low as they do not include the labor costs to replace the controllers or complete the required reporting. The two costs cited by UDAQ are $2,104/controller and $1,420/per controller. This will increase the time to pay-back, and could impact economic considerations for older wells impacted by this rule. (Western Energy Alliance, Utah Petroleum Association)*

> **Response:** The commenter is correct that the costs cited by UDAQ, $2,104/controller and $1,420/controller, are the costs for new equipment only. The commenter suggests using a total cost which includes the cost of new equipment as well as the labor costs to replace the controller and to complete the required reporting, and provides an example total cost of $3,000 from a study by ICF International. The commenter also notes that using this total cost will increase the time to pay-back, and could impact economic considerations for older wells. However, using the commenter's recommended total cost of $3000/controller and the most recent 12 month Citygate natural gas prices for Utah, the pay-back time is estimated to be 21 to 28 months, similar to the initial estimated pay-back period UDAQ noted of 18 to 24 months. Given this fact, UDAQ does not agree that when taking the total cost of replacing a high bleed pneumatic controller with a low bleed controller into account that the time to pay-back or the economic considerations for older wells is significantly impacted.

Methods for Reducing Natural Gas Losses	Volume of Natural Gas Savings (Mcf/year)	Value of Natural Gas Savings ($/year)		Implementation Cost ($)	Payback Months	
		$5.65 per Mcf	$6.42 per Mcf		$5.65 per Mcf	$6.42 per Mcf
Replacement + additional labor costs	260	$1,469.00	$1,669.20	$3,000.00	27.71	20.34

R307-503. Flares.

Comment: *As drafted R307-503 does not appear to be technically feasible. The rule does not provide a definition of "flare." The common industry definition of flare is very similar to what is found in 40 CFR 60 Subpart OOOO – "Flare means a thermal oxidation system using an open (without enclosure) flame." When this common definition is applied to R307-503 it becomes technically impossible to meet the requirement of the rule which requires installation of an ignition device in the combustion chamber of a control device; a flare does not have a combustion chamber. While flares are occasionally used to control emissions they are more typically used for emergency and safety purposes at natural gas plants and refineries. In upstream oil and gas production, an enclosed vapor combustor is the most common means of controlling VOC emissions.*

We believe that UDAQ has adopted regulatory language relating to auto-igniters from the Colorado Department of Public Health and Environment's (CDPHE's) recently promulgated changes to Regulation 7. While we support such actions as they provide a common compliance requirement, it should be noted that CDPHE also requires that all combustion devices used to control VOCs be enclosed – which essentially mandates that VOC control devices be enclosed vapor combustors that can be equipped with auto-igniters (see Section XVII.B.2b of Regulation 7). It should be noted that this Colorado requirement is also technically infeasible as high volume gas flows, such as those typically encountered during the

emergency shutdown of a natural gas processing plant or a compressor station, cannot be safely managed in any type of enclosed combustion device. Operators in Colorado are currently working on this issue with CDPHE.

We believe that the following steps can be taken to address these issues.

> *1) Rename the regulation to "R307-503. Oil and Gas Industry: Vapor Combustion Devices.*
> *2) Add definitions for "Flare", "Enclosed Vapor Combustor", and "Continuous Pilot"*
> *3) Amend R307-503-3 to reflect that Enclosed Vapor Combustor must be equipped with auto-ignitors and Flares must be equipped with Continuous Pilots.*

UDAQ may also want to consider referencing the continuous flame presence requirements for flares found in 40 CFR 60.18(b)(2). (Western Energy Alliance, Utah Petroleum Association)

> **Response:** DAQ agrees that "flare" is not defined in R307-503. The commenter indicates that there are two types of VOC combustion devices: an enclosed combustor and a flare. Both units are used to oxidize hydrocarbons, but an enclosed combustor has an enclosed flame and a flare has an open flame. DAQ considers an "enclosed vapor combustor," as mentioned by the commenter, to be the same as an "enclosed flare." In addition, DAQ considers a "flare" as mentioned by the commenter and as referenced in 40 CFR 60 Subpart OOOO to be the same as an "open flare." DAQ will add a definition for "flare," "enclosed flare," and "open flare." DAQ is not requiring that all VOC combustion devices be enclosed as mentioned by the commenter in regards to Colorado's rule, but recognizes that a VOC combustor may be enclosed or may be open.
>
> A continuous pilot, as mentioned by the commenter, may be required according to 40 CFR 60 Subpart OOOO. At this time, R307-503 will not require the use of a continuous pilot. R307-503 will require the use of an "auto igniter for both open flares and enclosed flares. Continuous pilot flares are designed to operate with a pilot continuously burning; however, the pilot could go out and an "auto igniter" is necessary to re-light the pilot so VOC emissions can be combusted. If the flare does not utilize a continuous pilot, an "auto igniter" is necessary to light the pilot when hydrocarbons are being sent to the flare so VOC emissions can be combusted.

Comment: *As with the proposed rule for pneumatic devices, we believe UDAQ's cost and economic analysis of this proposed rule is faulty. Section 7 of the Notice of Proposed New Rule states that "because the requirements of this new rule apply to businesses with more than 50 employees, there are no anticipated costs for small businesses." The vast majority of oil and natural gas producers in Utah are independent exploration and production companies, the median size of which is 14 employees. (Western Energy Alliance)*

> **Response:** DAQ will modify the description regarding the impact to small businesses in the Notice of Change to Proposed Rule to reflect the following description that was used for all businesses. "Colorado estimated a cost of $2,348 to retrofit an existing flare with an auto igniter, with an annualized cost of $475. The overall cost effectiveness of the retrofit was $302/ton of VOC reduced."

Comment: *UDAQ cites Colorado's estimated cost of $2,348 to install an auto-ignitor. While we agree that this is a reasonable estimate for installation of an auto-ignitor on an enclosed vapor combustor, it is not representative of the costs required to upgrade a flare. It is imperative that UDAQ understand the differences between these two different types of vapor combustion systems." (Western Energy Alliance)*

> **Response:** DAQ agrees that the estimated cost to install an auto-ignitor was based on the cost for installation on an enclosed vapor combustor. DAQ has not yet determined the cost to retrofit an open flare. The rule has been modified to require retrofits only on enclosed flares.

Staff Comment: R307-503 requires all new flares constructed after November 1, 2014, to be equipped with an auto-igniter. Because changes have been made to the proposed rule, an additional 30-day public notice period is required before the rule could be made effective. The applicability date for all new flares has been changed to January 1, 2015, to reflect the expected effective date of the rule.

R307. Environmental Quality.
R307-501. Oil and Gas Industry: General Provisions.
R307-501-1. Purpose.

R307-501 establishes general requirements for prevention of emissions and use of good air pollution control practices for all oil and natural gas exploration and production operations, well production facilities, natural gas compressor stations, and natural gas processing plants.

R307-501-2. Definitions.

(1) The definitions in 40 CFR 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution, which is incorporated by reference in R307-210 apply to R307-501.

(2) "Well production facility" means all equipment at a single stationary source directly associated with one or more oil wells or gas wells. This equipment includes, but is not limited to, equipment used for production, extraction, recovery, lifting, stabilization, storage, separation, treating, dehydration, [~~artificial lift,~~]combustion, compression, pumping, metering, monitoring, and flowline.

(3) "Oil well" means an onshore well drilled principally for the production of crude oil.

(4) "Oil transmission" means the pipelines used for the long distance transport of crude oil, condensate, or intermediate hydrocarbon liquids (excluding processing). Specific equipment used in transmission includes, but is not limited to, the land, mains, valves, meters, boosters, regulators, storage vessels, dehydrators, pumps and compressors, and their driving units and appurtenances. The transportation of oil or natural gas to end users is not included in the definition of "transmission".

R307-501-3. Applicability.

(1) R307-501 applies to all oil and natural gas exploration, production, [~~distribution,~~]and transmission operations; well production facilities; natural gas compressor stations; and natural gas processing plants in Utah.

(2) R307-501 does not apply to oil refineries.

R307-501-4. General Provisions.

(1) General requirements for prevention of emissions and use of good air pollution control practices.

(a) All crude oil, condensate, and intermediate hydrocarbon liquids collection, storage, processing and handling operations, regardless of size, shall be designed, operated and maintained so as

to minimize emission of volatile organic compounds to the atmosphere to the extent reasonably practicable.

(b) At all times, including periods of start-up, shutdown, and malfunction, the installation and air pollution control equipment shall be maintained and operated in a manner consistent with good air pollution control practices for minimizing emissions.

(c) Determination of whether or not acceptable operating and maintenance procedures are being used will be based on information available to the director, which may include, but is not limited to, monitoring results, infrared camera images, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(2) General requirements for air pollution control equipment.

(a) All air pollution control equipment shall be operated and maintained pursuant to the manufacturing specifications or equivalent to the extent practicable and consistent with technological limitations and good engineering and maintenance practices.

(b) The owner or operator shall keep manufacturer specifications or equivalent on file.

(c) In addition, all such air pollution control equipment shall be adequately designed and sized to achieve the control efficiency rates established in rules or in approval orders issued under R307-401 and to handle reasonably foreseeable fluctuations in emissions of VOCs during normal operations. Fluctuations in emissions that occur when the separator dumps into the tank are reasonably foreseeable.

KEY: air pollution, oil, gas,
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality.
R307-502. Oil and Gas Industry: Pneumatic Controllers.
R307-502-1. Purpose.

(1) The purpose of R307-502 is to reduce emissions of volatile organic compounds from pneumatic controllers that are associated with oil and gas operations.

(2) The rule requires existing pneumatic controllers to meet the standards established for new controllers in 40 CFR Part 60, Subpart OOOO.

R307-502-2. Definitions.

(1) The definitions in 40 CFR 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution, which is incorporated by reference in R307-210 apply to R307-502.

(2) “Existing pneumatic controller” means a pneumatic controller affected facility as described in 40 CFR 60.5365(d)(1) through (3) that was constructed, modified, or reconstructed prior to October 15, 2013.

R307-502-3. Applicability.

R307-502 applies to the owner or operator of any existing pneumatic controller in Utah.

R307-502-4. Retrofit Requirements.

(1) Effective December 1, 2015, all existing pneumatic controllers in Duchesne County or Uintah County shall meet the standards established for pneumatic controller affected facilities that are constructed, modified or reconstructed on or after October 15, 2013, as specified in 40 CFR 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution.

(2) Effective April 1, 2017 all existing pneumatic controllers in Utah shall meet the standards established for pneumatic controller affected facilities that are constructed, modified or reconstructed on or after October 15, 2013 as specified in 40 CFR 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution.

R307-502-5. Documentation Required.

[~~The owner or operator shall identify all existing pneumatic controller facilities that were replaced or retrofitted to meet the requirements of R307-502-4 in the annual report required under 40 CFR 60.5420.~~](1) The tagging requirements in 40 CFR 60.5390(b)(2) and 40 CFR 60.5390(c)(2), incorporated by reference in R307-210, are

modified to not require the month and year of installation, reconstruction or modification for existing pneumatic controllers.

(2) The recordkeeping requirements in 40 CFR 60.5420(c)(4)(i), incorporated by reference in R307-210, are modified to not require records of the date of installation or manufacturer specifications for existing pneumatic controllers.

KEY: air pollution, oil, gas, pneumatic controllers
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality.
R307-503. Oil and Gas Industry: Flares.
R307-503-1. Purpose.

R307-503 establishes conditions to ensure that [~~combustion devices~~]flares used in the oil and gas industry are operated effectively.

R307-503-2. Definitions.

(1) "Auto igniter" means a device which will automatically attempt to relight the pilot flame [~~in the combustion chamber of a control device~~]of a flare in order to combust volatile organic compound emissions.

(2) "Enclosed flare" means a flare that has an enclosed flame.

(3) "Flare" means a thermal oxidation system designed to combust hydrocarbons in the presence of a flame.

(4) "Open flare" means a flare that has an open (without enclosure) flame.

R307-503-3. Applicability.

(1) R307-503 applies to all oil and gas exploration and production operations, well sites, natural gas compressor stations, and natural gas processing plants in Utah.

(2) R307-503 does not apply to oil refineries.

R307-503-3. Auto-Igniters.

(1) [~~All open or enclosed f~~]Flares used to control emissions of volatile organic compounds shall be equipped with and operate an auto-igniter as follows:

(a) All open flares and all[~~or~~] enclosed flares installed on or after [~~November 1, 2014~~]January 1, 2015, shall be equipped with an operational auto-igniter upon installation of the flare.

(b) All [~~open or~~]enclosed flares installed before [~~November 1, 2014,~~]January 1, 2015 in Duchesne County or Uintah County shall be equipped with an operational auto-igniter by December 1, 2015, or after the next flare planned shutdown, whichever comes first.

(c) All [~~open or~~]enclosed flares installed before [~~November 1, 2014,~~]January 1, 2015 in all other areas of Utah shall be equipped with an operational auto-igniter by April 1, 2017, or after the next flare planned shutdown, whichever comes first.

R307-503-4. Recordkeeping.

The owner or operator shall maintain records demonstrating the date of installation and manufacturer specifications for each auto-igniter required under R307-503-3.

KEY: air pollution, oil, gas, flares
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality.
R307-504. Oil and Gas Industry: Tank Truck Loading.
R307-504-1. Purpose.

R307-504 establishes control requirements for the loading of liquids containing volatile organic compounds at oil or gas well sites.

R307-504-2. Definitions.

(1) The definitions in 40 CFR 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution that is incorporated by reference in R307-210 apply to R307-504.

(2) “Bottom Filling” means the filling of a tank through an inlet at or near the bottom of the tank designed to have the opening covered by the liquid after the pipe normally used to withdraw liquid can no longer withdraw any liquid.

(3) “Submerged Fill Pipe” means any fill pipe with a discharge opening which is entirely submerged when the liquid level is six inches above the bottom of the tank and the pipe normally used to withdraw liquid from the tank can no longer withdraw any liquid.

(4) “Well production facility” means all equipment at a single stationary source directly associated with one or more oil wells or gas wells.

R307-504-3. Applicability.

R307-504 applies to any person who loads or permits the loading of any intermediate hydrocarbon liquid or produced water at a well production facility after January 1, 2015.

R307-504-4. Tank Truck Loading Requirements.

Tank trucks used for intermediate hydrocarbon liquid or produced water shall be loaded using bottom filling or a submerged fill pipe.

KEY: air pollution, oil, gas
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

Oil and Gas Rules

Utah Air Quality Board
October 1, 2014

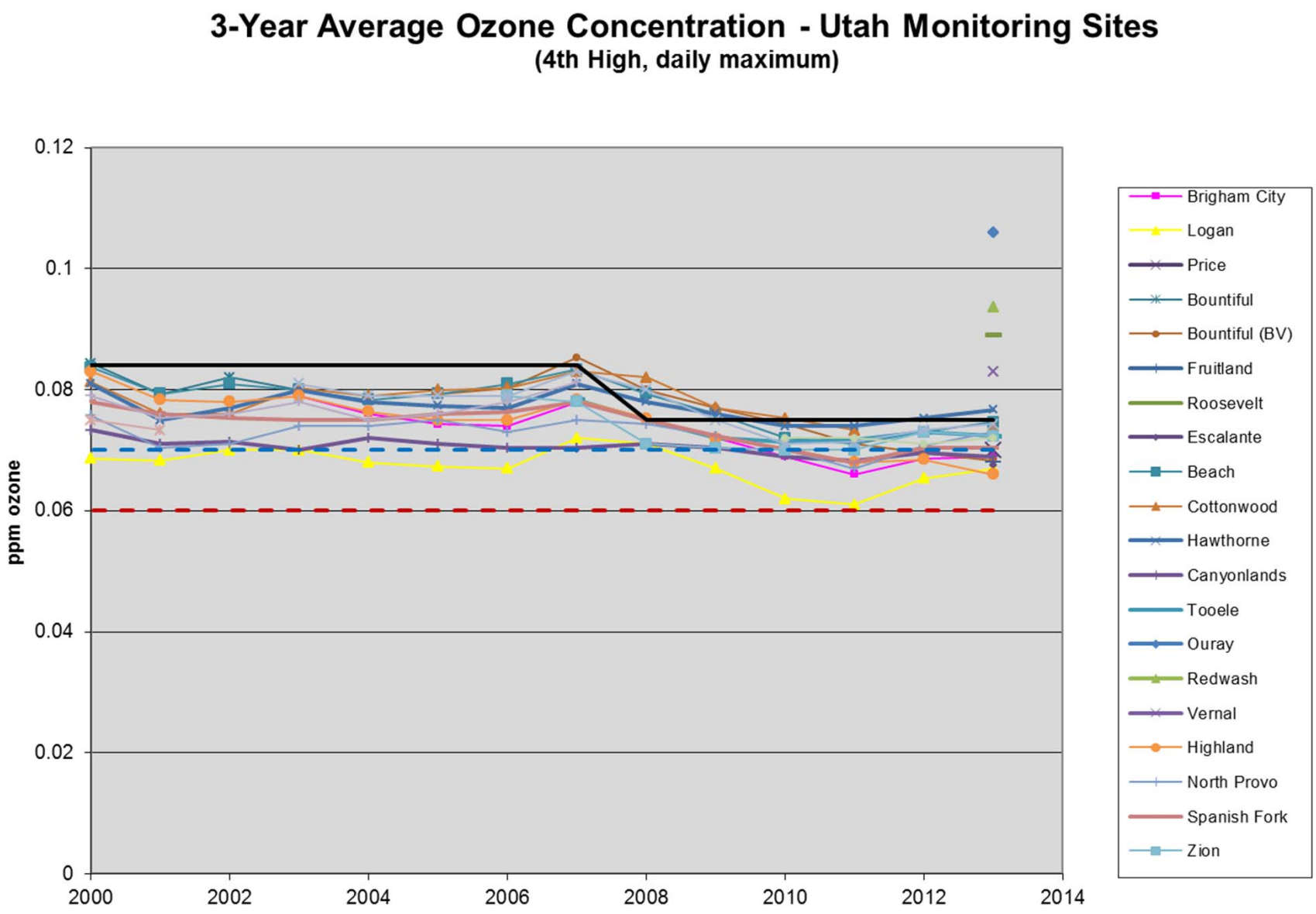
Colleen Delaney, Environmental Scientist

Proposed Oil and Gas Rules

- R307-501. General Provisions
  - Statewide
  - Clarifying changes, definitions added, distribution excluded
- R307-502. Pneumatic Controllers
  - Uinta Basin: December 2015
  - Statewide: April 2017
  - Clarifying changes to ensure consistency with NSPS requirements
- R307-503. Flares
  - Uinta Basin: December 2015
  - Statewide: April 2017
  - Clarifying changes, definitions added, retrofit requirements limited to enclosed flares
- R307-504. Tank Truck Loading
  - Statewide: January 2015
  - No changes

- Commenters questioned rationale for requiring rules statewide
  - Address gap in federal requirements
  - Information about emissions from oil and gas area sources is improving nationwide
    - Largest source of anthropogenic VOC emissions in the state
    - Production is increasing
    - Learn from efforts in other states
  - Strategies were chosen that are very cost effective and that help ensure existing pollution control equipment is operated effectively
    - Extra time provided for statewide retrofits
    - Concurrent statewide effort to ensure that sources have permits if required by Utah's rules
  - EPA is under court order to revise the ozone NAAQS by October 1, 2015
    - Expected to tighten the standard
    - VOC and NOx are the main precursors to ozone
    - Summertime ozone is a regional issue
  - Hazardous air pollutants are also a component of VOC emissions

Response to Comments


3-Year Average Ozone Concentration - Utah Monitoring Sites
(4th High, daily maximum)
ppm ozone
0.12
0.1
0.08
0.06
0.04
0.02
0
2000
2002
2004
2006
2008
2010
2012
2014
Brigham City
Logan
Price
Bountiful
Bountiful (BV)
Fruitland
Roosevelt
Escalante
Beach
Cottonwood
Hawthorne
Canyonlands
Tooele
Ouray
Redwash
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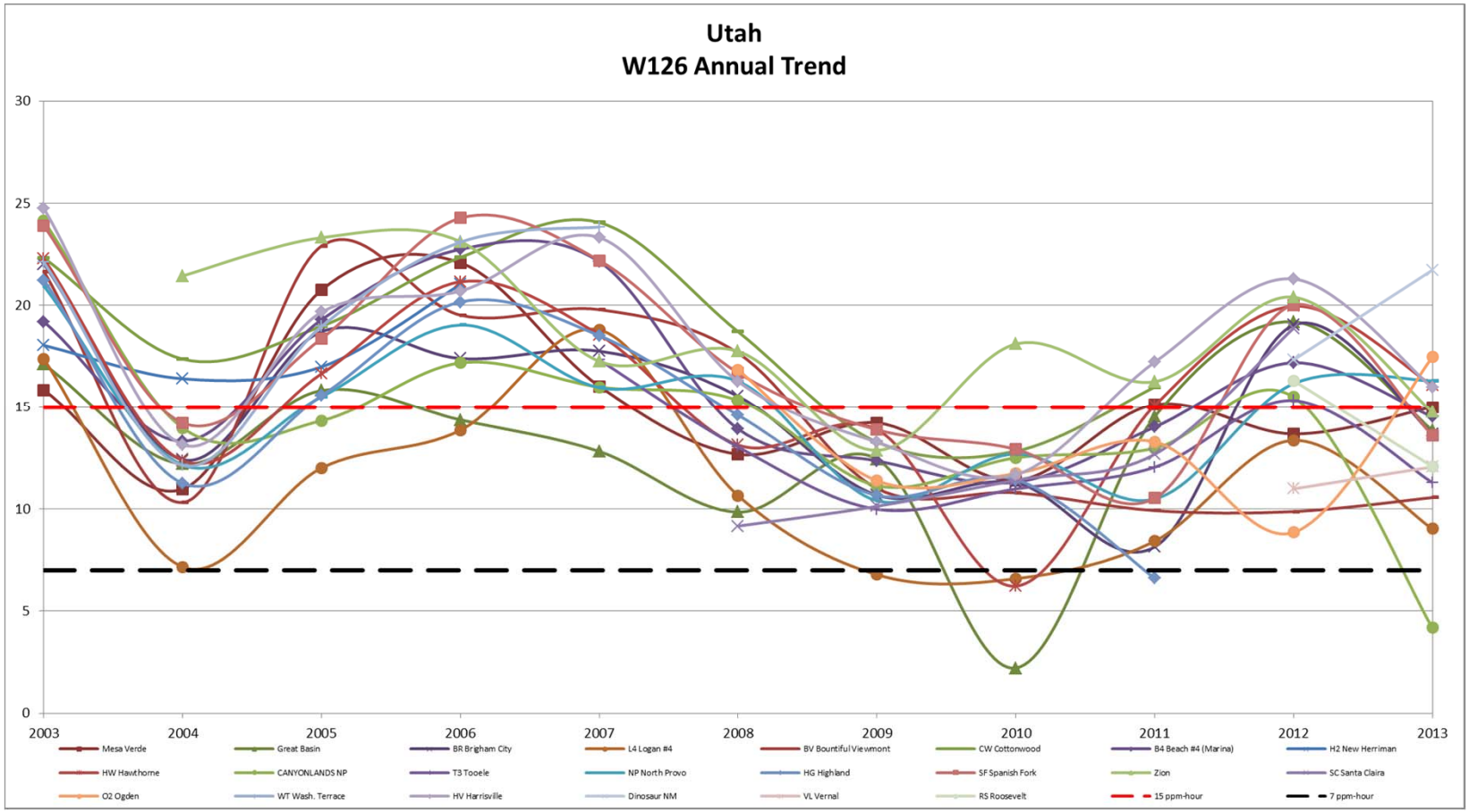
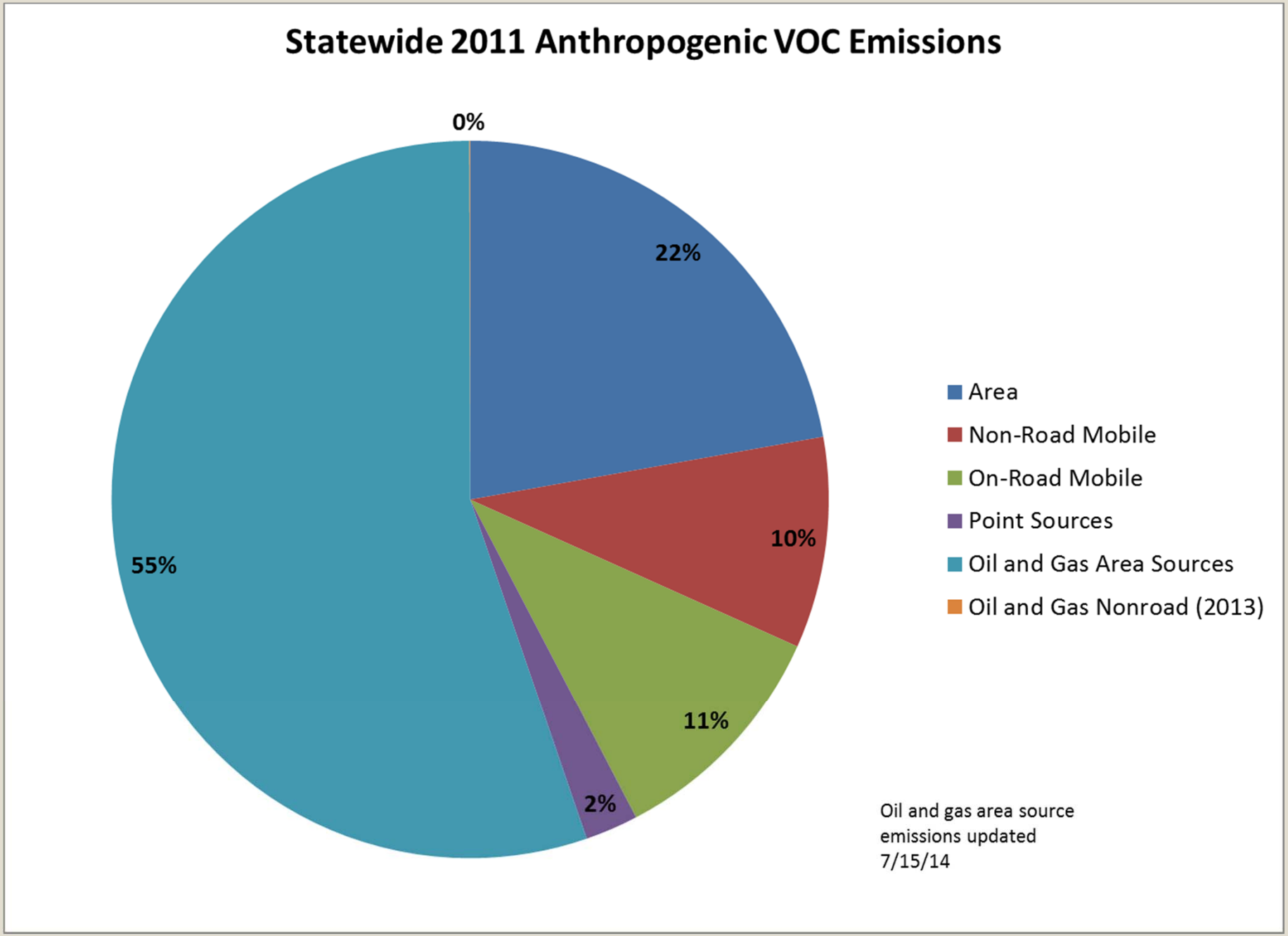
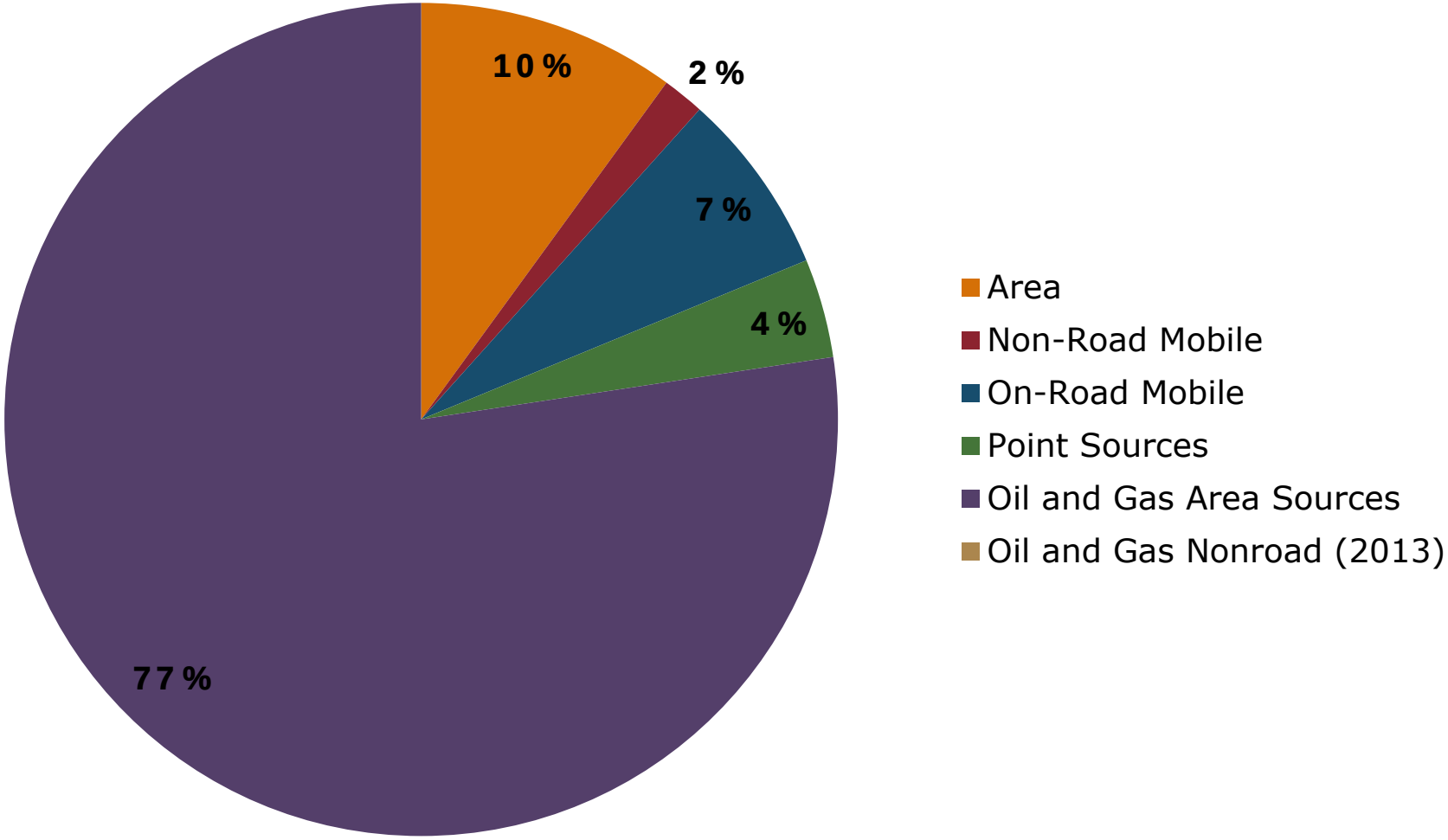
Highland
North Provo
Spanish Fork
Zion

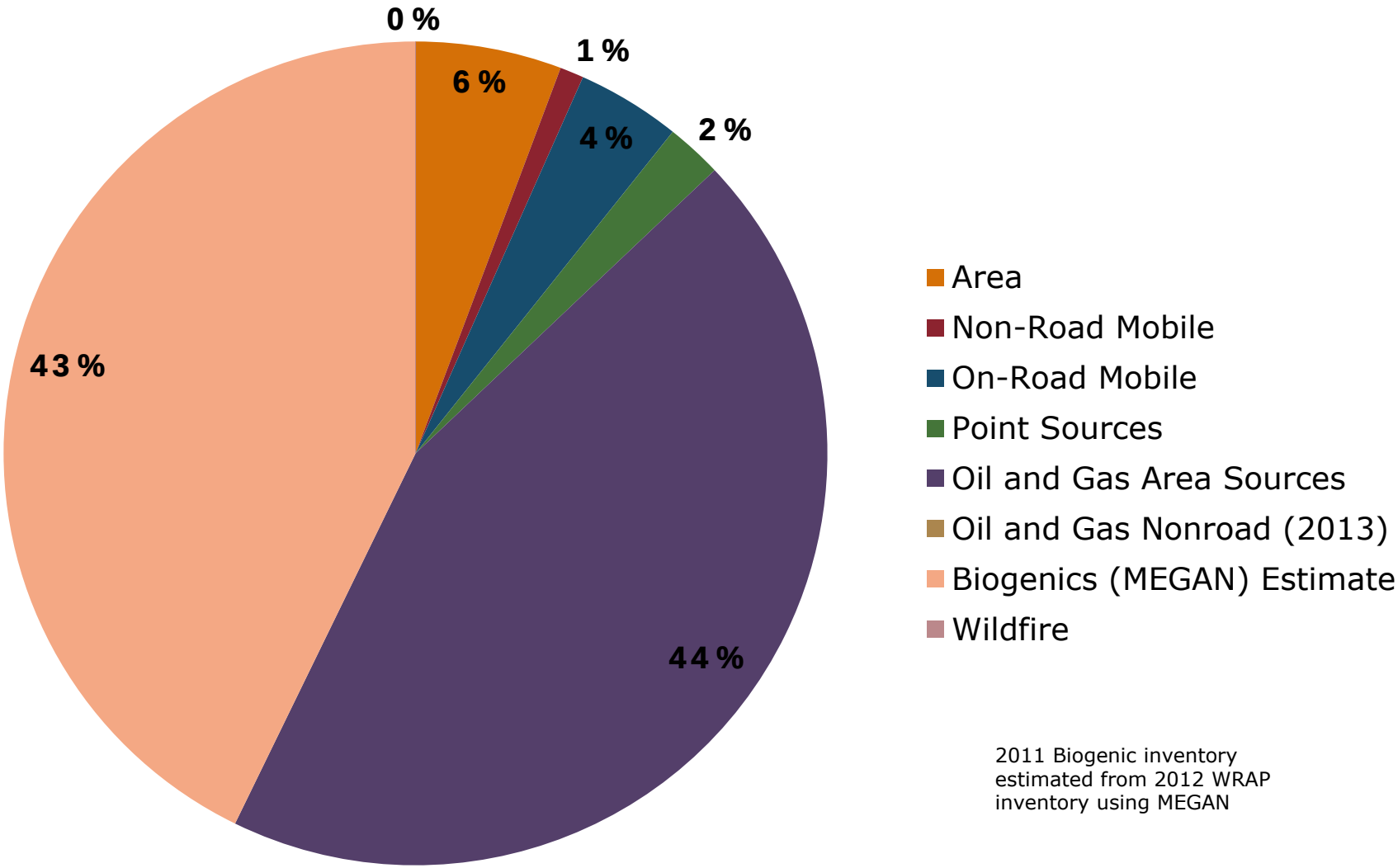

Utah
W126 Annual Trend
30
25
20
15
10
5
0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Mesa Verde
Great Basin
BR Brigham City
L4 Logan #4
BV Bountiful Viewmont
CW Cottonwood
B4 Beach #4 (Marina)
H2 New Herriman
HW Hawthorne
CANYONLANDS NP
T3 Tooele
NP North Provo
HG Highland
SF Spanish Fork
Zion
SC Santa Claira
O2 Ogden
WT Wash. Terrace
HV Harrisville
Dinosaur NM
VL Vernal
RS Roosevelt
15 ppm-hour
7 ppm-hour


Statewide 2011 Anthropogenic VOC Emissions
0%
22%
10%
11%
2%
55%
Area
Non-Road Mobile
On-Road Mobile
Point Sources
Oil and Gas Area Sources
Oil and Gas Nonroad (2013)
Oil and gas area source emissions updated 7/15/14

Carbon County 2011 Anthropogenic VOC Emissions

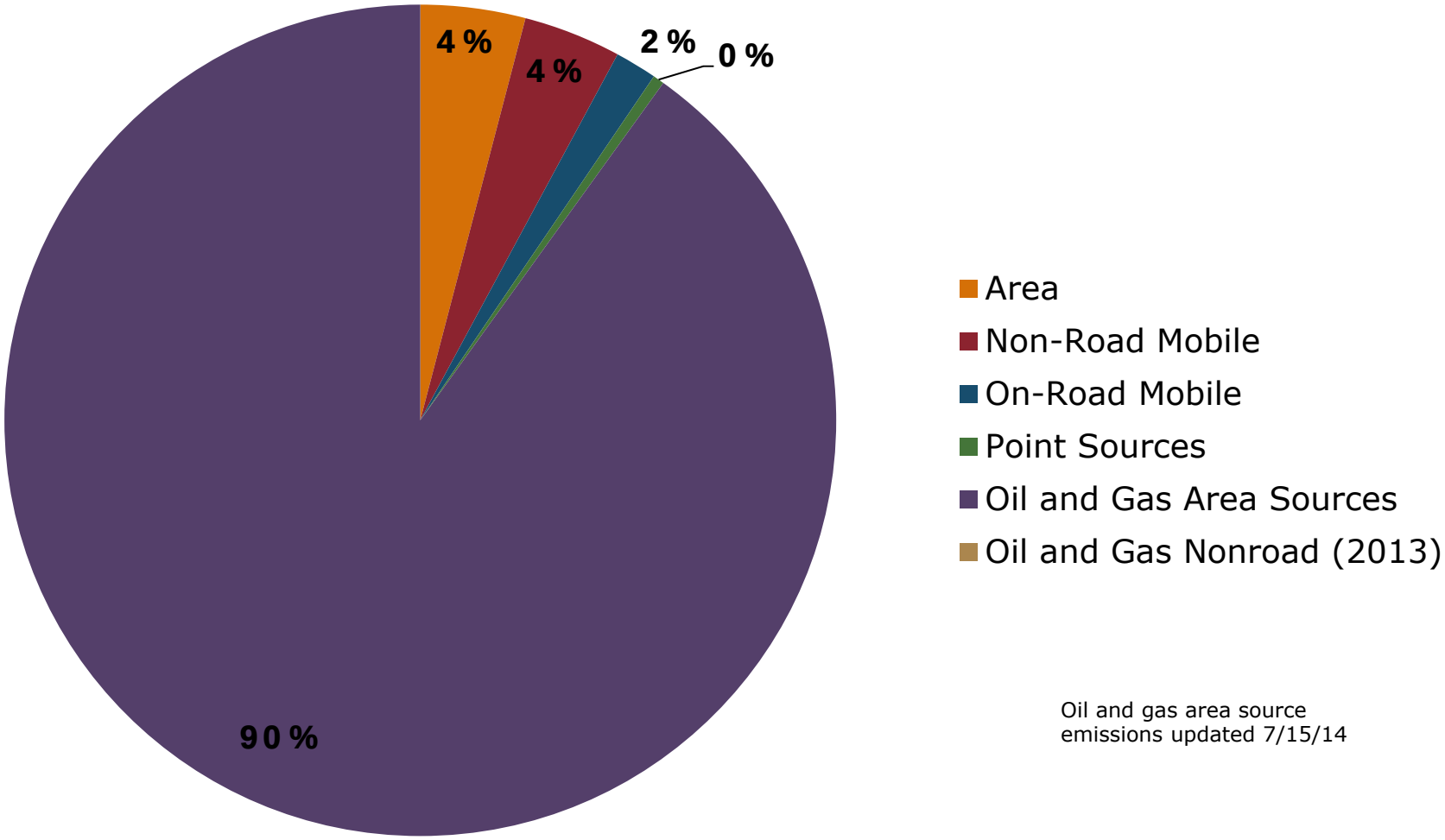


Carbon County 2011 VOC Emissions



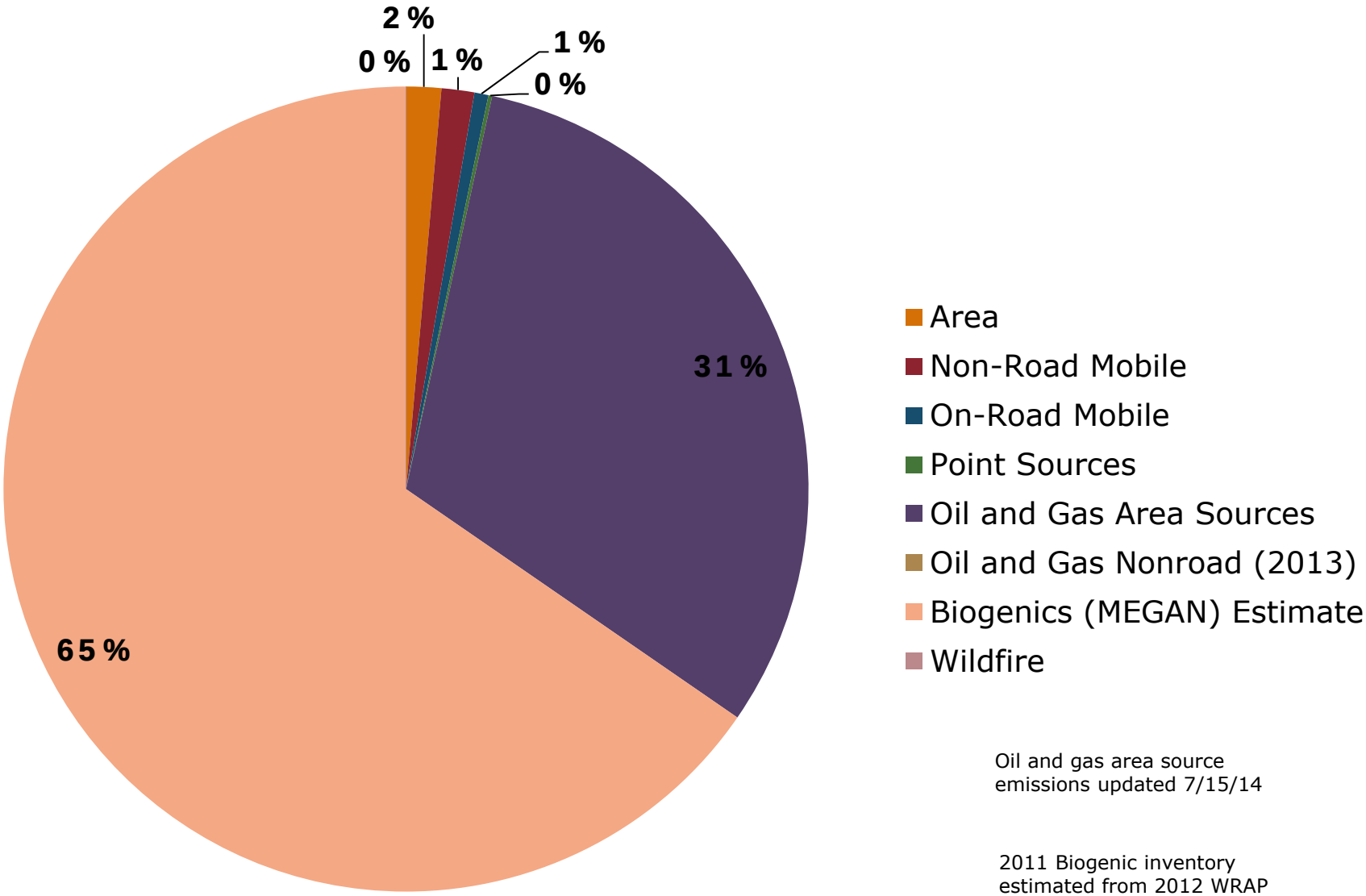
2011 Biogenic inventory estimated from 2012 WRAP inventory using MEGAN

San Juan County 2011 Anthropogenic VOC Emissions



Oil and gas area source emissions updated 7/15/14

San Juan County 2011 VOC Emissions



Oil and gas area source emissions updated 7/15/14

2011 Biogenic inventory estimated from 2012 WRAP

ITEM 5

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-082-14

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Joel Karmazyn, Environmental Scientist

DATE: September 12, 2014

SUBJECT: FINAL ADOPTION: Amend R307-202. Emission Standards: General Burning.

Native American tribes conduct ceremonial burning that involves heating stones in a fire and transferring the hot rocks to a sweat lodge. This ceremonial ritual cannot be conducted under the current rule during restricted burning days. Native American tribe members have requested an exemption from the burning rule restriction to conduct this religious ceremony when conducted by a "Native American spiritual advisor," as newly defined in R307-202.

On July 2, 2014, the Board proposed adding this exemption to R307-202. The public comment period was held from August 1 to September 2, 2014. Six commenters provided support for the amendment based on religious ceremonial rights. There were no comments opposing the proposal. No hearing was requested.

Staff Recommendation: Staff recommends the Board adopt R307-202 as proposed.

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R307. Environmental Quality, Air Quality.
R307-202. Emission Standards: General Burning.
R307-202-1. Applicability.

R307-202-4 through R307-202-8 applies to general burning within incorporated community under the authority of county or municipal fire authority.

R307-202-2. Definitions.

The following additional definitions apply only to R307-202.

"Attainment areas" means any area that meets the national primary and secondary ambient air quality standard (NAAQS) for the pollutant.

"County or municipal fire authority" means the public official so designated with the responsibility, authority, and training to protect people, property, and the environment from fire, within their respective area of jurisdiction.

"Federal Class I Area" means an area that consists of national parks exceeding 6,000 acres, wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. See Clean Air Act section 162(a).

"Fire hazard" means a hazardous condition involving combustible, flammable, or explosive material that represents a substantial threat to life or property if not immediately abated, as declared by the county or municipal fire authority.

“Native American spiritual advisor” means a person who leads, instructs, or facilitates a Native American religious ceremony or service; or provides religious counseling; is an enrolled member of a federally recognized Native American tribe; and is recognized as a spiritual advisor by a federally recognized Native American tribe. “Native American spiritual advisor” includes a sweat lodge leader, medicine person, traditional religious practitioner, or holy man or woman.

R307-202-3. Exclusions.

As provided in Section 19-2-114, the provisions of R307-202 are not applicable to:

(1) Except for areas zoned as residential, burning incident to horticultural or agricultural operations of:

(a) Prunings from trees, bushes, and plants; and

(b) Dead or diseased trees, bushes, and plants, including stubble.

(2) Burning of weed growth along ditch banks for clearing these ditches for irrigation purposes;

(3) Controlled heating of orchards or other crops during the frost season to lessen the chances of their being frozen so long as the emissions from this heating do not cause or contribute to an exceedance of any national ambient air quality standards and is consistent with the federally approved State Implementation Plan; and

(4) The controlled burning of not more than two structures per year by an organized and operating fire department for the purpose of training fire service personnel when the National Weather Service clearing index is above 500. See also Section 11-7-1(2)(a).

(5) Ceremonial burning is excluded from R307-202-4(2) when conducted by a Native American spiritual advisor.

R307-202-4. Prohibitions.

(1) No open burning shall be done at sites used for disposal of community trash, garbage and other wastes.

(2) No person shall burn under this rule when the director issues a public announcement under R307-302. The director will distribute such announcement to the local media notifying the public that a mandatory no-burn period is in effect for the area where the burning is to occur.

R307-202-5. General Requirements.

(1) Except as otherwise provided in this rule, no person shall set or use an open outdoor fire for the purpose of disposal or burning of petroleum wastes; demolition or construction debris; residential rubbish; garbage or vegetation; tires; tar; trees; wood waste; other combustible or flammable solid, liquid or gaseous waste; or for metal salvage or burning of motor vehicle bodies.

(2) The county or municipal fire authority shall approve burning based on the predicted meteorological conditions and whether the emissions would impact the health and welfare of the public or cause or contribute to an exceedance of any national ambient air quality standard.

(3) Nothing in this regulation shall be construed as relieving any person conducting open burning from meeting the requirements of any applicable federal, state or local requirements concerning disposal of any combustible materials.

(4) The county or municipal fire authority that approves any open burning permit will retain a copy of each permit issued for one year.

R307-202-6. Open Burning - Without Permit.

The following types of open burning do not require a permit when not prohibited by other local, state or federal laws and regulations, when it does not create a nuisance, as defined in Section 76-10-803, and does not impact the health and welfare of the public.

(1) Devices for the primary purpose of preparing food such as outdoor grills and fireplaces;

(2) Campfires and fires used solely for recreational purposes where such fires are under control of a responsible person and the combustible material is clean, dry wood or charcoal; and

(3) Indoor fireplaces and residential solid fuel burning devices except as provided in R307-302-2.

R307-202-7. Open Burning - With Permit.

(1) No person shall knowingly conduct open burning unless the open burning activities may be conducted without a permit pursuant to R307-202-6 or the person has a valid permit for burning on a specified date or period, issued by the county or municipal fire authority having jurisdiction in the area where the open burning will take place.

(2) A permit applicant shall provide information as requested by the county or municipal fire authority. No permit or authorization shall be deemed valid unless the issuing authority determines that the applicant has provided the required information.

(3) Persons seeking an open burning permit shall submit to the county or municipal fire authority an application on a form provided by the director for each separate burn.

(4) A permit shall be valid only on the lands specified on the permit.

(5) No material shall be burned unless it is clearly described and quantified as material to be burned on a valid permit.

(6) No burning shall be conducted contrary to the conditions specified on the permit.

(7) Any permit issued by a county or municipal fire authority shall be subject to the local, state, and federal rules and regulations.

(8) Open burning is authorized by the issuance of a permit, as stipulated within this rule, for specification in R307-202-7(10). These permits can only be issued when not prohibited by other local, state, or federal laws and regulations and when a nuisance as defined in Section 76-10-803 is not created and does not impact the health and welfare of the public.

(9) Individual permits, as stipulated within this rule, for the types of burning listed in R307-202-7(10) may be issued by a county or municipal fire authority when the clearing index is 500 or greater. When the clearing index is below 500, all permits issued for that day will be null and void until further notice from the county or municipal fire authority. Additionally, anyone burning on the day when the clearing index is below 500 or is found to be violating any part of this rule shall be liable for a fine in accordance with R307-130.

(10) Types of open burning for which a permit may be granted are:

(a) Except in nonattainment and maintenance areas, open burning of tree cuttings and slash in forest areas where the cuttings accrue from pulping, lumbering, and similar operations, but excluding waste from sawmill operations such as sawdust and scrap lumber.

(b) Open burning of trees and brush within railroad rights-of-way provided that dirt is removed from stumps before burning, and that tires, oil more dense than #2 fuel oil, tar, or other materials which can cause severe air pollution are not present in the materials to be burned, and are not used to start fires or to keep fires burning.

(c) Open burning of a fire hazard that a county or municipal fire authority determines cannot be abated by any other viable option.

(d) Open burning of highly explosive materials when a county or municipal fire authority, law enforcement agency or governmental agency having jurisdiction determines that onsite burning or detonation in place is the only reasonably available method for safely disposing of the material.

(e) Open burning for the disposal of contraband in the possession of public law enforcement personnel provided they

demonstrate to the county or municipal fire authority that open burning is the only reasonably available method for safely disposing of the material.

(f) Open burning of clippings, bushes, plants and prunings from trees incident to property clean-up activities, including residential cleanup, provided that the following conditions have been met:

(i) Within only the counties of Washington, Kane, San Juan, Iron, Garfield, Beaver, Piute, Wayne, Grand and Emery, the county or municipal fire authority may issue a permit between March 1 and May 30 when the clearing index is 500 or greater. The county or municipal fire authority may issue a permit between September 15 to November 15 for such burning to occur when the state forester has approved the burning window under Section 65A-8-211 and the clearing index is 500 or greater.

(ii) In all other areas of the state, the county or municipal fire authority may issue a permit between March 30 and May 30 for such burning to occur when the clearing index is 500 or greater. The county or municipal fire authority may issue a permit between September 15 and October 30 for such burning to occur when the state forester has approved the burning window under Section 65A-8-211 and the clearing index is 500 or greater.

(iii) Such burnings occur in accordance with state and federal requirements;

(iv) Materials to be burned are thoroughly dry; and

(v) No trash, rubbish, tires, or oil are included in the material to be burned, used to start fires, or used to keep fires burning.

(g) Except for nonattainment and maintenance areas, the director may grant a permit for types of open burning not specified in R307-202-7(3) on written application if the director finds that the burning is consistent with the federally approved State Implementation Plan and does not cause or contribute to an exceedance of any national ambient air quality standards.

(i) This permit may be granted once the director has reviewed the written application with the requirements and criteria found within this rule at R307-202-7.

(ii) Open Burning Permit Criteria.

(A) The director or the county or municipal fire authority shall consider the following factors in determining whether, and upon what conditions, to issue an open burning permit:

(I) The location and proximity of the proposed burning to any building, other structures, the public, and federal Class I areas that might be impacted by the smoke and emissions from the burn;

(II) Burning will only be conducted when the clearing index is 500 or above; and

(III) Whether there is any practical alternative method for the disposal of the material to be burned.

(B) Methods to minimize emissions and smoke impacts may include, but are not limited to:

(I) The use of clean auxiliary fuel;

(II) Drying the material prior to ignition; and

(III) Separation for alternative disposal of materials that produce higher levels of emissions and smoke during the combustion

process.

(C) Open burning permits are not valid during periods when the clearing index is below 500 or publicly announced air pollution emergencies or alerts have been declared in the area of the proposed burn.

(D) For burns of piled material, all piles shall be reasonably dry and free of dirt.

(E) Open burns shall be supervised by a responsible person who shall notify the local fire department and have available, either on-site or by the local fire department, the means to suppress the burn if the fire does not comply with the terms and conditions of the permit.

(F) All open burning operations shall be subject to inspection by the director or county or municipal fire authority. The permittee shall maintain at the burn site the original or a copy of the permit that shall be made available without unreasonable delay to the inspector.

(G) If at any time the director or the county or municipal fire authority granting the permit determines that the permittee has not complied with any term or condition of the permit, the permit is subject to partial or complete suspension, revocation or imposition of additional conditions. All burning activity subject to the permit shall be terminated immediately upon notice of suspension or revocation. In addition to suspension or revocation of the permit, the director or county or municipal fire authority may take any other enforcement action authorized under state or local law.

R307-202-8. Special Conditions.

(1) Open burning for special purposes or under unusual or emergency circumstances may be approved by the director if it is consistent with the federally approved State Implementation Plan and does not cause or contribute to an exceedance of any national ambient air quality standards.

(a) This permit may be granted once the director has reviewed the written application with the requirements and criteria in R307-202-7.

KEY: air pollution, open burning, fire authority
Date of Enactment or Last Substantive Amendment: 2014
Notice of Continuation: March 4, 2010
Authorizing, and Implemented or Interpreted Law: 19-2-104; 11-7-1(2)(a); 65A-8-211; 76-10-803

ITEM 6

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-084-14

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Joel Karmazyn, Environmental Scientist

DATE: September 15, 2014

SUBJECT: FINAL ADOPTION: Amend R307-335, R307-342 through R307-350, and R307-352 through R307-355.

The EPA has indicated its intention to approve the area source coatings rules for the $PM_{2.5}$ State Implementation Plans as reasonable available control technology (RACT), but not until 1) they are amended to clarify that the amount of control removal specified in each rule is based on the entire system, and 2) the inspection and recordkeeping requirements for these systems are expanded. DAQ has worked closely with EPA to craft agreeable rule language that was proposed for public comment by the Board on July 2, 2014.

The public comment period was held from August 1 to September 2, 2014.

We received a handful of verbal inquiries from manufacturers and distributors of solvent cleaners that service the auto industry, asking why we do not permit the use of exempt solvents for cleaning in our rules. The definition of volatile organic compound (VOC) in R307-101-2 was adopted from 40 CFR 51.100(s)(1) where the EPA has determined that certain compounds are exempt. Because we have adopted the EPA definition by reference, we do permit the use of exempt compounds for cleaning, but we do not specifically state it in the rules. We are proposing to clarify this point in the rules by specifying that exempt compounds are not VOC by definition.

Cumberland Products, an automotive specialty products manufacture, further requested an interpretation on how to comply with an apparent conflict in the consumer product and automotive refinishing rules. The automotive refinishing rule R307-354-5(1)(f), requires that spray gun cleaners have a maximum vapor pressure of 100 mm Hg at 68 degrees Fahrenheit. The consumer products rule R307-357 defines a consumer product as follows:

> "Consumer product" means a chemically formulated product used by household and institutional consumers including, but not limited to, …..and **automotive specialty products** but does not include other paint products,…"

The consumer products rule specifically identifies automotive specialty products as a consumer product. Cumberland Products distributes these specialty automotive products to the O'Reilly Auto Parts store chain where both general consumers and professional automotive personnel purchase their products. Some of these products could have a VOC content that could potentially exceed 100 mm Hg at 68 degrees Fahrenheit. In order to resolve this conflict, we are proposing to amend R307-354-5(1)(f) to exempt products from the vapor pressure requirement that are specifically defined in R307-357. The products that would be exempt from the vapor pressure requirement in R307-354-5(1)(f) will be required to meet the VOC content limit(s) in the consumer product rule R307-357. We have extensively reviewed this rule amendment with the Consumer Specialty Products Association's senior director of strategic issues advocacy and received concurrence on the proposed amendment from the American Coatings Association. EPA has been kept apprised of all the developments regarding the auto specialty products and has not raised any objections to them.

Staff Recommendation: Staff recommends the Board adopt R307-348 as proposed and R307-342 through R307-350 and R307-352 through R307-355 as amended.

R307. Environmental Quality, Air Quality.
R307-335. Degreasing and Solvent Cleaning Operations.
R307-335-1. Purpose.

The purpose of this rule is to limit volatile organic compound (VOC) emission from degreasing and solvent cleaning operations.

R307-335-2. Applicability.

R307-335 applies to all degreasing or solvent cleaning operations that use VOCs and that are located in PM10 and PM2.5 nonattainment and maintenance plan areas as defined in 40 CFR 81.345 (July 1, 2011).

R307-335-3. Definitions.

The following additional definitions apply to R307-335:

"Batch open top vapor degreasing" means the batch process of cleaning and removing grease and soils from metal surfaces by condensing hot solvent vapor on the colder metal parts.

"Cold cleaning" means the batch process of cleaning and removing soils from metal surfaces by spraying, brushing, flushing or immersing while maintaining the solvent below its boiling point.

"Conveyorized degreasing" means the continuous process of cleaning and removing greases and soils from metal surfaces by using either cold or vaporized solvents.

“Department of Defense military technical data” means a specification that specifies design requirements, such as materials to be used, how a requirement is to be achieved, or how an item is to be fabricated or constructed.

"Freeboard ratio" means the freeboard height (distance between solvent line and top of container)divided by the width of the degreaser.

"Industrial solvent cleaning" means operations performed using a liquid that contains any VOC, or combination of VOCs, which is used to clean parts, tools, machinery, equipment and work areas. Cleaning operations include, but are not limited to, spraying, wiping, flushing, and purging.

"Open top vapor degreaser" means the batch process of cleaning and removing soils from metal surfaces by condensing low solvent vapor on the colder metal parts.

"Separation operation" means any process that separates a mixture of compounds and solvents into two or more components. Specific mechanisms include extraction, centrifugation, filtration, and crystallization.

"Solvent metal cleaning" means the process of cleaning soils from metal surfaces by cold cleaning, open top vapor degreasers, or conveyorized degreasing.

R307-335-4. Cold Cleaning Facilities.

No owner or operator shall operate a degreasing or solvent cleaning operation unless conditions in R307-335-4(1) through (7) are met.

(1) A cover shall be installed which shall remain closed except during actual loading, unloading or handling of parts in cleaner. The cover shall be designed so that it can be easily operated with

one hand if:

(a) The volatility of the solvent is greater than 2 kPa (15 mm Hg or 0.3 psi) measured at 38 degrees C (100 degrees F),

(b) The solvent is agitated, or

(c) The solvent is heated.

(2) An internal draining rack for cleaned parts shall be installed on which parts shall be drained until all dripping ceases. If the volatility of the solvent is greater than 4.3 kPa (32 mm Hg at 38 degrees C (100 degrees F)), the drainage facility must be internal, so that parts are enclosed under the cover while draining. The drainage facility may be external for applications where an internal type cannot fit into the cleaning system.

(3) Waste or used solvent shall be stored in covered containers.

(4) Tanks, containers and all associated equipment shall be maintained in good operating condition, and leaks shall be repaired immediately or the degreaser shall be shutdown.

(5) Written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment.

(6) If the solvent volatility is greater than 4.3 kPa (33 mm Hg or 0.6 psi) measured at 38 degrees C (100 degrees F), or if solvent is heated above 50 degrees C (120 degrees F), then one of the following control devices shall be used:

(a) Freeboard that gives a freeboard ratio greater than 0.7;

(b) Water cover if the solvent is insoluble in and heavier than water); or

(c) Other systems of equivalent control, such as a refrigerated chiller or carbon adsorption.

(7) If used, the solvent spray shall be a solid fluid stream at a pressure that does not cause excessive splashing and may not be a fine, atomized or shower type spray.

R307-335-5. Open Top Vapor Degreasers.

Owners or operators of open top vapor degreasers shall, in addition to meeting the requirements of R307-335-4(3), (4) and (5),

(1) Equip the vapor degreaser with a cover that can be opened and closed without disturbing the vapor zone. The cover shall be closed except when processing work loads through the degreaser;

(2) Install one of the following control devices:

(a) Equipment necessary to sustain:

(i) A freeboard ratio greater than or equal to 0.75, and

(ii) A powered cover if the degreaser opening is greater than 1 square meter (10.8 square feet),

(b) Refrigerated chiller,

(c) Enclosed design (cover or door opens only when the dry part is actually entering or exiting the degreaser),

(d) Carbon adsorption system, with ventilation greater than or equal to 15 cubic meters per minute per square meter (50 cubic feet per minute per square foot) of air/vapor area when cover is open and exhausting less than 25 parts per million of solvent averaged over one complete adsorption cycle;

(3) Minimize solvent carryout by:

(a) Racking parts to allow complete drainage,

(b) Moving parts in and out of the degreaser at less than 3.3 meters per minute (11 feet per minute),

(c) Holding the parts in the vapor zone at least 30 seconds or until condensation ceases,

(d) Tipping out any pool of solvent on the cleaned parts before removal, and

(e) Allowing the parts to dry within the degreaser for at least 15 seconds or until visibly dry.

(4) Spray parts only in or below the vapor level;

(5) Not use ventilation fans near the degreaser opening, nor provide exhaust ventilation exceeding 20 cubic meters per minute per square meter (65 cubic feet per minute per square foot) in degreaser open area, unless necessary to meet state and federal occupational, health, and safety requirements.

(6) Not degrease porous or absorbent materials, such as cloth, leather, wood or rope;

(7) Not allow work loads to occupy more than half of the degreaser's open top area;

(8) Ensure that solvent is not visually detectable in water exiting the water separator;

(9) Install safety switches on the following:

(a) Condenser flow switch and thermostat (shuts off sump heat if condenser coolant is either not circulating or too warm); and

(b) Spray switch (shuts off spray pump if the vapor level drops excessively, i.e., greater than 10 cm (4 inches).

(10) Open top vapor degreasers with an open area smaller than one square meter (10.8 square feet) are exempt from R307-335-5(2)(b) and (d).

R307-335-6. Conveyorized Degreasers.

Owners and operators of conveyorized degreasers shall, in addition to meeting the requirements of R307-335-4(3), (4) and (5) and R307-335-5(5):

(1) Install one of the following control devices for conveyorized degreasers with an air/vapor interface equal to or greater than two square meters (21.5 square feet):

(a) Refrigerated chiller; or

(b) Carbon adsorption system, with ventilation greater than or equal to 15 cubic meters per minute per square meter (50 cubic feet per minute per square foot) of air/vapor area when downtime covers are open, and exhausting less than 25 parts per million of solvent, by volume, averaged over a complete adsorption cycle.

(2) Equip the cleaner with equipment, such as a drying tunnel or rotating (tumbling) basket, sufficient to prevent cleaned parts from carrying out solvent liquid or vapor.

(3) Provide downtime covers for closing off the entrance and exit during shutdown hours. Ensure that down-time cover is placed over entrances and exits of conveyorized degreasers immediately after the conveyor and exhaust are shut down and is removed just before they are started up.

(4) Minimize carryout emissions by racking parts for best

drainage and maintaining the vertical conveyor speed at less than 3.3 meters per minute (11 feet per minute).

(5) Minimize openings: Entrances and exits should silhouette work loads so that the average clearance (between parts and the edge of the degreaser opening) is either less than 10 cm (4 inches) or less than 10% of the width of the opening.

(6) Install safety switches on the following:

(a) Condenser flow switch and thermostat - shuts off sump heat if coolant is either not circulating or too warm;

(b) Spray switch - shuts off spray pump or conveyor if the vapor level drops excessively, i.e., greater than 10 cm or (4 inches); and

(c) Vapor level control thermostat - shuts off sump level if vapor level rises too high.

(7) Ensure that solvent is not visibly detectable in the water exiting the water separator.

R307-335-7. Industrial Solvent Cleaning.

(1) Exemptions. The requirements of R307-335-7 do not apply to aerospace, wood furniture, shipbuilding and repair, flat wood paneling, large appliance, metal furniture, paper film and foil, plastic parts, miscellaneous metal parts coatings and light autobody and truck assembly coatings, flexible packaging, lithographic and letterpress printing materials, fiberglass boat manufacturing materials, and operations that are exclusively covered by Department of Defense military technical data and performed by a Department of Defense contractor and/or on site at installations owned and/or operated by the United States Armed Forces.

(2) Operators of industrial solvent cleaning that emit 15 pounds of VOCs or more per day from industrial solvent cleaning operations, shall reduce VOC emissions from the use, handling, storage, and disposal of cleaning solvents and shop towels by implementing the following work practices:

(a) Covering open containers; and

(b) Storing used applicators and shop towels in closed fire proof containers, and

(c) Limiting VOC emissions by either:

(i) Using solvents (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) with a VOC limit in Table 1; or

(ii) Installing an emission control system designed to have an overall capture and control efficiency of at least 85%.

TABLE 1
Solvent Cleaning VOC Limits

Solvent Cleaning Category	VOC Limit (lb/gal)
Coatings, adhesives & ink manufacturing	4.2
Electronic parts & components	4.2
General miscellaneous cleaning	2.5
Medical devices and pharmaceutical	
Tools, equipment & machinery	6.7
General surface cleaning	5.0

Screening printing operations	4.2
Semiconductor tools, maintenance & equipment Cleaning	6.7

R307-335-8. Add-on Emission Control Systems Operations.

(1)Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2)The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-335-7(2)(c)(ii).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-335-7. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, degreasing, solvent cleaning
Date of Enactment or Last Substantive Amendment: 2014
Notice of Continuation: February 1, 2012
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-342. Adhesives and Sealants.
R307-342-1. Purpose.

The purpose of this rule is to limit emissions of volatile organic compounds (VOCs) from adhesives, sealants, primers and cleaning solvents.

R307-342-2. Applicability.

Beginning September 1, 2014, R307-342 applies to any person who manufactures any adhesive, sealant, adhesive primer or sealant primer in Box Elder, Cache, Davis, Salt Lake, Utah or Weber counties and to any person who sells, supplies, or applies any adhesive, sealant, adhesive primer or sealant primer in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah or Weber counties manufactured on or after September 1, 2014.

R307-342-3. Exemptions.

(1) The requirements of R307-342 do not apply to the following:

(a) Adhesives, sealants, adhesive primers or sealant primers being tested or evaluated in any research and development, quality assurance or analytical laboratory;

(b) Adhesives and sealants that contain less than 20 grams of VOC per liter of adhesive or sealant, less water and exempt solvents, as applied;

(c) Cyanoacrylate adhesives;

(d) Adhesives, sealants, adhesive primers or sealant primers that are sold or supplied by the manufacturer or supplier in containers with a net volume of 16 fluid ounces or less or that have a net weight of one pound or less, except plastic cement welding adhesives and contact adhesives;

(e) Contact adhesives that are sold or supplied by the manufacturer or supplier in containers with a net volume of one gallon or less;

(f) Aerosol adhesives and primers dispensed from aerosol spray cans; or

(g) Polyester bonding putties to assemble fiberglass parts at fiberglass boat manufacturing facilities and at other reinforced plastic composite manufacturing facilities.

(2) The requirements of R307-342 do not apply to the use of adhesives, sealants, adhesive primers, sealant primers, surface preparation and cleanup solvents in the following operations:

(a) Tire repair operations, provided the label of the adhesive states "for tire repair only;"

(b) In the production, rework, repair, or maintenance of aerospace vehicles and components, and undersea-based weapon systems;

(c) In the manufacture of medical equipment;

(d) Operations that are exclusively covered by Department of Defense military technical specifications and standards and performed by a Department of Defense contractor and/or on site at installations owned and/or operated by the United States Armed Forces.

(e) Plaque laminating operations in which adhesives are used

to bond clear, polyester acetate laminate to wood with lamination equipment installed prior to July 1, 1992.

(3) The requirements of R307-342 do not apply to commercial and industrial operations if the total VOC emissions from all adhesives, sealants, adhesive primers and sealant primers used at the source are less than 200 pounds per calendar year.

(4) Adhesive products and sealant products shipped, supplied or sold exclusively outside of the areas specified in R307-342-2 are exempt from the requirements of this rule.

(5) R307-342 shall not apply to any adhesive, sealant, adhesive primer or sealant primer products manufactured for shipment and use outside of the counties specified R307-342-2 as long as the manufacturer or distributor can demonstrate both that the product is intended for shipment and use outside of the applicable counties and that the manufacturer or distributor has taken reasonable prudent precautions to assure that the product is not distributed to the applicable counties.

(6) R307-342 shall not apply to the use of any adhesives, sealants, adhesive primers, sealant primers, cleanup solvents and surface preparation solvents, provided the total volume of noncomplying adhesives, sealants, primers, cleanup and surface preparation solvents applied facility-wide does not exceed 55 gallons per rolling 12-month period.

(7) Commercial and industrial operations claiming exemption pursuant to R307-342-3 shall record and maintain operational records sufficient to demonstrate compliance.

R307-342-4. Definitions.

The following additional definitions apply to R307-342:

"Acrylonitrile-butadiene-styrene (ABS) welding adhesive" means any adhesive intended by the manufacturer to weld acrylonitrile-butadiene-styrene pipe, which is made by reacting monomers of acrylonitrile, butadiene and styrene.

"Adhesive" means any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

"Adhesive primer" means any product intended by the manufacturer for application to a substrate, prior to the application of an adhesive, to provide a bonding surface.

"Aerospace component" means a fabricated part, assembled part, or completed unit, including passenger safety equipment, of any aircraft, helicopter, missile or space vehicle.

"Architectural sealant or primer" means any sealant or sealant primer intended by the manufacturer to be applied to stationary structures, including mobile homes and their appurtenances. Appurtenances to an architectural structure include, but are not limited to: hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and downspouts, and windows.

"Automotive glass adhesive primer" means an adhesive primer labeled by the manufacturer to be applied to automotive glass prior to installation of the glass using an adhesive or sealant.

"Ceramic tile installation adhesive" means any adhesive intended by the manufacturer for use in the installation of ceramic tiles.

"Chlorinated polyvinyl chloride plastic (CPVC) plastic" means a polymer of the vinyl chloride monomer that contains 67% chlorine and is typically identified with a CPVC marking.

"Chlorinated polyvinyl chloride (CPVC) welding adhesive" means an adhesive labeled for welding of chlorinated polyvinyl chloride plastic.

"Cleanup solvent" means a VOC-containing material used either to remove a loosely held uncured (i.e., not dry to the touch) adhesive or sealant from a substrate or to clean equipment used in applying a material.

"Computer diskette jacket manufacturing adhesive" means any adhesive intended by the manufacturer to glue the fold-over flaps to the body of a vinyl computer diskette jacket.

"Contact bond adhesive" means an adhesive that:

(1) is designed for application to both surfaces to be bonded together;

(2) is allowed to dry before the two surfaces are placed in contact with each other;

(3) forms an immediate bond that is impossible, or difficult, to reposition after both adhesive-coated surfaces are placed in contact with each other; and

(4) does not need sustained pressure or clamping of surfaces after the adhesive-coated surfaces have been brought together using sufficient momentary pressure to establish full contact between both surfaces.

"Contact adhesive" means an adhesive that feels dry to the touch and bonds instantly. Contact adhesives do not include rubber cements that are primarily intended for use on paper substrates and vulcanizing fluids that are designed and labeled for tire repair only.

"Cove base" means a flooring trim unit, generally made of vinyl or rubber, having a concave radius on one edge and a convex radius on the opposite edge that is used in forming a junction between the bottom wall course and the floor or to form an inside corner.

"Cove base installation adhesive" means any adhesive intended by the manufacturer to be used for the installation of cove base or wall base on a wall or vertical surface at floor level.

"Cyanoacrylate adhesive" means any adhesive with a cyanoacrylate content of at least 95% by weight.

"Department of Defense military technical data" means a specification that specifies design requirements, such as materials to be used, how a requirement is to be achieved, or how an item is to be fabricated or constructed.

"Enclosed cleaning system" means a cleaner consisting of a closed container with a door or top that can be opened and closed and fitted with cleaning connections. A spray gun is attached to the enclosed cleaning system by a connection, and solvent is pumped through the gun to clean it. The cleaning solvent falls back into the cleaning system's solvent reservoir for recirculation.

"Flexible vinyl" means non-rigid polyvinyl chloride plastic with

at least 5% by weight plasticizer content.

"Fiberglass" means a material consisting of extremely fine glass fibers.

"Indoor floor covering installation adhesive" means any adhesive intended by the manufacturer for use in the installation of wood flooring, carpet, resilient tile, vinyl tile, vinyl backed carpet, resilient sheet and roll or artificial grass. Adhesives used to install ceramic tile and perimeter bonded sheet flooring with vinyl backing onto a non-porous substrate, such as flexible vinyl, are excluded from this category.

"Laminate" means a product made by bonding together two or more layers of material.

"Marine deck sealant" or "marine deck sealant primer" means any sealant or sealant primer labeled for application to wooden marine decks.

"Medical equipment manufacturing" means the manufacture of medical devices, such as, but not limited to, catheters, heart valves, blood cardioplegia machines, tracheostomy tubes, blood oxygenators, and cardiatory reservoirs.

"Metal to urethane/rubber molding or casting adhesive" means any adhesive intended by the manufacturer to bond metal to high density or elastomeric urethane or molded rubber materials, in heater molding or casting processes, to fabricate products such as rollers for computer printers or other paper handling equipment.

"Multipurpose construction adhesive" means any adhesive intended by the manufacturer for use in the installation or repair of various construction materials, including but not limited to drywall, subfloor, panel, fiberglass reinforced plastic (FRP), ceiling tile and acoustical tile.

"Nonmembrane roof installation/repair adhesive" means any adhesive intended by the manufacturer for use in the installation or repair of nonmembrane roofs and that is not intended for the installation of prefabricated single-ply flexible roofing membrane, including, but not limited to, plastic or asphalt roof cement, asphalt roof coating and cold application cement.

"Outdoor floor covering installation adhesive" means any adhesive intended by the manufacturer for use in the installation of floor covering that is not in an enclosure and that is exposed to ambient weather conditions during normal use.

"Panel installation" means the installation of plywood, pre-decorated hardboard (or tileboard), fiberglass reinforced plastic, and similar pre-decorated or non-decorated panels to studs or solid surfaces using an adhesive formulated for that purpose.

"Perimeter bonded sheet flooring installation" means the installation of sheet flooring with vinyl backing onto a nonporous substrate using an adhesive designed to be applied only to a strip of up to four inches wide around the perimeter of the sheet flooring.

"Plastic cement welding adhesive" means any adhesive intended by the manufacturer for use to dissolve the surface of plastic to form a bond between mating surfaces.

"Plastic cement welding adhesive primer" means any primer

intended by the manufacturer for use to prepare plastic substrates prior to bonding or welding.

"Plasticizer" means a material such as a high boiling point organic solvent that is incorporated into a vinyl to increase its flexibility, workability, or distensibility, as determined by ASTM Method E-260-96.

"Polyvinyl chloride (PVC) plastic" means a polymer of the chlorinated vinyl monomer that contains 57% chlorine.

"Polyvinyl chloride welding adhesive" or "PVC welding adhesive" means any adhesive intended by the manufacturer for use in the welding of PVC plastic pipe.

"Porous material" means a substance that has tiny openings, often microscopic, in which fluids may be absorbed or discharged, including, but not limited to, wood, paper and corrugated paperboard.

"Roadway sealant" means any sealant intended by the manufacturer for application to public streets, highways and other surfaces, including but not limited to curbs, berms, driveways and parking lots.

"Rubber" means any natural or manmade rubber substrate, including styrene-butadiene rubber, polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene and ethylene propylene diene terpolymer.

"Sealant primer" means any product intended by the manufacturer for application to a substrate, prior to the application of a sealant, to enhance the bonding surface.

"Sealant" means any material with adhesive properties, including sealant primers and caulks, that is formulated primarily to fill, seal, waterproof or weatherproof gaps or joints between two surfaces.

"Sheet-applied rubber installation" means the process of applying sheet rubber liners by hand to metal or plastic substrates to protect the underlying substrate from corrosion or abrasion. These operations also include laminating sheet rubber to fabric by hand.

"Single-ply roof membrane" means a prefabricated single sheet of rubber, normally ethylene-propylenediene terpolymer, that is field applied to a building roof using one layer of membrane material.

"Single-ply roof membrane installation and repair adhesive" means any adhesive labeled for use in the installation or repair of single-ply roof membrane.

(1) Installation includes, as a minimum, attaching the edge of the membrane to the edge of the roof and applying flashings to vents, pipes and ducts that protrude through the membrane.

(2) Repair includes gluing the edges of torn membrane together, attaching a patch over a hole and reapplying flashings to vents, pipes or ducts installed through the membrane.

"Single-ply roof membrane adhesive primer" means any primer labeled for use to clean and promote adhesion of the single-ply roof membrane seams or splices prior to bonding.

"Single-ply roof membrane sealant" means any sealant labeled for application to single-ply roof membrane.

"Structural glazing adhesive" means any adhesive intended by the manufacturer to apply glass, ceramic, metal, stone or composite panels to exterior building frames.

"Subfloor installation" means the installation of subflooring material over floor joists, including the construction of any load bearing joists. Subflooring is covered by a finish surface material.

"Surface preparation solvent" means a solvent used to remove dirt, oil and other contaminants from a substrate prior to the application of a primer, adhesive or sealant.

"Thin metal laminating adhesive" means any adhesive intended by the manufacturer for use in bonding multiple layers of metal to metal or metal to plastic in the production of electronic or magnetic components in which the thickness of the bond line is less than 0.25 mils.

"Tire repair" means a process that includes expanding a hole, tear, fissure or blemish in a tire casing by grinding or gouging, applying adhesive, and filling the hole or crevice with rubber.

"Traffic marking tape" means preformed reflective film intended by the manufacturer for application to public streets, highways and other surfaces, including curbs, berms, driveways and parking lots.

"Traffic marking tape adhesive primer" means any primer intended by the manufacturer for application to surfaces prior to installation of traffic marking tape.

"Undersea-based weapons systems components" means the fabrication of parts, assembly of parts or completed units of any portion of a missile launching system used on undersea ships.

"Waterproof resorcinol glue" means a two-part resorcinol-resin-based adhesive designed for applications where the bond line must be resistant to conditions of continuous immersion in fresh or salt water.

R307-342-5. VOC Content Limits.

(1) Beginning September 1, 2014, no person shall manufacturer any adhesive, sealant, adhesive primer or sealant primer with a VOC content in excess of the limits in Table 1.

(2) Beginning September 1, 2014, no person shall sell supply or offer for sale any adhesive, sealant, adhesive primer or sealant primer with a VOC content in excess of the limits in Table 1 and that was manufactured on or after September 1, 2014.

(3) Beginning September 1, 2014, no person shall apply any adhesive, sealant, adhesive primer or sealant primer with a VOC content in excess of the limits in Table 1 unless that person uses an add-on control device as specified in R307-342-8 or unless the adhesive, sealant, adhesive primer or sealant primer was manufactured before September 1, 2014.

(4) The VOC content limits in Table 1 for adhesives applied to particular substrates shall apply as follows:

(a) If a person uses an adhesive or sealant subject to a specific VOC content limit for such adhesive or sealant in Table 1, such specific limit is applicable rather than an adhesive-to-substrate limit; and

(b) If an adhesive is used to bond dissimilar substrates together, the applicable substrate category with the highest VOC content shall be the limit for such use.

TABLE 1

VOC Content Limits for Adhesives, Sealants, Adhesive Primers, Sealant Primers and Adhesives Applied to Particular Substrates (minus water and exempt compounds (compounds that are not defined as VOC), as applied

Adhesive, Sealant, Adhesive Primer Category	VOC Content Limit (grams VOC/liter)
Adhesives	
ABS welding	400
Ceramic tile installation	130
Computer diskette jacket manufacturing	850
Contact bond	250
Cove base installation	150
CPVC welding	490
Indoor floor covering installation	150
Metal to urethane/rubber molding or casting	850
Multipurpose construction	200
Nonmembrane roof installation/repair	300
Other plastic cement welding	510
Outdoor floor covering installation	250
PVC welding	510
Single-ply roof membrane installation/repair	250
Structural glazing	100
Thin metal laminating	780
Tire retread	100

Perimeter bonded sheet vinyl flooring installation	660
Waterproof resorcinol glue	170
Sheet-applied rubber installation	850
Sealants	
Architectural	250
Marine deck	760
Nonmembrane roof installation/repair	300
Roadway	250
Single-ply roof membrane	450
Other	420
Adhesive Primers	
Automotive glass	700
Plastic cement welding	650
Single-ply roof membrane	250
Traffic marking tape	150
Other	250
Sealant Primers	
Non-porous architectural	250
Porous architectural	775
Marine deck	760
Other	750
Adhesives Applied to the Listed Substrate	
Flexible vinyl	250
Fiberglass	200

Metal	30
Porous material	120
Rubber	250
Other substrates	250

R307-342-6. Application Equipment.

(1) An operator shall only use the following equipment to apply adhesives and sealants:

(a) Electrostatic application;

(b) Flow coater;

(c) Roll coater;

(d) Dip coater;

(e) Hand application method;

(f) Airless spray and air-assisted airless spray;

(g) High volume, low pressure spray equipment operated in accordance with the manufacturers specifications; or

(h) Other methods having a minimum 65% transfer efficiency.

(2) Removal of an adhesive, sealant, adhesive primer or sealant primer from the parts of spray application equipment shall be performed as follows:

(a) In an enclosed cleaning system;

(b) Using a solvent (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) with a VOC content less than or equal to 70 grams of VOC per liter of material; or

(c) Parts containing dried adhesive may be soaked in a solvent if the composite vapor pressure of the solvent, excluding water and exempt compounds, is less than or equal to 9.5 mm Hg at 20 degrees Celsius and the parts and solvent are in a closed container that remains closed except when adding parts to or removing parts from the container.

R307-342-7. Administrative Requirements.

(1) Each person that manufactures adhesives, sealants, and adhesive primers subject to this rule shall maintain records demonstrating compliance.

(2) Commercial and industrial operations that are not exempt under R307-342-3 shall maintain records demonstrating compliance with this rule, including:

(a) A list of each adhesive, sealant, adhesive primer, sealant primer cleanup solvent and surface preparation solvent in use and in storage;

(b) A material data sheet for each adhesive, sealant, adhesive primer, sealant primer, cleanup solvent and surface preparation solvent;

(c) A list of catalysts, reducers or other components used and the mix ratio;

(d) The VOC content or vapor pressure, as applied; and

(e) The monthly volume of each adhesive, sealant, adhesive primer, sealant primer cleanup solvent and surface preparation solvent used.

(2) Except as provided in R307-342-6(2), no person shall use materials containing VOCs for the removal of adhesives, sealants, or adhesive or sealant primers from surfaces, other than spray application equipment, unless the composite vapor pressure of the solvent used is less than 45 mm Hg at 20 degrees Celsius.

R307-342-8. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 85% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-342-8(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-342-8. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

R307-342-9. Container Labeling.

Each manufacturer of an adhesive, sealant, adhesive primer or sealant primer subject to this rule shall display the following information on the product container or label:

(1) A statement of the manufacture's recommendation regarding

thinning, reducing, or mixing of the product.

(a) R307-342-9 does not apply to the thinning of a product with water.

(b) If the thinning of the product prior to use is not necessary, the recommendation shall specify that the product is to be applied without thinning.

(2) The maximum or the actual VOC content of the product in accordance with Table 1, as supplied, displayed in grams of VOC per liter of product; and

(3) The maximum or the actual VOC content of the product in accordance with Table 1, which includes the manufacture's maximum recommendation for thinning, as applied, displayed in grams of VOC per liter of product.

KEY: air pollution, adhesives, sealants, primers
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-343. Emissions Standards for Wood Furniture Manufacturing Operations.
R307-343-1. Purpose.

The purpose of R307-343 is to limit volatile organic compound (VOC) emissions from wood furniture manufacturing.

R307-343-2. Applicability.

R307-343 applies to wood furniture manufacturing operations, including related cleaning activities, that have the potential to emit 2.7 tons or more per year of VOCs and that are located in Box Elder, Cache, Davis, Salt Lake, Utah, Tooele, and Weber counties.

R307-343-3. Definitions.

The following additional definitions apply to R307-343:

"Affected source" means a wood furniture manufacturing source that meets the criteria in R307-343-2.

"As applied" means the volatile organic compound and solids content of the finishing material that is actually used for coating the substrate. It includes the contribution of materials used for in-house dilution of the finishing material.

"Coating" means a protective, decorative, or functional material applied in a thin layer to a surface. Such materials may include paints, topcoats, varnishes, sealers, stains, washcoats, basecoats, inks, and temporary protective coatings.

"Compliant coating" means a finishing material or strippable booth coating that meets the emission limits specified in R307-343-4(1).

"Control system" means the combination of capture and control devices used to reduce emissions to the atmosphere.

"Conventional Air Spray" means a spray coating method in which the coating is atomized by mixing it with compressed air at an air pressure greater than ten pounds per square inch (gauge) at the point of atomization. Airless, air assisted airless spray technologies, and electrostatic spray technology are not considered conventional air spray.

"Finishing material" means a coating used in the wood furniture industry, including basecoats, stains, washcoats, sealers, and topcoats.

"Finishing Operation" means those activities in which a finishing material is applied to a substrate and is subsequently air-dried, cured in an oven, or cured by radiation.

"Sealer" means a finishing material used to seal the pores of a wood substrate before additional coats of finishing material are applied. A washcoat used to optimize aesthetics is not a sealer.

"Solids" means the part of the coating that remains after the coating is dried or cured; solids content is determined using data from EPA Method 24.

"Stain" means any color coat having a solids content by weight of no more than 8.0% that is applied in single or multiple coats directly to the substrate, including nongrain raising stains, equalizer stains, sap stains, body stains, no-wipe stains, penetrating

stains, and toners.

"Topcoat" means the last film-building finishing material applied in a finishing system. Non-permanent final finishes are not topcoats.

"Touch-up and Repair" means the application of finishing materials to cover minor finishing imperfections.

"Washcoat" means a transparent special purpose coating having a solids content by weight of 12.0% or less that is applied over initial stains to protect and control color and to stiffen the wood fibers in order to aid sanding.

"Washoff operations" means those operations in which organic solvent is used to remove coating from a substrate.

"Wood furniture" means any product made of wood, a wood product such as rattan or wicker, or an engineered wood product such as particleboard that is manufactured under any of the following standard industrial classification codes: 2434, 2511, 2512, 2517, 2519, 2521, 2531, 2541, 2599, or 5712.

"Wood furniture manufacturing operations" means the finishing, cleaning, and washoff operations associated with the production of wood furniture or wood furniture components.

R307-343-4. VOC Content Limits.

(1) Each affected source subject to R307-343 shall limit VOC emissions by:

(a) Using the compliant coating method as described in R307-343-4(1)(a)(i) or using the control system method as described in R307-343-4(1)(a)(ii).

(i) Compliant coating method is the use of the topcoats or topcoat/sealer combinations in Table 1:

TABLE 1

Compliant Coating VOC Limitations
(values in pounds VOC per pound of solids, minus water and exempt solvents (compounds not classified as VOC), as applied)

COATING CATEGORY	VOC Content Limitations	
	Effective Through December 31,2014	Effective Beginning January 1, 2015
Topcoats	0.8	0.4
Topcoat/Sealer combination		
Topcoat	1.8	0.9
Sealer	1.9	0.9
Acid-cured, alkyd amino topcoat/sealer combinations		

Acid-cured, alkyd amino topcoat	2.0	1.0
Acid-cured, alkyd amino vinyl Sealer	2.3	1.2

(ii) Control system method is the use of a VOC control system achieving a 85% or greater emissions reduction.

(b) Using strippable spray booth coatings that contain no greater than 0.8 pounds VOC per pound solids as applied.

(c) Using closed containers for the storing of finishing, gluing, cleaning and washoff materials.

R307-343-5. Application Equipment Requirements.

(1) All coatings shall be applied using equipment having a minimum 65% transfer efficiency, except as allowed under R307-343-5(3) and operated according to the equipment manufacturer specifications. Equipment meeting the transfer efficiency requirement includes:

(a) Brush, dip, or roll coating;

(b) Electrostatic application; and

(c) High volume, low pressure (HVLP) spray equipment.

(2) Other coating application methods that achieve transfer efficiency equivalent to HVLP or electrostatic spray application methods may be used.

(3) Conventional air spray methods may be used under the following circumstances:

(a) To apply finishing materials that have no greater than 1.0 pound of VOC per pound of solids, as applied;

(b) For touch-up and repair under the following circumstances:

(i) The touchup and repair occurs after completion of the finishing operation; or

(ii) The touchup and repair occurs after the application of stain and before the application of any other type of finishing material, and the materials used for touchup and repair are applied from a container that has a volume of no more than 2.0 gallons;

(c) When the spray gun is aimed and triggered automatically, not manually;

(d) When the emissions from the finishing application station are directed to a control device;

(e) When the conventional air gun is used to apply finishing materials and the cumulative total usage of that finishing material is no more than 10% of the total gallons of finishing material used during the calendar year; or

(f) When the conventional air gun is used to apply stain on a part for which it is technically or economically infeasible to use any other spray application technology. The following criteria shall be used, either independently or in combination, to support the affected source's claim of technical or economic infeasibility:

(i) The production speed is too high or the part shape is too complex for one operator to coat the part and the application station is not large enough to accommodate an additional operator; or

(ii) The excessively large vertical spray area of the part makes it difficult to avoid sagging or runs in the stain.

R307-343-6. Add-on Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 85% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-343-6(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-343-6. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

R307-343-7. Work Practices and Recordkeeping.

(1) Control techniques and work practices shall be implemented at all times to reduce VOC emissions from fugitive type sources. Control techniques and work practices shall include:

(a) Storing all VOC-containing coatings, thinners, and coating-related waste materials in closed containers;

(b) Ensuring that mixing and storage containers used for VOC-containing coatings, thinners, and coating-related waste material are kept closed at all times except when depositing or removing these materials;

(c) Minimizing spills of VOC-containing coatings, thinners, and coating-related waste materials; and

(d) Conveying VOC-containing coatings, thinners, and coating-related waste materials from one location to another in closed

containers or pipes.

(2) The work practices for cleaning materials shall be implemented at all times to reduce VOC emissions from fugitive type sources. The work practices shall include:

(a) Storing all VOC-containing cleaning materials and used shop towels in closed containers;

(b) Ensuring that storage containers used for VOC-containing cleaning materials are kept closed at all times except when depositing or removing these materials;

(c) Minimizing spills of VOC-containing cleaning materials;

(d) Conveying VOC-containing cleaning materials from one location to another in closed containers or pipes; and

(e) Minimizing VOC emissions from cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

(3) All persons shall perform solvent cleaning operations with cleaning material having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon or less.

(4) For each calendar year, all sources subject to R307-343 shall maintain records demonstrating compliance with R307-343-4, R307-343-5 and R307-343-7.

(a) Records shall include, but shall not be limited to, inventory and product data sheets for all coatings and solvents subject to R307-343.

(b) These records shall be made available to the director upon request.

KEY: air pollution, wood furniture, coatings
Date of Enactment or Last Substantive Amendment: 2014
Notice of Continuation: February 1, 2012
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a); 19-2-104(3)(e)

R307. Environmental Quality, Air Quality.
R307-344. Paper, Film, and Foil Coatings.
R307-344-1. Purpose.

The purpose of this rule is to limit volatile organic compound (VOC) emissions from roll, knife, and rotogravure coaters and drying ovens of paper, film, and foil coating operations.

R307-344-2. Applicability.

R307-344 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-344-3. Definitions.

The following additional definitions apply to R307-344:

"Coating" means a protective, functional, or decorative film applied in a thin layer to a surface. This term often applies to paints such as lacquers or enamels. It is also used to refer to films applied to paper, plastics, or foil.

"Foil coating" means a coating applied in a web coating process on any foil substrate other than paper or fabric, including, but not limited to, typewriter ribbons, photographic film, magnetic tape, and metal foil gift wrap, but excluding coatings applied to packaging used exclusively for food and health care products for human and animal consumption.

"Knife coating" means the application of a coating material to a substrate by means of drawing the substrate beneath a blade that spreads the coating evenly over the width of the substrate.

"Paper coating" means uniform distribution of coatings put on paper, film, foils and pressure sensitive tapes regardless of substrate. Related web coating processes on plastic film and decorative coatings on metal foil are included in this definition. Paper coating covers saturation operations as well as coating operations.

"Roll coating" means the application of a coating material to a substrate by means of hard rubber or steel rolls.

"Roll printing" means the application of words, designs and pictures to a substrate usually by means of a series of hard rubber or steel rolls each with only partial coverage.

"Rotogravure coating" means the application of a uniform layer of material across the entire width of the web to substrate by means of a roll coating technique in which the pattern to be applied is etched on the coating roll. The coating material is picked up in these recessed areas and is transferred to the substrate.

"Saturation" means dipping the web into a bath.

"Web" means a continuous sheet of substrate.

R307-344-4. VOC Content Limits.

Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use an add-on control device as specified in R307-344-6.

TABLE 1

Paper, Film, and Foil Coating Limitations
(values in pounds VOC per pound of coating, minus water and exempt solvents (compounds not classified as VOC), as applied)

COATING CATEGORY	VOC EMISSION RATES
Paper, film and foil	0.08
Pressure sensitive tape and label	0.067

R307-344-5. Work Practices and Recordkeeping.

(1) Control techniques and work practices are to be implemented at all times to reduce VOC emissions. Control techniques and work practices include:

(a) Using tight fitting covers for open tanks;

(b) Using covered containers for solvent wiping cloths;

(c) Using collection hoods for areas where solvent is used for cleanup;

(d) Minimizing spills of VOC-containing cleaning materials;

(e) Conveying VOC-containing materials from one location to another in closed containers or pipes;

(f) Cleaning spray guns in enclosed systems; and

(g) Using recycled solvents for cleaning.

(2) All sources subject to R307-344 shall maintain records demonstrating compliance with R307-344-4 and R307-344-5.

(a) Records shall include, but not limited to, inventory and product data sheets of all coatings and solvents subject to R307-344.

(b) These records shall be available to the director upon request.

(3) No person shall apply coatings unless these materials are applied with equipment operated according to the manufacturer's specifications, and by the use of one of the following methods:

(a) Flow coater;

(b) Roll coater;

(c) Dip coater;

(d) Foam coater;

(e) Die coater;

(f) Hand application methods;

(g) High-volume, low pressure (HVLP) spray; or

(h) Other application method capable of achieving at least 65% transfer efficiency, as certified by the manufacturer.

(4) All persons shall perform solvent cleaning operations with cleaning materials having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon or less.

R307-344-6. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control

system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-344-6(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-344-6. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: VOC emission, paper coating, film coating, foil coating
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-345. Fabric and Vinyl Coatings.
R307-345-1. Purpose.

The purpose of this rule is to limit volatile organic compound (VOC) emissions from fabric and vinyl coating operations, which use roll, knife, or rotogravure coaters and drying ovens.

R307-345-2. Applicability.

R307-345 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-345-3. Definitions.

The following additional definitions apply to R307-345:

"Coating" means a protective, functional, or decorative film applied in a thin layer to a surface.

"Fabric coating" means the coating or saturation of a textile substrate with a knife, roll or rotogravure coater to impart characteristics that are not initially present, such as strength, stability, water or acid repellency, or appearance. Fabric coatings can include, but are not limited to, industrial and electrical tapes, tie cord, utility meter seals, imitation leathers, tarpaulins, shoe material, and upholstery fabrics.

"Knife coating" means the application of a coating material to a substrate by means of drawing the substrate beneath a blade that spreads the coating evenly over the width of the substrate.

"Roller coating" the coating material is applied to the moving fabric, in a direction opposite to the movement of the substrate, by hard rubber or steel rolls.

"Rotogravure coating" means the application of a uniform layer of material across the entire width of the web to substrate by means of a roll coating technique in which the pattern to be applied is etched on the coating roll. The coating material is picked up in these recessed areas and is transferred to the substrate.

"Vinyl coating" means applying a decorative or protective top coat, or printing on vinyl coated fabric or vinyl sheets.

R307-345-4. VOC Content Limits.

(1) Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use an add-on control device as specified in R307-345-6.

TABLE 1

Fabric and Vinyl Coating Limitations
(values in pounds VOC per gallon of coating, minus water and exempt solvents (compounds not classified as VOC), as applied)

COATING CATEGTORY	VOC CONTENT LIMITS Effective Through	VOC CONTENT LIMITS Effective Beginning

	December 31, 2014	January 1, 2015
Fabric	2.9	2.2
Vinyl	3.8	2.2

(2) Organosol and plastisol coatings shall not be used to bubble emissions from vinyl printing and top coating.

R307-345-5. Work Practices and Recordkeeping.

(1) Control techniques and work practices are to be implemented at all times to reduce VOC emissions. Control techniques and work practices include:

(a) Tight fitting covers for open tanks or drums;

(b) Covered containers for solvent wiping cloths;

(c) Collection hoods for areas where solvent is used for cleanup;

(d) Covered mixing tanks; and

(e) Covered hoods and oven routed to add-on control devices, which may include, but are not limited to, after burners, thermal incinerators, catalytic oxidation, or carbon adsorption.

(2) No person shall apply any coating unless the coating application method achieves a demonstrated 65% transfer efficiency.

The following applications achieve a minimum of 65% transfer efficiency and must be operated in accordance with the manufacturers specifications:

(a) Foam coat;

(b) Flow coat;

(c) Roll coat;

(d) Dip coat;

(e) Die coat;

(e) High-volume, low-pressure (HVLP) spray;

(f) Hand application methods; or

(g) Other application method capable of achieving at least 65% transfer efficiency, as certified by the manufacturer.

(3) All persons shall perform solvent cleaning operations with cleaning material having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon or less.

(4) All sources subject to R307-345 shall maintain records demonstrating compliance with R307-345-4 and R307-345-5.

(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-345.

(b) These records shall be available to the director upon request.

R307-345-6. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency.

Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-345-6(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-345-6. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, fabric coating, vinyl coating
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-346. Metal Furniture Surface Coatings.
R307-346-1. Purpose.

The purpose of this rule is to limit volatile organic compound (VOC) emissions from metal furniture surface coating operations in application areas, flash-off areas, and ovens of metal furniture coating lines involved in prime and top-coat or single coat operations.

R307-346-2. Applicability.

R307-346 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-346-3. Exemptions.

(1) The requirements of R307-346 do not apply to the following:
(a) Stencil coatings;
(b) Safety-indicating coatings;
(c) Solid-film lubricants;
(d) Electrical-insulating and thermal-conducting coatings;
(e) Touch-up and repair coatings; or
(f) Coating applications utilizing hand-held aerosol cans.

R307-346-4. Definitions.

The following additional definitions apply to R307-346:

"Air dried coating" means coatings that are dried by the use of air or a forced warm air at temperatures up to 194 degrees Fahrenheit.

"Application area" means the area where the coating is applied by spraying, dipping, or flow coating techniques.

"Baked coating" means a coating that is cured at a temperature at or above 194 degrees Fahrenheit.

"Coating" means a protective, functional, or decorative film applied in a thin layer to a surface. This term applies to paints, sealants, caulks, inks, adhesives, and maskants.

"Extreme performance coatings" means coatings designed for harsh exposure or extreme environmental conditions.

"Maskants" means a material that protects a metal surface during the etching process.

"Metal furniture coating" means the surface coating of any furniture made of metal or any metal part that will be assembled with other metal, wood fabric, plastic, or glass parts to form a furniture piece.

R307-346-5. VOC Content Limits.

Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use an add-on control device as specified in R307-346-7.

TABLE 1

METAL FURNITURE SURFACE COATING VOC LIMITS

(values in pounds of VOC per gallon of coating, minus water and exempt solvents (compounds not classified as VOC, as applied)

COATING CATEGORY	VOC CONTENT LIMITS	
	Baked	Air Dried
General, One Component	2.3	2.3
General, Multi-Component	2.3	2.8
Extreme High Gloss	3.0	2.8
Extreme Performance	3.0	3.5
Heat Resistant	3.0	3.5
Metallic	3.5	3.5
Pretreatment Coatings	3.5	3.5
Solar Absorbent	3.0	3.5

R307-346-6. Work Practices.

(1) The owner or operator shall:

(a) Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

(b) Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

(c) Clean up spills immediately;

(d) Convey any coatings, thinners, and cleaning materials in closed containers or pipes;

(e) Close mixing vessels that contain VOC coatings and other materials except when specifically in use; and

(f) Minimize usage of solvents during cleaning of storage, mixing, and conveying equipment.

(2) No person shall apply any coating unless the coating application method achieves a demonstrated 65% transfer efficiency.

The following applications achieve a minimum of 65% transfer efficiency and shall be operated in accordance with the manufacturers specifications:

(a) Electrostatic application;

(b) Electrodeposition;

(c) Brush coat;

(d) Flow coat;

(e) Roll coat;

(f) Dip coat;

(g) Continuous coating;

(h) High-volume, low-pressure (HVLP) spray; or

(i) Other application method capable of achieving at least 65% transfer efficiency, as certified by the manufacturer.

(3) All persons shall perform solvent cleaning operations with

cleaning material having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon or less, unless such cleaning operations are performed within the control of the emission control system of R307-346-7.

(4) All sources subject to R307-346 shall maintain records demonstrating compliance with R307-346-5 and R307-346-6.

(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-346.

(b) These records shall be available to the director upon request.

R307-346-7. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-346-7(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-346-7. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, surface coating, metal furniture

Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-347. Large Appliance Surface Coatings.
R307-347-1. Purpose.

The purpose of this rule is to reduce volatile organic compound (VOC) emissions from large appliance surface coating operations.

R307-347-2. Applicability.

R307-347 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-347-3. Exemptions.

(1) The requirements of R307-347 do not apply to the following:
(a) Stencil coatings;
(b) Safety-indicating coatings;
(c) Solid-film lubricants;
(d) Electric-insulating and thermal-conducting coatings;
(e) Touch-up and repair coatings; or
(f) Coating application utilizing hand-held aerosol cans.

R307-347-4. Definitions.

The following additional definitions apply to R307-347:

"Air dried coating" means coatings that are dried by the use of air or a forced warm air at temperatures up to 194 degrees Fahrenheit.

"Baked coating" means a coating that is cured at a temperature at or above 198 degrees Fahrenheit.

"Coating" means a protective, functional, or decorative film applied in a thin layer to a surface. This term often applies to paints such as lacquers or enamels. It is also used to refer to films applied to paper, plastics, or foil.

"Extreme performance coatings" means coatings designed for harsh exposure or extreme environmental conditions.

"Large appliances" means doors, cases, lids, panels, and interior support parts of residential and commercial washers, dryers, ranges, refrigerators, freezers, water heaters, dishwashers, trash compactors, air conditioners, and other similar products.

R307-347-5. VOC Content Limits.

Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use an add-on control device as specified in R307-347-7.

TABLE 1

Large Appliance Coating Limitations
(values in pounds VOC per gallon of coating, minus water and exempt solvents(compounds not classified as VOC), as applied)

COATING CATEGORY	VOC CONTENT LIMITS

	Baked	Air Dried
General, one component	2.3	2.3
General, multi-component	2.3	2.8
Extreme high gloss	3.0	2.8
Extreme performance	3.0	3.5
Heat resistance	3.0	3.5
Solar absorbent	3.0	3.5
Metallic	3.5	3.5
Pretreatment coatings	3.5	3.5

R307-347-6. Work Practices and Recordkeeping.

(1) The owner or operator shall:

(a) Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

(b) Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

(c) Clean up spills immediately;

(d) Convey any coatings, thinners, and cleaning materials in closed containers or pipes;

(e) Close mixing vessels that contain VOC coatings and other materials except when specifically in use; and

(f) Minimize usage of solvents during cleaning of storage, mixing, and conveying equipment.

(2) All sources subject to R307-347 shall maintain records demonstrating compliance with R307-347-5 and R307-347-6.

(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-347.

(b) These records shall be made available to the director upon request.

(3) No person shall apply any coating unless the coating application method achieves a demonstrated 65% transfer efficiency. The following applications achieve a minimum of 65% transfer efficiency and shall be operated in accordance with the manufacturers specifications:

(a) Electrostatic application;

(b) Electrodeposition;

(c) Brush coat;

(d) Flow coat;

(e) Roll coat;

(f) Dip coat;

(g) High-volume, low-pressure (HVLP) spray; or

(h) Other application method capable of achieving at least 65% transfer efficiency, as certified by the manufacturer.

(4) All persons shall perform solvent cleaning operations with cleaning materials having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon or less.

R307-347-7. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-347-7(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-347-7. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, large appliance, surface coating
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-348. Magnet Wire Coatings.
R307-348-1. Purpose.

The purpose of this rule is to limit volatile organic compound (VOC) emissions from ovens of magnet wire coating operations.

R307-348-2. Applicability.

R307-348 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-348-3. Definitions.

The following additional definition applies to R307-348:

"Magnet wire coating" means the process of applying coating of electrical insulating varnish or enamel to aluminum or copper wire for use in electrical machinery.

R307-348-4. VOC Content Limit.

(1) No owner or operator of a magnet wire coating oven may cause, allow or permit discharge into the atmosphere of any VOC in excess of 0.20 kilograms per liter of coating (1.7 pounds per gallon), excluding water, and exempt solvents (compounds not classified as VOCs) delivered to the coating applicator from magnet wire coating operations.

(a) Equivalency calculations for coatings shall be performed in units of pounds VOCs per gallon of solid rather than pounds VOCs per gallon of coating when determining compliance.

(b) The equivalent emission limit is 2.2 pounds VOCs per gallon solids.

(2) The emission limitations specified above shall be achieved by:

(a) The application of low solvent content coating technology; or

(b) The use of an add-on control device on magnet wire coating ovens as specified in R307-348-6.

R307-348-5. Work Practices and Recordkeeping.

(1) The owner or operator shall:

(a) Store all VOC-containing coatings and cleaning materials in closed containers;

(b) Minimize spills of VOC-containing coatings and cleaning materials;

(c) Clean up spills immediately;

(d) Convey any coatings, thinners, and cleaning materials in closed containers or pipes;

(e) Close mixing vessels that contain VOC coatings and other materials except when specifically in use; and

(f) Minimize usage of solvents during cleaning of storage, mixing, and conveying equipment.

(2) All sources subject to R307-348 shall maintain records

demonstrating compliance with R307-348-4, and these records shall be available to the director upon request.

R307-348-6. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-348-6(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-348-6. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, surface coating, magnet wire
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-349. Flat Wood Panel Coatings.
R307-349-1. Purpose.

The purpose of R307-349 is to limit volatile organic compound (VOC) emissions from flat wood paneling coating sources.

R307-349-2. Applicability.

R307-349 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-349-3. Definitions.

The following additional definitions apply to R307-349:

"Coating" means a protective, decorative, or functional material applied in a thin layer to a surface. Such materials may include paints, topcoats, varnishes, sealers, stains, washcoats, basecoats, inks, and temporary protective coatings.

"Finishing material" means a coating used in the flat wood panel industry, including basecoats, stains, washcoats, sealers, and topcoats.

"Flat wood paneling" means wood paneling products that are any decorative interior, exterior or tileboard (class I hardboard) panel to which a protective, decorative, or functional material or layer has been applied.

"Sealer" means a finishing material used to seal the pores of a wood substrate before additional coats of finishing material are applied. A washcoat used to optimize aesthetics is not a sealer.

"Strippable booth coating" means a coating that is applied to a booth wall to provide a protective film to receive overspray during finishing and that is subsequently peeled and disposed. Strippable booth coatings are intended to reduce or eliminate the need to use organic solvents to clean booth walls.

"Tileboard" means a premium interior wall paneling product made of hardboard that meets the specifications for Class I given by the standard ANSI/AHA A135.4-1995.

R307-349-4. VOC Content Limit.

(1) Each owner or operator shall not apply coatings with a VOC content in excess of 2.1 pounds of VOC per gallon, excluding water and exempt solvents (compounds not classified as VOC). The equivalent emission limit shall be 2.9 pounds VOCs per gallon solids coating; or

(2) Each owner or operator shall use an add-on control device as specified in R307-349-6.

R307-349-5. Work Practice and Recordkeeping.

(1) The owner or operator shall:

(a) Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

(b) Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

(c) Clean up spills immediately;

(d) Convey any coatings, thinners, and cleaning materials in closed containers or pipes;

(e) Close mixing vessels that contain VOC coatings and other materials except when specifically in use; and

(f) Minimize usage of solvents during cleaning of storage, mixing, and conveying of equipment.

(2) No person shall apply any coating unless the coating application method achieves a demonstrated 65% transfer efficiency.

The following applications achieve a minimum of 65% transfer efficiency and shall be operated in accordance with the manufacturers specifications:

(a) Paint brush;

(b) Flow coat;

(c) Roll coat;

(d) Dip coat;

(e) Detailing or touch-up guns;

(e) High-volume, low-pressure (HVLP) spray;

(f) Hand application methods; or

(g) Other application method capable of achieving at least 65% transfer efficiency, as certified by the manufacturer.

(3) No person shall use organic solvents for cleaning operations that exceed a VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon and a strippable booth coating with a VOC content in excess of 3.8 pounds per gallon, excluding water and exempt solvents (compounds that are not defined as VOC).

(4) All sources subject to R307-349 shall maintain records demonstrating compliance with R307-349-4 and R307-349-5.

(a) Records should include, but not be limited to, inventory and products data sheets of all coatings and solvents subject to R307-349.

(b) These records shall be available to the Director upon request.

R307-349-6. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-349-6(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-349-6. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, flat wood paneling, coatings
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-350. Miscellaneous Metal Parts and Products Coatings.
R307-350-1. Purpose.

The purpose of R307-350 is to limit volatile organic compound (VOC) emissions from miscellaneous metal parts and products coating operations.

R307-350-2. Applicability.

(1) R307-350 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties where the potential to emit VOC emissions from all miscellaneous metal product parts surface coating operations, including related cleaning activities, is 2.7 tons per year or more.

(2) R307-350 applies to, but is not limited to, the following industries:

(a) Large farm machinery (harvesting, fertilizing, planting, tractors, combines, etc.);

(b) Small farm machinery (lawn and garden tractors, lawn mowers, rototillers, etc.)

(c) Small appliance (fans, mixers, blenders, crock pots, vacuum cleaners, etc.);

(d) Commercial machinery (computers, typewriters, calculators, vending machines, etc.);

(e) Industrial machinery (pumps, compressors, conveyor components, fans, blowers, transformers, etc.);

(f) Fabricated metal products (metal covered doors, frames, trailer frames, etc.); and

(g) Any other industrial category that coats metal parts or products under the standard Industrial Classification Code of major group 33 (primary metal industries), major group 34 (fabricated metal products), major group 35 (nonelectric machinery), major group 36 (electrical machinery), major group 37 (transportation equipment) major group 38 (miscellaneous instruments), and major group 39 (miscellaneous manufacturing industries).

R307-350-3. Exemptions.

(1) The requirements of R307-350 do not apply to the following:

(a) The surface coating of automobiles and light-duty trucks;

(b) Flat metal sheets and strips in the form of rolls or coils;

(c) Surface coating of aerospace vehicles and components;

(d) Automobile refinishing;

(e) The exterior of marine vessels;

(f) Customized top coating of automobiles and trucks if production is less than 35 vehicles per day;

(g) Military munitions manufactured by or for the Armed Forces of the United States;

(h) Operations that are exclusively covered by Department of Defense military technical data and performed by a Department of Defense contractor and/or on site at installations owned and/or operated by the United States Armed Forces; or

(i) Stripping of cured coatings and adhesives.

(2) The requirements of R307-350-5 do not apply to the following:

(a) Stencil coatings;

(b) Safety-indicating coatings;

(c) Solid-film lubricants;

(d) Electric-insulating and thermal-conducting coatings;

(e) Magnetic data storage disk coatings; or

(f) Plastic extruded onto metal parts to form a coating.

(3) The requirements of R307-350-6 do not apply to the following:

(a) Touch-up coatings;

(b) Repair coatings; or

(c) Textured finishes.

R307-350-4. Definitions.

The following additional definitions apply to R307-350:

"Aerospace vehicles and component" means any fabricated part, processed part, assembly of parts, or completed unit, with the exception of electronic components, of any aircraft including but not limited to airplanes, helicopters, missiles, rockets and space vehicles.

"Air dried coating" means coatings that are dried by the use of air or a forced warm air at temperatures up to 194 degrees Fahrenheit.

"Baked coating" means coatings that are cured at a temperature at or above 194 degrees Fahrenheit.

"Camouflage coating" means coatings that are used, principally by the military, to conceal equipment from detection.

"Coating" means a material applied to a substrate for decorative, protective, or functional purposes.

(1) Such materials include, but are not limited to, paints, sealants, liquid plastic coatings, caulks, inks, adhesives, and maskants.

(2) Decorative, protective, or functional materials that consist only of protective oils for metal, acids, bases, or any combination of these substances, or paper film or plastic film which may be pre-coated with an adhesive by the film manufacturer, are not considered coatings.

"Coating application System" means all operations and equipment that applies, conveys, and dries a surface coating, including, but not limited to, spray booths, flow coaters, flash off areas, air dryers and ovens.

"Cured coating or adhesive" means a coating or adhesive, which is dry to the touch.

"Department of Defense military technical data" means a specification that specifies design requirements, such as materials to be used, how a requirement is to be achieved, or how an item is to be fabricated or constructed.

"Dip coating" means a method of applying coatings to a substrate

by submersion into and removal from a coating bath.

"Electric-insulating varnish" means a non-convertible-type coating applied to electric motors, components of electric motors, or power transformers, to provide electrical, mechanical, and environmental protection or resistance.

"Electric-insulating and thermal-conducting" means a coating that displays an electrical insulation of at least 1000 volts DC per mil on a flat test plate and an average thermal conductivity of at least 0.27 BTU per hour-foot-degree-Fahrenheit.

"Electrostatic application" means a method of applying coating particles or coating droplets to a grounded substrate by electrically charging them.

"Etching filler" mean a coating that contains less than 23% solids by weight and at least 0.5% acid by weight, and is used instead of applying a pretreatment coating followed by a primer.

"Extreme high-gloss coating" means a coating which, when tested by the American Society for Testing Material (ASTM) Test Method D-523 adopted in 1980, shows a reflectance of 75 or more on a 60 degree meter.

"Extreme performance coatings" means coatings designed for harsh exposure or extreme environmental conditions.

"Flow coat" means a non-atomized technique of applying coatings to a substrate with a fluid nozzle in a fan pattern with no air supplied to the nozzle.

"Heat-resistant coating" means a coating that must withstand a temperature of at least 400 degrees Fahrenheit during normal use.

"High-performance architectural coating" means a coating used to protect architectural subsections and which meets the requirements of the Architectural Aluminum Manufacturer Association's publication number AAMA 605.2-1980.

"High-temperature coating" means a coating that is certified to with-stand a temperature of 1,000 degrees Fahrenheit for 24 hours.

"High-volume, low-pressure (HVLP) spray" means a coating application system which is designed to be operated and which is operated between 0.1 and 10 pounds per square inch gauge (psig) air pressure, measured dynamically at the center of the air cap and the air horns.

"Magnetic data storage disk coating" means a coating used on a metal disk which stores data magnetically.

"Metallic coating" means a coating which contains more than 5 grams of metal particles per liter of coating, applied.

"Military specification coating" means a coating applied to metal parts and products and which has a formulation approved by a United States military agency for use on military equipment.

"Mold-seal coating" means the initial coating applied to a new mold or repaired mold to provide a smooth surface which, when coated with a mold release coating, prevents products from sticking to the mold.

"Multi-component coating" means a coating requiring the addition of a separate reactive resin, commonly known as a catalyst or hardener,

before application to form an acceptable dry film.

"One-component coating" means a coating that is ready for application as it comes out of its container to form an acceptable dry film. A thinner, necessary to reduce the viscosity, is not considered a component.

"Pan backing coating" means a coating applied to the surface of pots, pans, or other cooking implements that are exposed directly to a flame or other heating elements.

"Prefabricated architectural component coatings" means coatings applied to metal parts and products that are to be used as an architectural structure or their appurtenances including, but not limited to, hand railings, cabinets, bathroom and kitchen fixtures, fences, rain-gutters and down-spouts, window screens, lamp-posts, heating and air conditioning equipment, other mechanical equipment, and large fixed stationary tools.

"Pretreatment coating" means a coating which contains no more than 12% solids by weight, and at least 0.5% acid, by weight, is used to provide surface etching, and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.

"Primer" means a coating applied to a surface to provide a firm bond between the substrate and subsequent coats.

"Repair coating" means a coating used to recoat portions of a part or product which has sustained mechanical damage to the coating.

"Safety-indicating coating" means a coating which changes physical characteristics, such as color, to indicate unsafe condition.

"Silicone release coating" means any coating which contains silicone resin and is intended to prevent food from sticking to metal surfaces.

"Solar-absorbent coating" means a coating which has as its prime purpose the absorption of solar radiation.

"Solid-film lubricant" means a very thin coating consisting of a binder system containing as its chief pigment material one or more of molybdenum disulfide, graphite, polytetrafluoroethylene (PTEF) or other solids that act as a dry lubricant between faying surfaces.

"Stencil coating" means an ink or a coating which is rolled or brushed onto a template or stamp in order to add identifying letters or numbers to metal parts and products.

"Textured finish" means a rough surface produced by spraying and splattering large drops of coating onto a previously applied coating. The coatings used to form the appearance of the textured finish are referred to as textured coatings.

"Touch-up coating" means a coating used to cover minor coating imperfections appearing after the main coating operation.

"Vacuum-metalizing coating" means the undercoat applied to the substrate on which the metal is deposited or the overcoat applied directly to the metal film.

R307-350-5. VOC Content Limits.

(1) Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use

an add-on control device as specified in R307-350-8.

TABLE 1

METAL PARTS AND PRODUCTS VOC CONTENT LIMITS
(values in pounds of VOC per gallon of coating, minus water and exempt solvents (compounds not classified as VOC)), as applied)

COATING CATEGORY	VOC CONTENT LIMITS	
	Air Dried	Baked
General One Component	2.8	2.3
General Multi Component	2.8	2.3
Camouflage	3.5	3.5
Electric-Insulating varnish	3.5	3.5
Etching Filler	3.5	3.5
Extreme High-Gloss	3.5	3.0
Extreme Performance	3.5	3.0
Heat-Resistant	3.5	3.0
High Performance architectural	6.2	6.2
High Temperature	3.5	3.5
Metallic	3.5	3.5
Military Specification	2.8	2.3
Mold-Seal	3.5	3.5
Pan Backing	3.5	3.5
Prefabricated Architectural Multi-Component	3.5	2.3
Prefabricated Architectural One-Component	3.5	2.3
Pretreatment Coatings	3.5	3.5

Repair and Touch Up	3.5	3.0
Silicone Release	3.5	3.5
Solar-Absorbent	3.5	3.0
Vacuum-Metalizing	3.5	3.5
Drum Coating, New, Exterior	2.8	2.8
Drum Coating, New, Interior	3.5	3.5
Drum Coating, Reconditioned, Exterior	3.5	3.5
Drum Coating, Reconditioned, Interior	4.2	4.2

(2) If more than one content limit indicated in this section applies to a specific coating, then the most stringent content limit shall apply.

R307-350-6. Application Methods.

No owner or operator of a facility shall apply VOC containing coatings to metal parts and products unless the coating is applied with equipment operated according to the equipment manufacturer specifications, and by the use of one of the following methods:

(1) Electrostatic application;
(2) Flow coat;
(3) Dip/electrodeposition coat;
(4) Roll coat;
(5) High-volume, low-pressure (HVLP) spray;
(6) Hand Application Methods;
(7) Airless or air-assisted airless spray may also be used for metal coatings with a viscosity of 15,000 centipoise or greater, as supplied; or
(8) Another application method capable of achieving transfer efficiency equivalent or better to HVLP spray, as certified by the manufacturer.

R307-350-7. Work Practices and Recordkeeping.

(1) Control techniques and work practices shall be implemented at all times to reduce VOC emissions. Control techniques and work practices shall include, but are not limited to:

(a) Storing all VOC-containing coatings, thinners, and coating-related waste materials in closed containers;

(b) Ensuring that mixing and storage containers used for VOC-containing coatings, thinners, and coating-related waste material are kept closed at all times except when depositing or removing these materials;

(c) Minimizing spills of VOC-containing coatings, thinners, and coating-related waste materials; and

(d) Conveying VOC-containing coatings, thinners, and coating-related waste materials from one location to another in closed container or pipes; and

(e) Minimizing VOC emission from cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

(2) All persons shall perform solvent cleaning operations with cleaning material having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon or less.

(3) All sources subject to R307-350 shall maintain records demonstrating compliance with R307-350-5, R307-350-6, and R307-350-7(2).

(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-350.

(b) These records shall be available to the director upon request.

R307-350-8. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-350-8(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-350-8. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the

manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, coatings, miscellaneous metal parts
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-352. Metal Container, Closure, and Coil Coatings.
R307-352-1. Purpose.

The purpose of this rule is to reduce volatile organic compound (VOC) emissions from the coating of metal coils, cans, pails, and lids in the manufacturing or reconditioning process.

R307-352-2. Applicability.

R307-352 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-352-3. Definitions.

The following additional definitions apply to R307-352:

"Coating" means a protective, functional or decorative film applied in a thin layer to a surface.

"End sealing compound" means a compound which is coated onto can ends and which functions as a gasket when the end is assembled onto the can.

"Exterior body spray" means a coating sprayed on the exterior of the container body to provide a decorative or protective finish.

"Interior body spray" means a coating sprayed on the interior of the can body to provide a protective film between the product and the can.

"Metal container or closure coating" means any coating applied to either the interior or exterior of formed metal cans, pails, lids or crowns or flat metal sheets which are intended to be formed into cans, pails, lids or crowns.

"Overvarnish" means a coating applied directly over a design coating to reduce the coefficient of friction, to provide gloss and to protect the finish against abrasion and corrosion.

"Reconditioned pails or lids" means any metal container which is reused, recycled or remanufactured.

"Three-piece can side-seam coating" means a coating sprayed on the exterior and/or interior of a welded, cemented or soldered seam to protect the exposed metal.

"Two-piece can exterior-end coating" means a coating applied to the exterior bottom end of a can to reduce the coefficient of friction and to provide protection to the metal.

R307-352-4. VOC Content Limits.

Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use an add-on control device as specified in R307-352-6.

TABLE 1

METAL CONTAINER AND CLOSURE COIL COATING LIMITATIONS
(values in pounds VOC per gallon of coating, minus water and exempt solvents (compounds not classified as VOC), as applied)

COATING CATEGORY	VOC CONTENT LIMITS
CANS	
Sheet basecoat (interior and exterior) and overvarnish	1.9
Two-piece can exterior basecoat, overvarnish, and end coating	2.1
Interior body spray	
Two-piece cans	3.5
Three-piece cans	3.0
Three-piece can side seam spray	5.5
End sealing compound: Food cans, non-food cans, and beverage cans	0.1
Exterior body spray	3.5
PAILS AND LIDS	
Body spray	
Reconditioned interior	4.2
Reconditioned exterior	3.5
New interior	3.5
New exterior	2.8
End sealing compound	0.5
Inks, all applications	2.5
Coil	
Coil coating	1.7

R307-352-5. Work Practices and Recordkeeping.

(1) The owner or operator shall:

(a) Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

(b) Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

(c) Clean up spills immediately;

(d) Convey any coatings, thinners, and cleaning materials in closed containers or pipes;

(e) Close mixing vessels that contain VOC coatings and other materials except when specifically in use; and

(f) Minimize usage of solvents during cleaning of storage, mixing, and conveying equipment.

(2) No person shall apply any coating unless the coating application method achieves a demonstrated 65% transfer efficiency.

The following applications achieve a minimum of 65% transfer efficiency and shall be operated in accordance with the manufacturers specifications:

(a) Electrostatic application;

(b) Flow coat;

(c) Roll coat;

(d) Dip coat;

(e) High-volume, low-pressure (HVLP) spray;

(f) Hand application methods;

(g) Printing techniques; or

(h) Other application method capable of achieving at least 65% transfer efficiency, as certified by the manufacturer.

(3) All persons shall perform solvent cleaning operations with cleaning material having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 lb/gallon or less.

(4) All sources subject to R307-352 shall maintain records demonstrating compliance with R307-352-4 and R307-352-5.

(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-352.

(b) These records shall be made available to the director upon request.

R307-352-6. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable. (b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-352-6(1).

(3) The owner or operator shall maintain records of key system

parameters necessary to ensure compliance with R307-352-6. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, metal containers, coil coatings
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-353. Plastic Parts Coatings.
R307-353-1. Purpose.

The purpose of this rule is to limit volatile organic compound (VOC) emissions from the application of coatings to any plastic product.

R307-353-2. Applicability.

R307-353 applies to plastic parts coating operations located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

R307-353-3. Exemptions.

(1) The provisions of this rule shall not apply to any of the following:

(a) Stencil coatings;
(b) Safety-indicating coatings;
(c) Electric-insulating and thermal-conducting coatings;
(d) Magnetic data storage disk coatings;
(e) Plastic extruded onto metal parts to form a coating; and
(f) Textured finishes.

(2) If a coating line is subject to the requirements for existing automobile, light-duty truck, and other product and material coatings or for existing metallic surface coating lines, the coating line shall be exempt from this rule.

R307-353-4. Definitions.

The following additional definitions apply to R307-353:

"Air dried coating" means coatings that are dried by the use of air or a forced warm air at temperatures up to 194 degrees Fahrenheit.

"Baked coating" means coatings that are cured at a temperature at or above 194 degrees Fahrenheit.

"Coating" means a protective, functional, or decorative film applied in a thin layer to a surface. This term often applies to paints such as lacquers or enamels. It is also used to refer to films applied to paper, plastics, or foil.

"Electric-insulating and thermal-conducting" means a coating that displays an electrical insulation of at least 1000 volts DC per mil on a flat test plate and an average thermal conductivity of at least 0.27 BTU per hour-foot-degree-Fahrenheit.

"Magnetic data storage disk coating" means a coating used on a metal disk which stores data magnetically.

"Metallic coating" means a coating which contains more than 5 grams of metal particles per liter of coating as applied.

"Military specification coating" means a coating which has a formulation approved by a United States military agency for use on military equipment.

"Mirror backing" means the coating applied over the silvered surface of a mirror.

"Mold-seal coating" means the initial coating applied to a new mold or a repaired mold to provide a smooth surface which, when coated with a mold release coating, prevents products from sticking to the mold.

"Multi-colored coating" means a coating which exhibits more than one color when applied, and which is packaged in a single container and applied in a single coat.

"Multi-component coating" means a coating requiring the addition of a separate reactive resin, commonly known as a catalyst, before application to form an acceptable dry film.

"One-component coating" means a coating that is ready for application as it comes out of its container to from an acceptable dry film. A thinner necessary to reduce the viscosity is not considered a component.

"Optical coating" means a coating applied to an optical lens.

"Plastic" means a substrate containing one or more resigns that may be solid, porous, flexible, or rigid, and includes fiber reinforced plastic composites.

"Primer" means a coating applied to a surface to provide a firm bond between the substrate and subsequent coats.

"Repair coating" means a coating used to recoat portions of a part or product which has sustained mechanical damage to the coating.

"Roller Coated" means a type of coating application equipment that utilizes a series of mechanical rollers to form a thin coating film on the surface of a roller, which is then applied to a substrate by moving the substrate underneath the roller.

"Safety-indicating coating" means a coating which changes physical characteristics, such as color, to indicate unsafe condition.

"Stencil coating" means an ink or a coating which is rolled or brushed onto a template or stamp in order to add identifying letters or numbers to metal parts and products.

"Textured finish" means a rough surface produced by spraying and splattering large drops of coating onto a previously applied coating. The coatings used to form the appearance of the textured finish are referred to as textured coatings.

"Touch-up coating" means a coating used to cover minor coating imperfections appearing after the main coating operation.

"Topcoat" means the last film-building finishing material applied in a finishing system. Non-permanent final finishes are not topcoats.

R307-353-5. VOC Content Limits.

(1) For automobile and truck plastic parts coating lines:

(a) Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use an add-on control device as specified in R307-353-8.

(b) For red and black coatings, the emission limitation shall be determined by multiplying the appropriate limit in Table 1 by 1.15.

(c) When EPA Method 24 is used to determine the VOC content of a high bake coating, the applicable emission limitation shall be determined by adding 0.5 to the appropriate limit in Table 1.

(d) When EPA Method 24 is used to determine the VOC content of an air-dried coating, the applicable emission limitation shall be determined by adding 0.1 to the appropriate limit in Table 1.

TABLE 1

AUTOMOBILE AND TRUCK PLASTIC PARTS COATING LINES
(values in pounds of VOC per gallon of coating, minus water and exempt solvents (compounds not classified as VOC), as applied)

COATING CATEGORY	VOC Content Limitations
High bake coating - exterior and interior parts	
Prime	
Flexible coating	4.5
Nonflexible coating	3.5
Topcoat	
Basecoat	4.3
Clearcoat	4.0
Non-basecoat/clearcoat	4.3
Air-dried coating - exterior parts	
Prime	4.8
Topcoat	
Basecoat	5.0
Clearcoat	4.5
Non-basecoat/clearcoat	5.0
Air-dried coating - interior parts	5.0
Touch-up and repair	5.2

(2) Each owner or operator of a business machine plastic parts coating line shall not apply coatings with a VOC content in excess of the amounts specified in Table 2 or shall use an add-on control device as specified in R307-353-8.

TABLE 2

BUSINESS MACHINE PLASTIC PARTS COATING LINES
(values in pounds of VOC per gallon of
coating, minus water and exempt solvents (compounds not
classified as VOC)), as applied)

COATING CATEGORY	VOC Content Limitations
Prime	2.9
Topcoat	2.9
Texture coat	2.9
Fog coat	2.2
Touch-up and repair	2.9

(3) Each owner or operator engaged in other plastic product coating operations shall not apply coatings with a VOC content in excess of the amounts specified in Table 3 or shall use an add-on control device as specified in R307-353-8.

TABLE 3

OTHER PLASTIC PRODUCT COATING CATEGORIES
(values in pounds of VOC per gallon of
coating, minus water and exempt solvents (compounds not
classified as VOC), as applied)

COATING CATEGORY	VOC Content Limitations
General One-Component	2.3
General Multi-Component	3.5
Electric Dissipating Coatings And Shock-Free Coatings	3.0
Extreme Performance	3.5 (2-pack coatings)
Metallic	3.5
Military Specification	2.8 (1 pack) 3.5 (2 pack)
Mold-Seal	6.3
Multi-colored Coatings	5.7

Optical Coatings	6.7
Vacuum-Metalizing	6.7
Mirror Backing	
Curtain Coated	4.2
Roll Coated	3.6

(4) If a part consists of both plastic and metal surfaces and is exempted from the requirements for existing metallic surface coating lines, the part shall be subject to this rule.

R307-353-6.Application Methods.

No person shall apply VOC containing coatings unless the coating is applied with equipment operated according to the manufacturer specifications, and by use of one of the following methods:

(1) Electrostatic application;
(2) Flow coat;
(3) Roller coat;
(4) Dip/electrodeposition coat;
(5) Airless Spray;
(6) High-volume, low-pressure (HVLP) spray; or
(7) Other application method equal to or better than HVLP, as certified by the manufacturer.

R307-353-7. Work Practices and Recordkeeping.

(1) The owner or operator shall:
(a) Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;
(b) Minimize spills of VOC-containing coatings, thinners, and cleaning materials;
(c) Clean up spills immediately;
(d) Convey any coatings, thinners, and cleaning materials in closed containers or pipes;
(e) Close mixing vessels that contain VOC coatings and other materials except when specifically in use; and
(f) Minimize usage of solvents during cleaning of storage, mixing, and conveying equipment.

(2) All persons shall perform solvent cleaning operations with cleaning material having VOC content (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) of 0.21 pounds per gallon or less.

(3) All sources subject to R307-353 shall maintain records demonstrating compliance with R307-353-5, R307-353-6 and R307-353-7(2).
(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-350.
(b) These records shall be made available to the director upon request.

R307-353-8. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-353-8(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-353-8. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, emission controls, coatings, plastic parts
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-354. Automotive Refinishing Coatings.
R307-354-1. Purpose.

The purpose of R307-354 is to limit volatile organic compound emissions (VOC) from automotive refinishing sources.

R307-354-2. Applicability.

(1) R307-354 applies to sources located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber counties that have the potential to emit 2.7 tons per year or more of VOC, including related cleaning activities.

(2) The requirements of R307-354 shall not apply to any canned aerosol coating products.

R307-354-3. Definitions.

The following additional definitions apply to R307-354:

"Adhesion promoter" means a coating which is labeled and formulated to be applied to uncoated plastic surfaces to facilitate bonding of subsequent coatings, and on which, a subsequent coating is applied.

"Automotive" means passenger cars, vans, motorcycles, trucks, buses, golf carts and all other mobile equipment.

"Automotive refinishing" means the process of coating automobiles, after-market automobiles, motorcycles, light and medium-duty trucks and vans that are performed in auto body shops, auto repair shops, production paint shops, new car dealer repair and paint shops, fleet operation repair and paint shops, and any other facility which coats vehicles under the Standard Industrial Classification Code 7532 (Top, Body and Upholstery Repair Shops and Paint Shops). This includes dealer repair of vehicles damaged in transit. It does not include refinishing operations for other types of mobile equipment, such as farm machinery and construction equipment or their parts, including partial body collision repairs, that is subsequent to the original coating applied at an automobile original equipment manufacturing plant.

"Clear coating" means any coating that contains no pigments and is labeled and formulated for application over a color coating or clear coating.

"Coating" means a protective, decorative, or functional material applied in a thin layer to a surface. Such materials may include paints, topcoats, varnishes, sealers, stains, washcoats, basecoats, inks, and temporary protective coatings.

"Color coating" means any pigmented coating, excluding adhesion promoters, primers, and multi-color coatings, that requires a subsequent clear coating and which is applied over a primer, adhesion promoter, or color coating. Color coatings include metallic and iridescent color coatings.

"Enclosed paint gun cleaner" means a cleaner consisting of a closed container with a door or top that can be opened and closed and fitted with cleaning connections. The spray gun is attached to a connection, and solvent is pumped through the gun and onto the exterior of the gun. Cleaning solvent falls back into the cleaner's

solvent reservoir for recirculation.

"Metallic/Iridescent color coating" means a coating which contains iridescent particles, composed of either metal as metallic particles or silicon as mica particles, in excess of 0.042 pounds per gallon as applied, where such particles are visible in the dried film.

"Multi-color coating" means a coating which exhibits more than one color when applied, and which is packaged in a single container and applied in a single coat.

"Non-enclosed paint gun cleaner" means cleaner consisting of a basin similar to a sink in which the operator washes the outside of the gun under a solvent stream. The gun cup is filled with recirculated solvent, the gun tip is placed into a canister attached to the basin, and suction draws the solvent from the cup through the gun. The solvent gravitates to the bottom of the basin and drains through a small hole to a reservoir that supplies solvent to the recirculation pump.

"Pretreatment coating" means a coating which contains no more that 16% solids, by weight, and at least 0.5% acid, by weight, is used to provide surface etching, and is applied directly to bare metal surfaces to provide corrosion resistance and promote adhesion for subsequent coatings.

"Primer" means any coating which is labeled and formulated for application to a substrate to provide a bond between the substrate and subsequent coats; corrosion resistance; a smooth substrate surface; or resistance to penetration of subsequent coats, and on which a subsequent coating is applied. Primers may be pigmented.

"Single-stage coating" means any pigmented coating, excluding primers and multi-color coatings, labeled and formulated for application without a subsequent clear coat. Single-stage coatings include single-stage metallic/iridescent coatings.

"Solids" means the part of the coating that remains after the coating is dried or cured; solids content is determined using data from EPA Method 24.

"Temporary protective coating" means any coating which is labeled and formulated for the purpose of temporarily protecting areas form overspray or mechanical damage.

"Topcoat" means any coating or series of coatings applied over a primer or an existing finish for the purpose of protection or beautification.

"Truck bed liner coating" means any coating, excluding clear, color, multi-color, and single-stage coatings, labeled and formulated for application to a truck bed to protect it from surface abrasion.

"Underbody coating" means any coating labeled and formulated for application to wheel wells, the inside of door panels or fenders, the underside of a trunk or hood, or the underside of the motor vehicle.

"Uniform finish coating" means any coating labeled and formulated for application to the area around a spot repair for the purpose of blending a repaired area's color or clear coat to match the appearance of an adjacent area's existing coating. Prior to May 1, 2013, this coating category may be referred to as uniform finish blenders.

"Uniform finish blender" means a coating designed to blend a

repaired topcoat into an existing topcoat.

R307-354-4. VOC Content Limits.

Each owner or operator shall not apply coatings with a VOC content in excess of the amounts specified in Table 1 or shall use an add-on control device as specified in R307-354-6.

TABLE 1

AUTOMOTIVE REFINISHING VOC LIMITS
(values in pounds of VOC per gallon of coating, minus water and exempt solvent (compounds not defined as VOC), as applied)

COATING CATEGORY	VOC CONTENT LIMITS
Adhesion Promoter	4.5
Clear Coating	2.1
Color Coating	3.5
Multi-color Coating	5.7
Pretreatment Coating	5.5
Primer	2.1
Primer Sealer	2.1
Single-stage Coating	2.8
Temporary Protective Coating	0.5
Truck Bed Liner Coating	2.6
Underbody Coating	3.6
Uniform Finish Coating	4.5
Any Other Coating Type	2.1

R307-354-5. Work Practice and Recordkeeping.

(1) Control techniques and work practices are to be implemented at all times to reduce VOC emissions. Control techniques and work practices include:

(a) Tight fitting covers for open tanks;

(b) Covered containers for solvent wiping cloths;

(c) Collection hoods for areas where solvent is used for cleanup;

(d) Minimizing spill of VOC-containing cleaning materials;

(e) Conveying VOC-containing materials from one location to another in closed containers or pipes; and

(f) Cleaning spray guns in enclosed systems or in a non-enclosed paint gun clean[~~er~~]ing process may be used if the vapor pressure of the cleaning solvent (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) is less than 100 mm Hg at 68 degrees Fahrenheit and the solvent is directed towards a drain that leads directly to an enclosed remote reservoir. Automotive spray gun solvent cleaners that are defined as a "consumer product" under R307-357 are exempt from the vapor pressure requirement and are regulated under the requirements in R307-357.

(2) Application equipment requirements:

(a) A person shall not apply any coating to an automotive part or component unless the coating application method achieves a demonstrated 65% transfer efficiency.

(b) The following coating application methods have been demonstrated to achieve a minimum of 65% transfer efficiency:

(i) Brush, dip or roll coating operated in accordance with the manufacturers specifications;

(ii) Electrostatic application equipment operated in accordance with the manufacturers specifications; and

(iii) High Volume, Low Pressure spray equipment operated in accordance with the manufacturers specifications.

(c) Other coating application methods may be used that have been demonstrated to be capable of achieving at least 65% transfer efficiency, as certified by the manufacturer.

(3) All sources subject to R307-354 shall maintain records demonstrating compliance with R307-354-4 and R307-354-5.

(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-354.

(b) These records shall be available to the director upon request.

R307-354-6. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 90% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA

Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-354-6(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-354-6. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer's recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, automotive refinishing, VOC, coatings
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

R307. Environmental Quality, Air Quality.
R307-355. Control of Emissions from Aerospace Manufacture and Rework Facilities.
R307-355-1. Purpose.

The purpose of R307-355 is to limit the emissions of volatile organic compounds (VOCs) from aerospace coatings and adhesives, from organic solvent cleaning, and from the storage and disposal of solvents and waste solvent materials associated with the use of aerospace coatings and adhesives.

R307-355-2. Applicability.

R307-355 applies to all aerospace manufacture and rework facilities that have the potential to emit 10 tons or more per year of VOCs and that are located in Box Elder, Cache, Davis, Salt Lake, Utah, Tooele and Weber counties.

R307-355-3. Exemptions.

(1) R307-355 does not apply:

(a) Where cleaning and coating takes place in research and development, quality control, laboratory testing and electronic parts and assemblies, except for cleaning and coating of completed assemblies;

(b) To manufacturing or rework operations involving space vehicles; and

(c) To rework operations performed on antique aerospace vehicles or components.

R307-355-4. Definitions.

The following additional definitions apply to R307-355:

"Aerospace manufacture" and "rework facility" means any installation that produces, reworks, or repairs in any amount any commercial, civil, or military aerospace vehicle or component.

"Antique aerospace vehicle or component" means an aircraft or component thereof that was built at least 30 years ago and would not routinely be in commercial or military service in the capacity for which it was designed.

"Chemical milling maskants" means a coating that is applied directly to aluminum components to protect surface areas when chemical milling the component with a Type I or Type II etchant. Type I chemical milling maskants are used with a Type I etchant and Type II chemical milling maskants are used with a Type II etchant.

"Exempt solvents" means organic chemicals that are not defined as VOC.

"General aviation rework facility" means any aerospace installation with the majority of its revenues resulting from the reconstruction, repair, maintenance, repainting, conversion, or alteration of general aviation aerospace vehicles or components.

"Low vapor pressure hydrocarbon-based cleaning solvent" means a cleaning solvent that is composed of a mixture of photochemically reactive hydrocarbons and oxygenated hydrocarbons and has a maximum vapor pressure of 7 mm Hg at 68 degrees Fahrenheit. These cleaners

must not contain hazardous air pollutants.

"Space vehicle" means a man-made device, either manned or unmanned, designed for operation beyond earth's atmosphere. This definition includes integral equipment such as models, mock-ups, prototypes, mold, jigs, tooling, hardware jackets and test coupons. Also included, auxiliary equipment associated with test, transport and storage that through contamination can compromise the space vehicle performance.

"Specialty coating" means a coating that, even though it meets the definition of a primer, topcoat, or self-priming topcoat, has additional performance criteria beyond those of primers, topcoats, and self-priming topcoats for specific applications.

(1) These performance criteria may include, but are not limited to, temperature or fire resistance, substrate compatibility, antireflection, temporary protection or marking, sealing, adhesively joining substrates, or enhanced corrosion protection.

(2) Individual specialty coatings are defined in Appendix A of 40 CFR 63 subpart GG, which is incorporated by reference.

"Topcoat" means a coating that is applied over a primer or component for appearance, identification, camouflage, or protection. Topcoats that are defined as specialty coatings are not included under this definition.

R307-355-5. VOC Content Limits.

(1) The owner or operator shall not apply coatings to aerospace vehicles or components with a VOC content in excess as follows:

(a) 2.9 pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies primers. For general aviation rework facilities, the VOC limitation shall be 4.5 pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies primers;

(b) 3.5 pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies topcoats (including self-priming topcoats). For general aviation rework facilities, the VOC limit shall be 4.5 pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies topcoats (including self-priming topcoats);

(c) 5.2 pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies Type I chemical milling maskant;

(d) 1.3 pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies Type II chemical milling maskants; and

(e) Emissions of VOCs from specialty coatings in excess of the amounts specified in EPA-453/R-97-004, December 1997, page B-2, hereby incorporated by reference.

(2) The owner or operator may alternatively comply with R307-355-5(1)(a) through (d) by using an add-on control device as specified in R307-355-9.

(3) The following coating applications are exempt from the VOC content limits in R307-355-5(1);

(a) Touchup and repair operations.
(b) Use of hand-held spray can application method.
(c) Department of Defense classified coatings.
(d) Coatings of space vehicles.
(e) Facilities that use separate formulations in volumes of less than 50 gallons per year subject to a maximum exemption of 200 gallons total for such formulations applied annually.

R307-355-6. Application Method.

(1) No owner or operator shall apply any primer or topcoat unless the primer and topcoat is applied with equipment operated according to the equipment manufacturer specifications or by the use of one of the following methods:
(a) Electrostatic application;
(b) Flow/curtain coat;
(c) Dip/electrodeposition coat;
(d) Roll coat;
(e) Brush coating;
(f) cotton-tipped swab application;
(g) High-Volume, Low-Pressure (HVLP) Spray;
(h) Hand Application Methods; or
(i) Other coating application methods that achieve emission reductions equivalent to HVLP or electrostatic spray application methods, as determined according to the requirements in 40 CFR 63.750(i).
(2) The following conditions are exempt from R307-355-6(1):
(a) Any situation that normally requires the use of an airbrush or an extension on the spray gun to properly reach limited access spaces.
(b) The application of coatings that contain fillers that adversely affect atomization with HVLP spray guns and that cannot be applied by any of the application methods specified in R307-355-6.
(c) The application of coatings that normally have dried film thickness of less than 0.0013 centimeters (0.0005 inches) and that cannot be applied by any of the application methods specified in R307-355-6.
(d) The use of airbrush application methods for stenciling, lettering, and other identification markings.
(e) The use of hand-held spray can application methods.
(f) Touch-up and repair operations.
(g) Application of specialty coatings.

R307-355-7. Work Practices and Recordkeeping.

(1) Control techniques and work practices shall be implemented at all times to reduce VOC emissions. Control techniques and work practices shall include, but are not limited to:
(a) Storing all VOC-containing coatings, adhesives, thinners, and coating-related waste materials in closed containers;
(b) Ensuring that mixing and storage containers used for VOC-containing coatings, adhesives, thinners, and coating-related waste material are kept closed at all times except when depositing

or removing these materials;

(c) Minimizing spills of VOC-containing coatings, adhesives, thinners, and coating-related waste materials; and

(d) Conveying VOC-containing coatings, adhesives, thinners, and coating-related waste materials from one location to another in closed container or pipes.

(2) All sources subject to R307-355 shall maintain records demonstrating compliance with R307-355-5, R307-355-6 and R307-355-8.

(a) Records shall include, but not be limited to, inventory and product data sheets of all coatings and solvents subject to R307-355.

(b) These records shall be available to the Director upon request.

R307-355-8. Solvent Cleaning.

(1) Hand-wipe cleaning. Cleaning solvents (excluding water and solvents exempt from the definition of volatile organic compounds found in R307-101-2) used in hand-wipe cleaning operations shall meet one of the following requirements:

(a) Have a VOC composite vapor pressure less than or equal to 45 mm Hg at 68 degrees Fahrenheit;

(b) Have an aqueous cleaning solvent in which water is at least 80% of the solvent as applied; or

(c) Have a low vapor pressure hydrocarbon-based cleaning solvent.

(2) The following exemptions apply:

(a) Cleaning during the manufacture, assembly, installation, maintenance, or testing of components of breathing oxygen systems that are exposed to the breathing oxygen.

(b) Cleaning during the manufacture, assembly, installation, maintenance, or testing of parts, subassemblies, or assemblies that are exposed to strong oxidizers or reducers (e.g., nitrogen tetroxide, liquid oxygen, hydrazine).

(c) Cleaning and surface activation prior to adhesive bonding.

(d) Cleaning of electronics parts and assemblies containing electronics parts.

(e) Cleaning of aircraft and ground support equipment fluid systems that are exposed to the fluid, including air-to-air heat exchangers and hydraulic fluid systems.

(f) Cleaning of fuel cells, fuel tanks, and confined spaces.

(g) Surface cleaning of solar cells, coated optics, and thermal control surfaces.

(h) Cleaning during fabrication, assembly, installation, and maintenance of upholstery, curtains, carpet, and other textile materials used on the interior of the aircraft.

(i) Cleaning of metallic and nonmetallic materials used in honeycomb cores during the manufacture or maintenance of these cores, and cleaning of the completed cores used in the manufacture of aerospace vehicles or components.

(j) Cleaning of aircraft transparencies, polycarbonate, or glass substrates.

(k) Cleaning and solvent usage associated with research and development, quality control, or laboratory testing.

(l) Cleaning operations, using nonflammable liquids, conducted within five feet of energized electrical systems.

(3) Flush cleaning. Cleaning solvents used in flush cleaning of parts, assemblies and coating unit components must be emptied into an enclosed container or collection system that is kept closed when not in use.

(4) Spray gun cleaning. All spray guns shall be cleaned by one or more of the following methods:

(a) Enclosed system that is closed at all times except when inserting or removing the spray gun. If leaks in the system are found, repairs shall be made as soon as practicable, but no later than 15 days after the leak was found. If the leak is not repaired by the 15th day, the cleaning solvent shall be removed and the enclosed cleaner shall be shut down until the leak is repaired or its use is permanently discontinued.

(b) Nonatomized cleaning.

(i) Spray guns shall be cleaned by placing cleaning solvent in the pressure pot and forcing it through the gun with the atomizing cap in place.

(ii) No atomizing air is to be used.

(iii) The cleaning solvent from the spray gun shall be directed into a vat, drum, or other waste container that is closed when not in use.

(c) Disassembled spray gun cleaning.

(i) Spray guns shall be cleaned by disassembling and cleaning the components by hand in a vat, which shall remain closed at all times except when in use.

(ii) Spray gun components shall be soaked in a vat, which shall remain closed during the soaking period and when not inserting or removing components.

(d) Atomizing spray into a waste container that is fitted with a device designed to capture atomized solvent emissions.

(e) Cleaning of the nozzle tips of automated spray equipment systems, except for robotic systems that can be programmed to spray into a closed container, shall be exempt from these requirements.

R307-355-9. Add-On Controls Systems Operations.

(1) The owner or operator shall install and maintain an incinerator, carbon adsorption, or any other add-on emission control system, provided that the emission control system is operated and maintained in accordance with the manufacturer recommendations in order to maintain at least 81% capture and control efficiency. Determination of overall capture and control efficiency shall be determined using EPA approved methods, as follows.

(a) The capture efficiency of a VOC emission control system's VOC collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR Part 51, Appendix M, Methods 204-204F, as applicable.

(b) The control efficiency of a VOC emission control system's

VOC control device shall be determined using test methods in Appendices A-1, A-6, and A-7 to 40 CFR Part 60, for measuring flow rates, total gaseous organic concentrations, or emissions of exempt compounds, as applicable.

(c) An alternative test method may be substituted for the preceding test methods after review and approval by the EPA Administrator.

(2) The owner or operator of a control system shall provide documentation that the emission control system will attain the requirements of R307-355-9(1).

(3) The owner or operator shall maintain records of key system parameters necessary to ensure compliance with R307-355-9. Key system parameters may include, but are not limited to, temperature, pressure and flow rates. Operator inspection schedule, monitoring, recordkeeping, and key parameters shall be in accordance with the manufacturer’s recommendations, and as required to demonstrate operations are providing continuous emission reduction from the source during all periods that the operations cause emissions from the source.

(4) The owner or operator shall maintain for a minimum of two years records of operating and maintenance sufficient to demonstrate that the equipment is being operated and maintained in accordance with the manufacturer recommendations.

KEY: air pollution, coating, aerospace
Date of Enactment or Last Substantive Amendment: 2014
Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)

ITEM 7

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-080-14

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: David Beatty, Operating Permit Section Manager

DATE: September 15, 2014

SUBJECT: Proposed for Public Comment with Department Fee Schedule: Operating Permit Program Fee for Fiscal Year 2016.

Title V of the Clean Air Act Amendments of 1990 (CAAA) requires the State of Utah to develop an Operating Permit Program (OPP), to include a fee system which is to be used solely to fund all direct and indirect costs associated with administering the OPP. Section 19-2-109.1 (4)(a) of the Utah Conservation Act authorizes the Utah Air Quality Board (the Board) to propose to the legislature an annual emission fee that conforms to Title V of the CAAA for each ton of chargeable pollutant. The fee is included as part of the Department's fee schedule each fall.

Utah began collecting an emission fee of $25 per ton of air pollution emitted, during fiscal year 1993, to fund development of the program. The fee has changed in varying increments by -4.3% to +12.3%. The current fee charged to fund fiscal year 2015 is $59.06 per ton of emissions. Most fee increases have been the result of reduced emission tonnages by sources, or increasing salaries and benefits to staff as part of legislative approved cost of living increases. Staff size has been reduced from 39 full-time employees (FTEs) in 1995 to a current level of 31 FTE's; this has assisted in keeping fee increases as low as possible.

For fiscal year 2015 Air Quality staff is basing its proposal on an emissions inventory of 58,500 tons, an amount significantly lower than that of the last few years. This decrease is due to a large power plant source shutting down during fiscal year 2015. The fee calculation is shown in the table below and shows a fee of $69.61 for fiscal year 2016, an increase of $10.55 per ton from fiscal year 2015.

Operating Permit Emission Fee for Fiscal Year 2016

FY2016 Salary + Benefits (using FY2015 Projections)		$3,155,000	
FY2016 Projected Cost Of Living Increase 2%		$63,100	
FY2016 Projected Salary + Benefits with Projected Increase			$3,218,100
FY2016 Projected Indirect Costs	12.4%	$399,044	
FY2016 Projected Direct Costs		$455,000	
FY2016 Projected Total Expenditures			$4,072,144
FY2016 Projected Fee Tonnage		58,500	
Fee Rate Per Ton of Emissions			$69.61
FY2014 Surplus		$0	
Surplus Reduction in Fee		$0.00	
FY2016 Proposed Fee Rate Per Ton of Emissions			**$69.61**
		$10.55	Increase

Current Fee (Fiscal Year 2015) is $59.06

Staff Recommendation: Staff recommends the Board submit as part of the Department's fee schedule, a proposed fee of $69.61 per ton for the operating permit program for fiscal year 2016.

ITEM 8

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-086-14

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Colleen Delaney, Environmental Scientist

DATE: September 16, 2014

SUBJECT: PROPOSE FOR PUBLIC COMMENT: Amend Utah SIP. Section XX.D.6. Regional Haze. Long-Term Strategy for Stationary Sources. Best Available Retrofit Technology (BART) Assessment for NOx and PM. Add new Utah SIP Subsections IX.H.21 and 22. General Requirements: Control Measures for Area and Point Sources, Emission Limits and Operating Practices, Regional Haze Requirements; and Source Specific Emission Limitations: Regional Haze Requirements, Best Available Retrofit Technology.

On December 14, 2012, EPA approved the majority of Utah's Regional Haze SIP (RH SIP), but disapproved Utah's best available retrofit technology (BART) determinations for nitrogen oxides (NOx) and particulate matter (PM) for PacifiCorp's Hunter Unit 1, Hunter Unit 2, Huntington Unit 1, and Huntington Unit 2 that were adopted by the Board in 2008. Utah's BART determination met the presumptive BART emission rate for NOx that was established by rule in 40 CFR part 51 Appendix Y (BART Rule) and required the installation of fabric filter baghouses, the most stringent control technology available, for PM. The 2008 RH SIP contained a 5-factor BART analysis that relied on the extensive technical work that EPA had completed to establish the presumptive BART emission rates for coal-fired electric generating units (EGUs) in the BART rule. EPA disapproved Utah's BART determination for NOx and PM because EPA did not agree that their own analysis satisfied the 5-factor analysis requirement. EPA, therefore, determined that the SIP did not contain a 5-factor analysis as required by the rule.

In June 2012, PacifiCorp prepared a new 5-factor BART analysis to satisfy the requirements of the BART rule. PacifiCorp submitted an update to that analysis on August 5, 2014, to address issues that EPA had raised with other regional haze SIPs. DAQ staff's detailed review of PacifiCorp's 5-factor analysis is attached to this memo. After weighing the five factors, the following changes to the 2008 BART determination are recommended.

Staff Recommendation: Staff recommends the Board retain the 2008 BART determination with the following changes:

1. Correct the typographical error in Table 5 of the SIP to reflect the 0.015 lb/MMBtu PM limit in the approval orders for Hunter Units 1 and 2 and include the 74 lb/hr emission rate for Huntington Unit 1 and the 70 lb/hr emission rate for Huntington Unit 2.
2. Add an enforceable requirement to shut down Carbon Unit 1 and Carbon Unit 2 by April 15, 2015.
3. Add enforceable BART conditions to Part H of the SIP to address EPA's determination that the approval orders and operating permits for PacifiCorp's Hunter and Huntington plants are not practicably enforceable.

Utah Division of Air Quality

Staff Review of 2008 Best Available Retrofit Technology (BART) Determination

September 12, 2014

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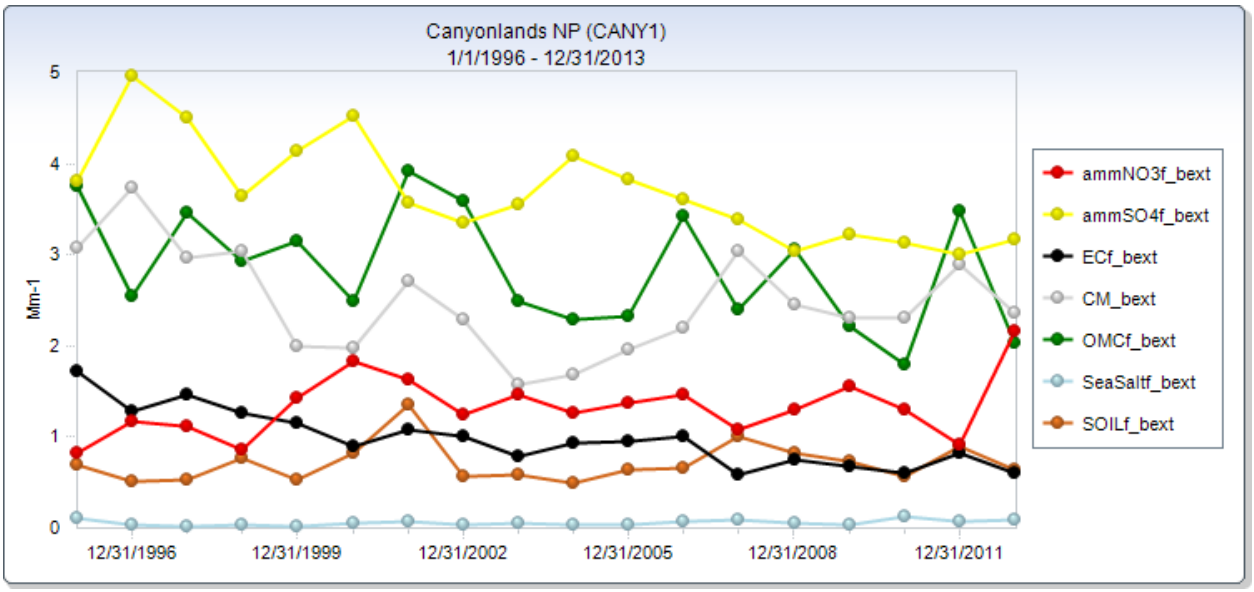
Introduction

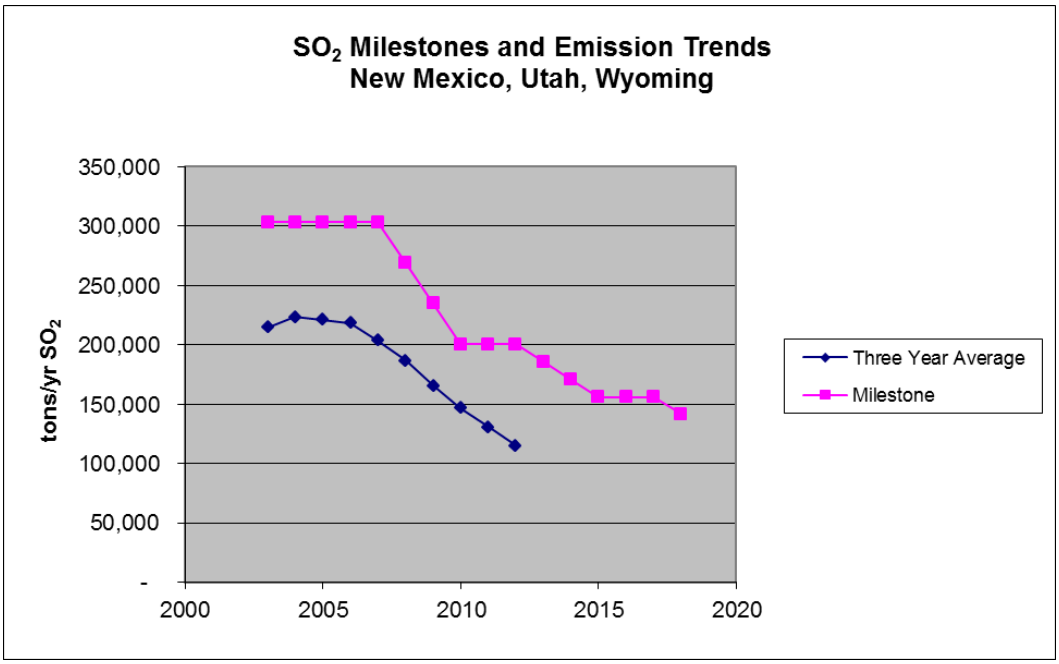
Utah's Regional Haze State Implementation Plan (RH SIP), originally adopted in 2003, was based on the Recommendations of the Grand Canyon Visibility Transport Commission (GCVTC). The GCVTC evaluated haze at Class I Areas on the Colorado Plateau, and determined that stationary source reductions should be focused on sulfur dioxide (SO_2) because it is the pollutant that has the most significant impact on haze on the Colorado Plateau. Utah's BART determination was developed within the context of the overall SIP and reflected this focus on SO_2. Figure 1 shows the contributions of various species to visibility impairment at Canyonlands National Park. As can be seen, sulfate (ammSO4) is the most significant contributor to haze. Fire (OMC) and dust (CM) are also a significant components but the impact is variable from year to year.

Figure 1. Speciated Annual Average Light Extinction at Canyonlands.



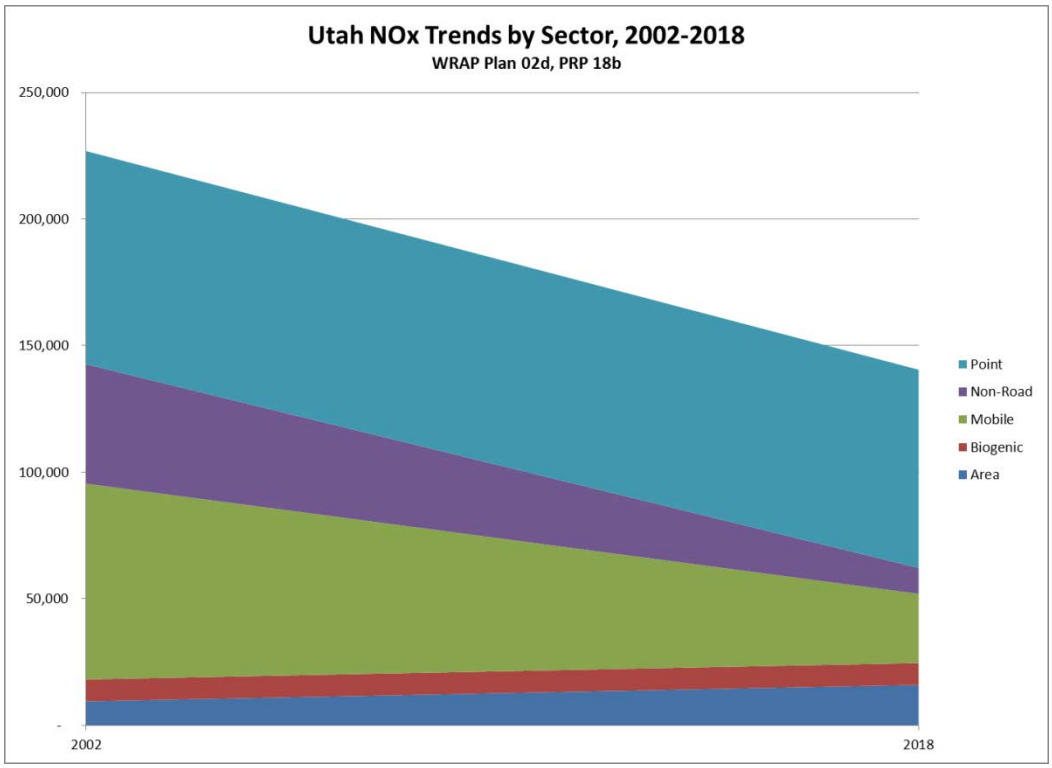
Utah's 2003 RH SIP included SO_2 emission milestones with a backstop regulatory trading program to ensure that SO_2 emissions in the 3-state region of Utah, Wyoming, and New Mexico decreased substantially between 2003 and 2018. The milestones were adjusted in 2008 and 2011 to reflect changes in the number of states participating in the regional program. Actual SO_2 emissions decreased by 55% between 2003 and 2012 in the current 3-state region, and in 2012 were significantly below the 2018 milestone in Utah's RH SIP (See Figure 2).

Figure 2. SO_2 Milestones and Emission Trends



While Utah's RH SIP is focused on achieving SO_2 reductions from stationary sources, substantial reductions in nitrogen oxide (NOx) emissions will also occur. Figure 3 shows the projected decrease in NOx emissions between 2002 and 2018 as documented in Utah's RH SIP.

Figure 3. Utah RH SIP Expected NOx Reductions 2002-2018.



BART Determination in 2008 RH SIP

On September 3, 2008, the Utah Air Quality Board adopted a revision to Utah's RH SIP to include Best Available Retrofit Technology (BART) requirements for NO_x and particulate matter (PM) as required by 40 CFR 51.309(d)(4)(vii). PacifiCorp's Hunter Unit 1, Hunter Unit 2, Huntington Unit 1, and Huntington Unit 2 fossil fuel fired electric generating units (EGUs) were determined to be subject to BART. The 2008 RH SIP required PacifiCorp to install the following BART controls at these EGUs:

Hunter Units 1 and 2:

- Conversion of existing electrostatic precipitators to pulse jet fabric filter bag-houses
- The replacement of existing, first generation low-NO_x burners with Alstom TSF 2000TM low-NO_x firing system and installation of two elevations of separated overfire air.
- Upgrade of existing flue gas desulfurization system to > 90% sulfur dioxide removal.

Huntington Units 1 and 2:

- Conversion of existing electrostatic precipitators to pulse jet fabric filter bag-houses
- The replacement of existing, first generation low-NO_x burners with Alstom TSF 2000TM low-NO_x firing system and installation of two elevations of separated overfire air.
- Installation of a new wet-lime, flue gas de-sulfurization system at Unit 2 (FGD).
- Upgrade of existing flue gas desulfurization system to > 90% sulfur dioxide removal at Unit 1.

The emission rates established in the RH SIP for Hunter Units 1 and 2 and Huntington Units 1 and 2 are more stringent than the presumptive BART emission rates for SO_2 and NO_x established in 40 CFR Part 51 Appendix Y, Guidelines for BART Determinations under the Regional Haze Rule as shown in Table 1. (Note, Table 1 corrects a typographical error in Table 5 of the RH SIP where the permitted rate for PM was listed as 0.05 lb/MMBtu when it should have been 0.015 lb/MMBtu, the limit established in the approval orders for each of the units.)

Table 1. BART Emission Rates in Utah's 2008 SIP

Units	Utah Permitted Rates[1]			Presumptive BART Limits[2]	
Rate: lb/MMBtu	SO_2	NOx	PM	SO_2	NOx
Hunter 1	0.12	0.26	0.015	0.15	0.28
Hunter 2	0.12	0.26	0.015	0.15	0.28
Huntington 1	0.12	0.26	0.015	0.15	0.28
Huntington 2	0.12	0.26	0.015	0.15	0.28

The 2008 RH SIP relied on EPA's presumptive BART emission rate for NO_x as the appropriate benchmark to determine whether the BART requirement had been met. EPA had completed extensive technical work for all EGUs in the country to develop presumptive limits for NO_x, now codified in Appendix Y[3], and the Utah SIP referenced this technical work to meet the requirement to conduct a 5-factor BART analysis for NO_x, as required by 40 CFR Part 51, Appendix Y. On December 20, 2010, the Division of Air Quality (DAQ) submitted to EPA a *Supplement to the Technical Support Document for Utah's 2008 Regional Haze SIP* that described in detail how Utah used EPA's extensive technical analysis to meet the requirements for a 5-factor analysis for NOx. The 2010 Supplement also described Utah's determination that the baghouses required by Utah's RH SIP were the most stringent control available for particulate matter.

The 2008 BART determination was influenced by a concurrent effort to reduce mercury emissions that was a priority for DAQ. A baghouse, in conjunction with wet or dry flue gas de-sulfurization, was needed to meet the mercury emission rate of 6.5×10^{-7} lbs/MMBtu or 90% mercury control required by Utah's rule *R307-424, Permits: Mercury Requirements for Electric Generating Units*. This rule was adopted in 2007 and was designed to work in conjunction with EPA's 2005 Clean Air Mercury Rule (CAMR) to reduce mercury emissions both nationally and locally. Mercury was a concern in Utah due to elevated

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[1] Utah Division of Air Quality Approval Orders: Huntington Unit 2 - AN0238012-05, Huntington Unit 1 - DAQE-AN0102380019-09 (note – on January 19, 2010 an administrative amendment was made to the 2009 AO), Hunter Units I and 2 - DAQE-AN0102370012-08. As described later in this review, the emission rate for Huntington is expressed as pounds per hour but was based on 0.015 lb/MMBtu.

[2] 40 CFR Part 51 Appendix Y Guidelines for BART Determinations under the Regional Haze Rule (70 Federal Register 39135)

[3] 40 CFR Part 51, Appx Y, Table 1, Presumptive NO_x Emission Limits for BART-Eligible Coal-Fired Units, note 20, says:

> These [presumptive NO_x] limits reflect the design and technological assumptions discussed in the technical support document for NO_x limits for these guidelines. See Technical Support Document for BART NO_x Limits for Electric Generating Units and Technical Support Document for BART NO_x Limits for Electric Generating Units Excel Spreadsheet, Memorandum to Docket OAR 2002–0076, April 15, 2005.

mercury levels measured in Utah fish and waterfowl. There are currently 24 waterbodies in Utah that have health advisories due to elevated mercury levels in one or more species of fish and there are also waterfowl advisories for several duck species around the Great Salt Lake. The source of mercury in Utah's waterways is currently unknown and has not been attributed to Utah's power plants. However, the Utah Department of Environmental Quality has worked to reduce mercury emissions throughout the state as a proactive measure. Utah's 2003 RH SIP and the PM/NOx BART determination in 2008 were intended to work in conjunction with R307-424 and CAMR to reduce emissions from SO_2, PM, and mercury.

The CAMR rule was vacated on February 8, 2008, and has since been replaced by the Mercury and Air Toxics Standards (MATS) rule that was adopted on December 16, 2011. The MATS rule requires controls by 2015. Despite the delay in the federal rule, Utah's rule and permits remained in effect and the mercury reductions were achieved as planned, and were achieved earlier than required nationwide.

Table 2 shows mercury emissions reported in Utah's triennial inventory. Mercury emission reductions due to the upgrades at Hunter 1 will be reflected in the next triennial inventory in 2014.

Table 2. Mercury Emission Trends

	Mercury Compound Emissions (lbs/yr)		
	2005	**2008**	**2011**
Hunter	381	104.84	63.52
Huntington	242	46	12.16

Note: Reported emissions for Hunter include Unit 3 which is not subject to BART. Unit 3 is equipped with a baghouse and WFGD Scrubber.

Partial Approval, Partial Disapproval of Utah's Regional Haze SIP

On December 14, 2012, EPA approved the majority of Utah's Regional Haze SIP, but disapproved Utah's BART determinations for NOx and PM for PacifiCorp's Hunter Unit 1, Hunter Unit 2, Huntington Unit 1, and Huntington Unit 2. EPA disapproved these BART determinations because EPA did not agree that their own analysis satisfied the 5-factor analysis requirement in the BART rule. EPA therefore determined that the SIP did not contain a 5-factor analysis as required by the rule.

EPA's disapproval of Utah's BART determination did not comply with the Clean Air Act's required timeline for acting on State SIPs. Utah's Regional Haze SIP was submitted to EPA on September 9, 2008. Under section 110(k)(1) of the Clean Air Act EPA is required to determine whether the SIP is complete within 6 months, otherwise the SIP is determined to be complete. EPA did not take action so it was automatically determined to be complete in March 2009. EPA was then required to take action on the SIP within 12 months of the completeness determination (March 2010). EPA's proposed disapproval of the BART determination did not occur until May 2012 with the final action occurring in December 2012. The timing is important because during the intervening years Utah's BART determination was in place and enforceable under state law and state permits. PacifiCorp incurred significant expense to comply with those requirements. The required controls were already installed and operating on 3 of the 4 EGUs

prior to EPA's proposed disapproval, and were installed on the 4th EGU in 2014 as required by Utah's SIP under state law. The 2008 BART determination was implemented in good faith by both the State of Utah and PacifiCorp, controls were installed within 5 years as required by the BART rule, and the emission rate met the presumptive limits established by EPA in Appendix Y.

New 5-Factor Analysis

In June 2012 after EPA had proposed to disapprove Utah's BART determination, PacifiCorp prepared a new 5-factor BART analysis to satisfy the requirements of the BART rule. PacifiCorp submitted an update to that analysis on August 5, 2014, to address issues that EPA had raised with other regional haze SIPs.

Analysis of Controls for SO_2, NO_x, and PM Established as BART in 2008

Energy and Non-Air Quality Environmental Impacts

PacifiCorp determined that installation of low-NOx burners (LNBs) with overfire air (OFA) did not significantly impact boiler efficiency or power usage, but could result in higher carbon monoxide emissions and unburned carbon in the ash. While not included as an impact in PacifiCorp's analysis, DAQ staff considers the mercury reductions achieved by the installation of baghouses in conjunction with flue gas de-sulfurization as a positive non-air quality environmental impact due to possible impact on mercury levels in lakes and streams.

Remaining Useful Life

PacifiCorp assumed a remaining useful life for all 4 units of 20 years.

Economic Impact

PacifiCorp's 5-factor analysis documented the cost of the controls for SO_2, NOx, and PM that were installed on the 4 subject-to-BART EGUs as required by Utah's 2008 RH SIP. The total capital cost for the controls was $588,436,552[4]. When operating costs were included, the total annualized cost of the new controls was $70,847,852/year. Focusing specifically on NOx, 11,480 tons of NOx were reduced from the 4 subject-to-BART EGUs with an average cost of $307/ton. These costs were consistent with EPA's analysis in the BART rule that meeting the presumptive limits for NOx would cost an average of $100/ton to just over $1,000/ton.

Visibility benefit

Early Reductions

Because Utah's RH SIP was developed under section 309, the SIP was originally submitted to EPA in 2003 and the emission reduction strategies were implemented 5 years earlier than in most other states. The SO_2 milestones established steady and continuing reductions through 2018, but as can be seen in Figure 2, the emission reductions necessary to meet the 2018 milestone were achieved 7 years early in 2011,

[4] PacifiCorp provided actual costs for installing SO_2 and PM controls on 3 of the 4 EGUs and estimated costs for Hunter 1. Costs for NOx controls were updated August 5, 2014.

and since that time, SO_2 emissions have continued to decrease. The NOx and PM reductions required by Utah's 2008 BART determination also occurred earlier than was achieved under the BART rule for most western states, with controls installed in 2006, 2010, and 2011 for Huntington 2, Huntington 1, and Hunter 2, respectively. The early visibility benefits due to these reductions are a consideration when evaluating the degree of visibility improvement due to BART at Class I areas on the Colorado Plateau.

Modeling Results

PacifiCorp performed visibility modeling as outlined in the June 2012 modeling protocol. DAQ required the use of the approved version of CALPUFF (Version 5.8 level 070623), CALMET (Version 5.8 level 070623), POSTUTIL (Version 1.56 level 070627), CALPOST (Version 6.292 level 110406), Method 8 visibility analysis, and the constant 1 ppb ammonia rate used in the 2006 WRAP BART protocol. The baseline results are representative of operations and meteorology in 2001-2003.

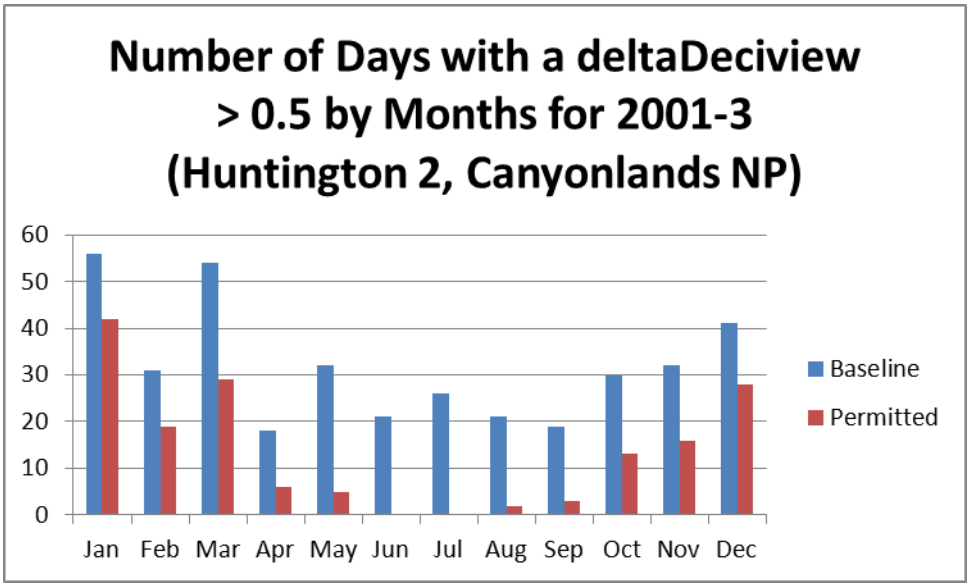
The model indicates significant visibility improvement due to the new controls for SO_2, NOx, and PM as required by the 2008 BART determination. Table 3 shows the modeled improvement for each of the 4 subject-to-BART EGUs at Canyonlands National Park, the Class I area with the greatest overall impact.

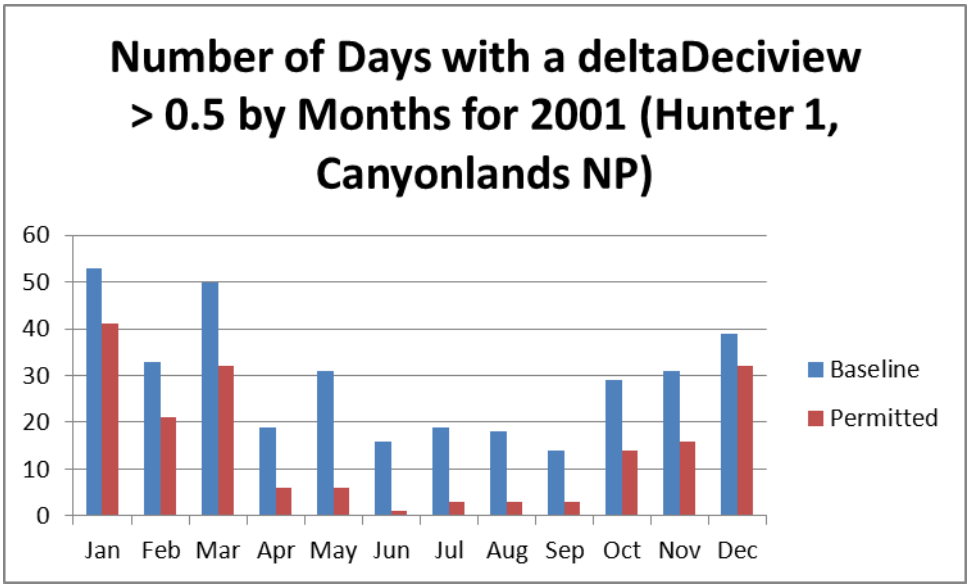
Table 3. Modeled visibility benefit at Canyonlands due to 2008 BART determination

	Baseline		Permitted Controls	
	98th Percentile (Δdv)	No. of days >0.5 Δdv	98th Percentile (Δdv)	No. of days >0.5 Δdv
Huntington 1	3.00	130	1.65	64
Huntington 2	3.66	156	1.65	65
Hunter 1	3.07	131	1.75	61
Hunter 2	3.08	132	1.75	61

Figure 4 shows that the modeled visibility improvement was distributed throughout the year, including the high visitation months of April – September (results are shown for one unit from each plant).

Figure 4. Modeled number of days improved at Canyonlands due to 2008 BART determination





These modeled improvements are significant in both the magnitude of expected improvement as well as the number of days with improvement.

Monitoring Data

Because controls have been installed on 3 of the 4 units since 2011, monitoring data can also be used to validate the actual benefit achieved. Controls were installed on the EGUs as follows: Huntington Unit 2 at the end of 2006, Huntington Unit 1 in the Fall of 2010, and Hunter Unit 2 in the Spring of 2011. Controls were installed on Hunter Unit 1 in the Spring of 2014 but are not yet reflected in the monitoring data. Figures 5 and 6 show the emission trends for SO_2 and NOx from the 4 subject-to-BART EGUs.

Figure 5. SO_2 Emission Trends

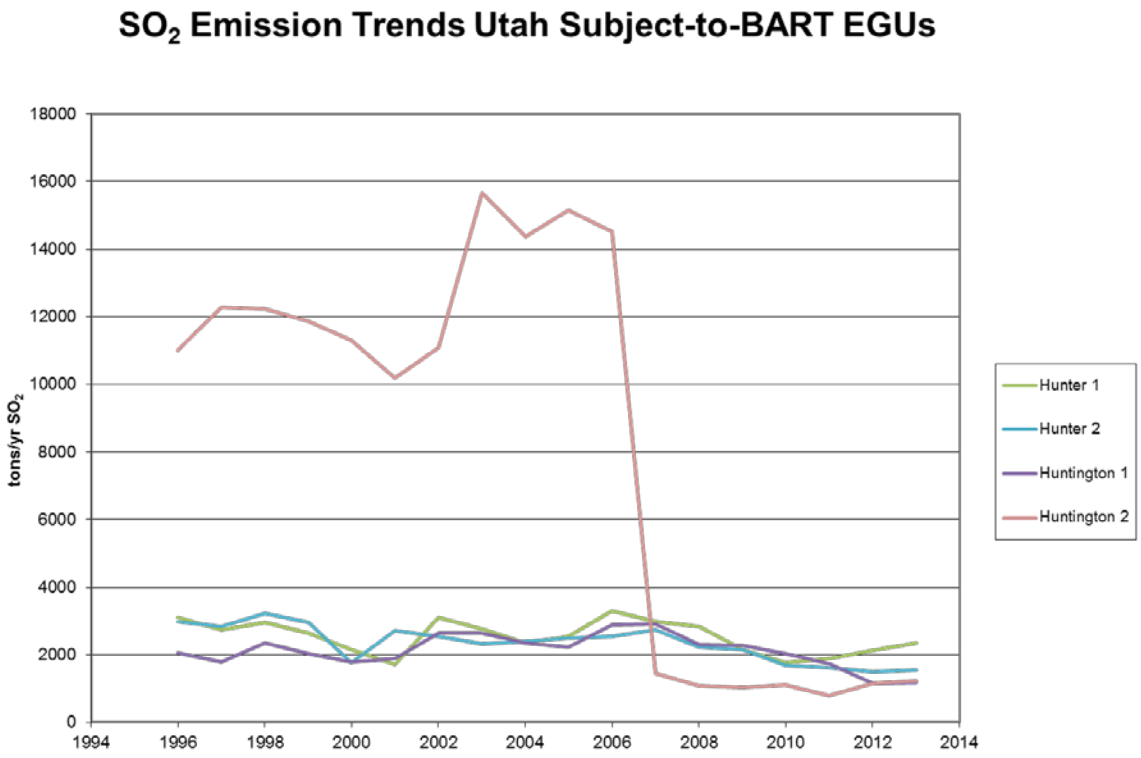
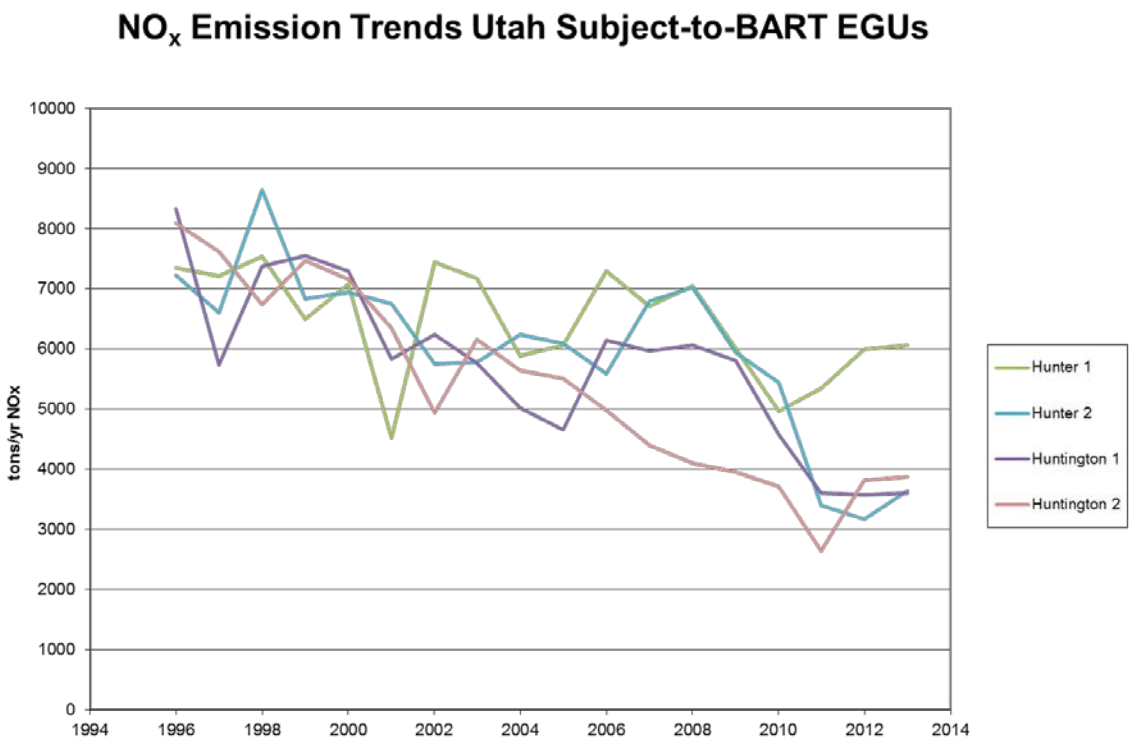
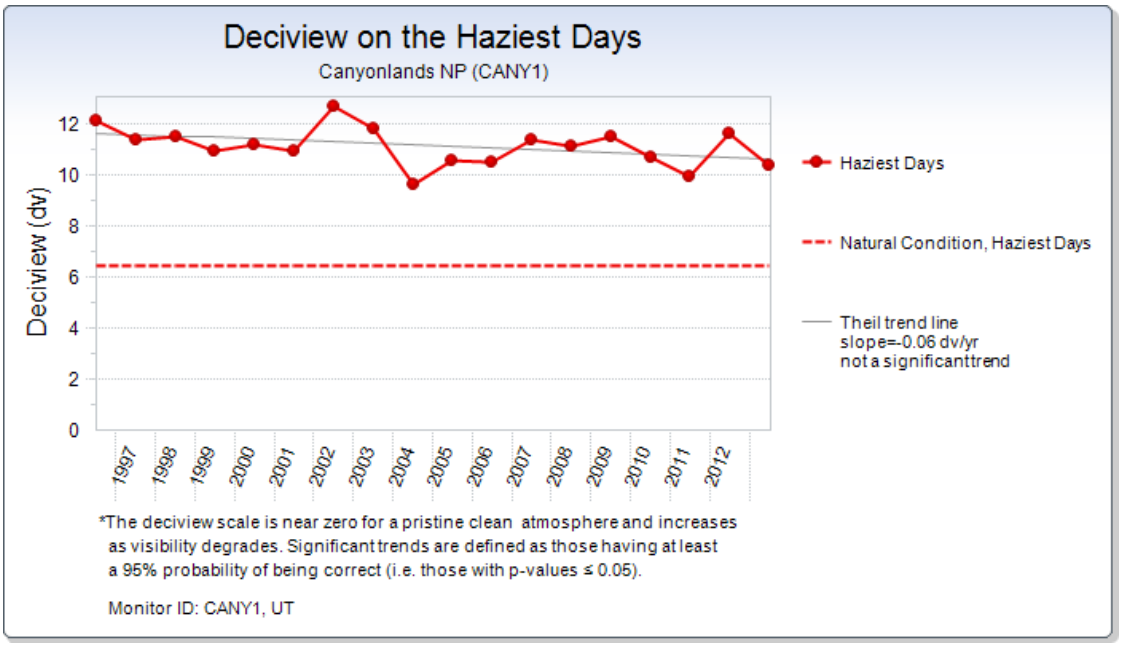


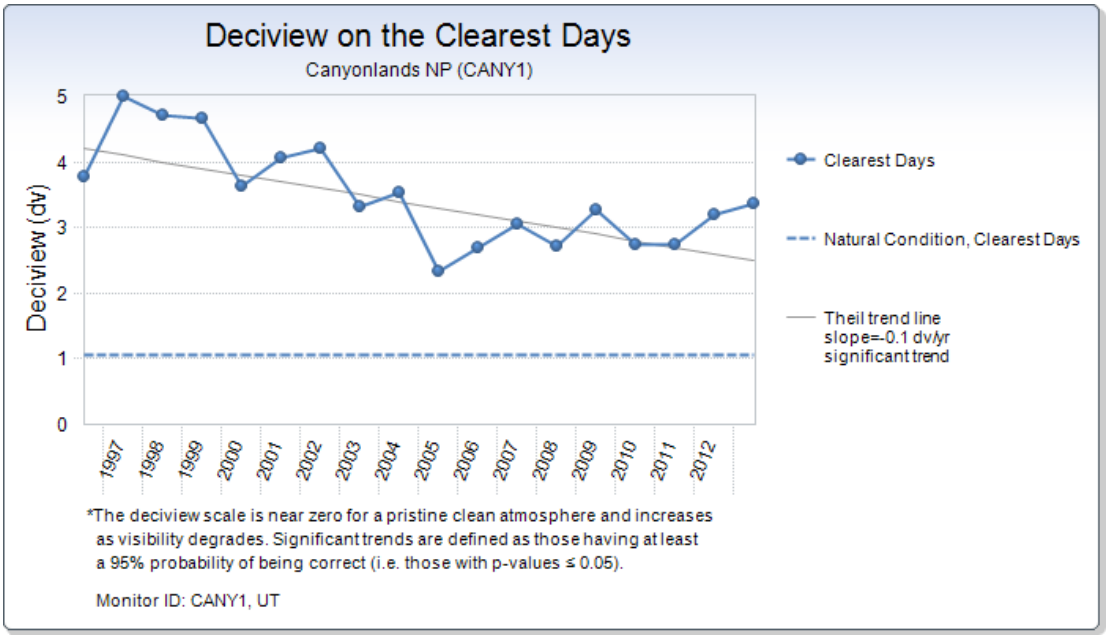
Figure 6. NOx Emission Trends



DAQ staff evaluated the monitoring data using several different metrics. First, the overall trend in deciviews and the contribution of individual species to light extinction during the 20% worst and 20% best days at Canyonlands were evaluated. Canyonlands was chosen because the highest overall modeled impacts occurred at Canyonlands. The 20% best and 20% worst day metric is used to measure progress towards the national visibility goal under the regional haze rule. The significant reductions at Huntington 2 at the end of 2006 and the additional reductions at Huntington 1 and Hunter 2 in 2010 and 2011 did not result in any identifiable visibility improvement on either the 20% worst or the 20% best days, but overall visibility is improving.

Figure 7. Deciview Trends on 20% Worst and 20% Best Visibility Days





DAQ staff also evaluated changes in the individual species that contribute to visibility impairment. The 98th percentile (3rd high) and the median values of sulfate and nitrate mass are shown in Figures 8 and 9. Emission trends from the 4 subject-to-BART units are also included. The significant reductions in SO_2 and NOx have not led to corresponding improvements on the high sulfate and nitrate days, but the median values do show overall improvement.

Figure 8. Sulfate Trends

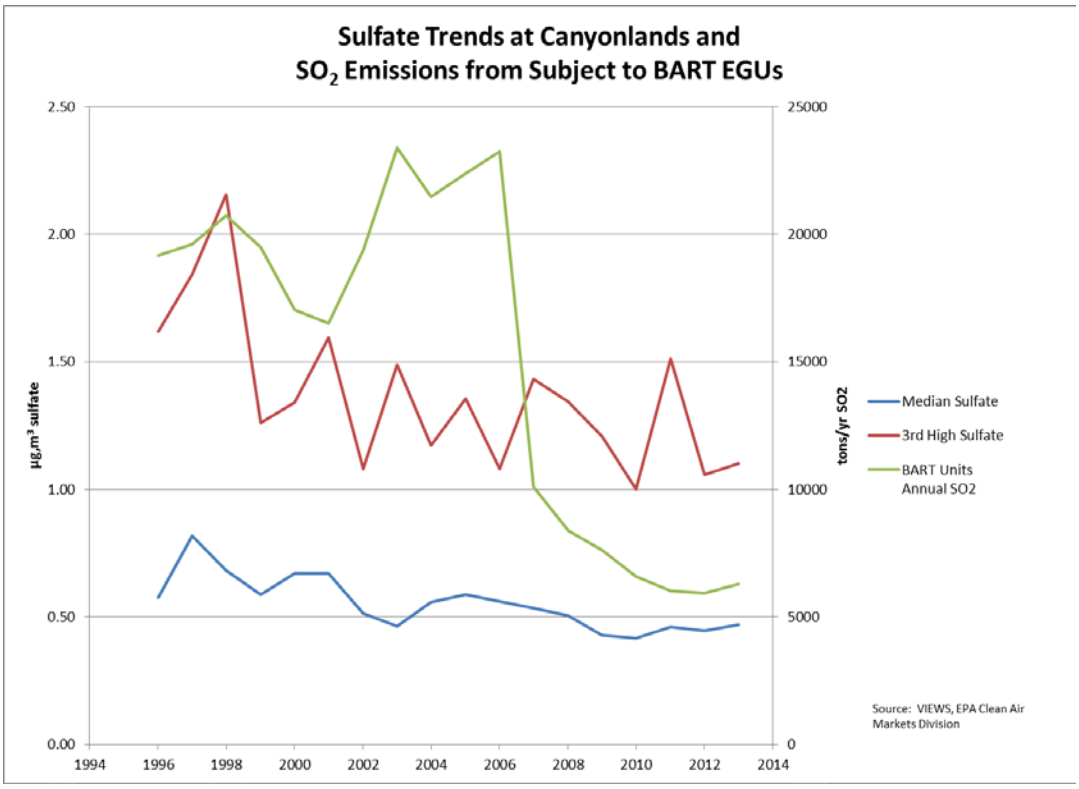
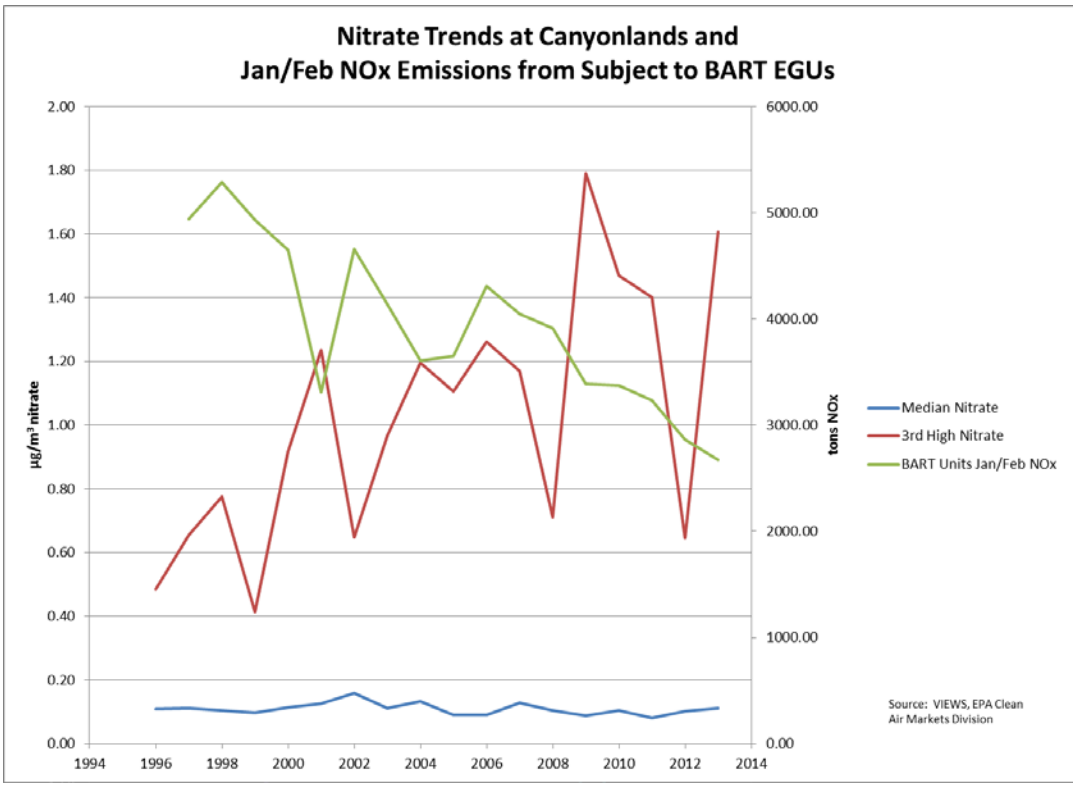


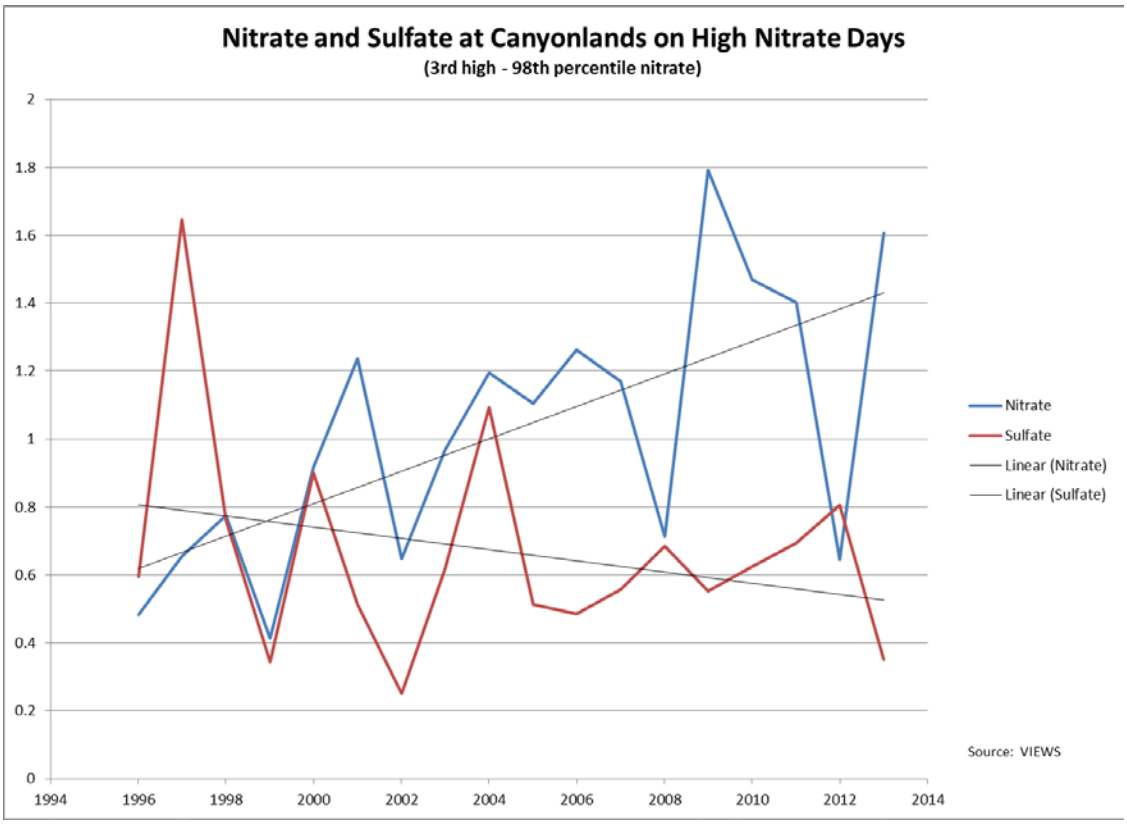
Figure 9. Nitrate Trends



Ammonia

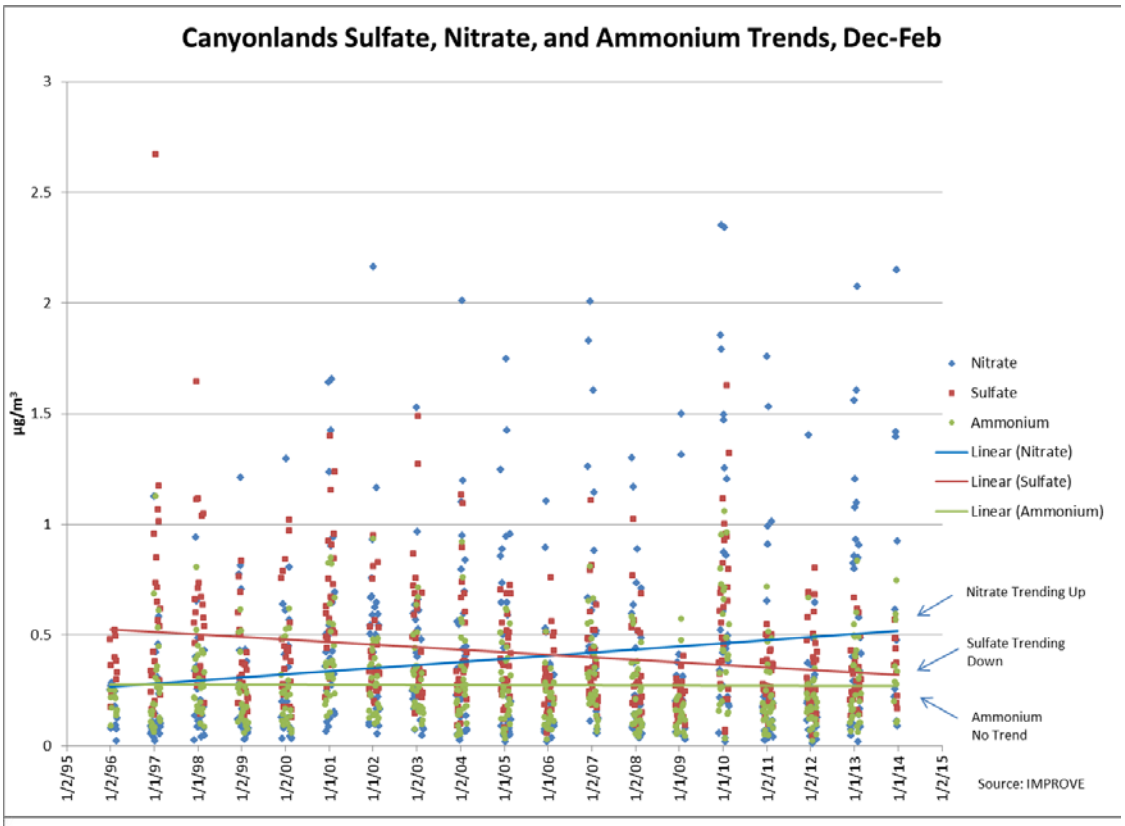
Surprisingly, the high nitrate values are increasing over time, despite the significant reduction in NOx emissions from the 4 subject-to-BART EGUs, as well as on-going reductions from mobile sources and other power plants throughout the region. This unexpected result may occur because ammonium sulfate forms more readily than ammonium nitrate when both SO_2 and NOx are available to react with ammonia. As SO_2 emissions decline and SO_2 is no longer available, the reaction shifts to form ammonium nitrate from available NOx. Figure 10 shows the nitrate and sulfate mass on the 98th percentile (3rd high) nitrate day showing the possible shift from formation of sulfate to nitrate. One explanation for the lack of improvement is that ammonia is limiting the reaction. This would be significant because reductions in SO_2 and NOx emissions may not lead to visibility improvements under ammonia limited conditions.

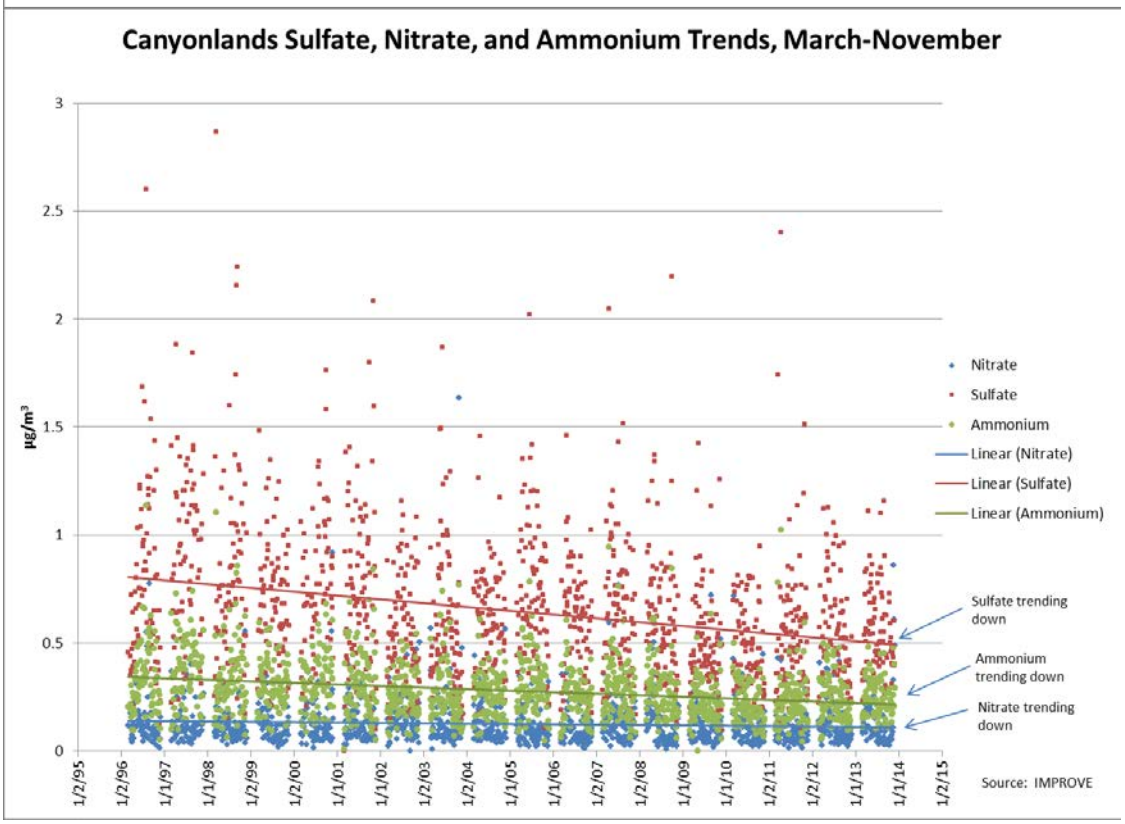
Figure 10. Nitrate and Sulfate on High Nitrate Days



The high nitrate values occur primarily during the winter when ammonia is typically lowest, so winter values (December – February) were compared to values during the rest of the year (March – November) to determine if there were seasonal differences. Figure 11 shows that the decreases in sulfate are offset by increases in nitrate during the winter while ammonium levels show little change. This would make sense if ammonia is limiting the reaction because two molecules of ammonium nitrate (NH4)NO3 would be created for every molecule of ammonium sulfate (NH4)2SO4 that was decreased. During the summer sulfate, nitrate, and ammonium are all decreasing, indicating that ammonia is not limiting the reaction.

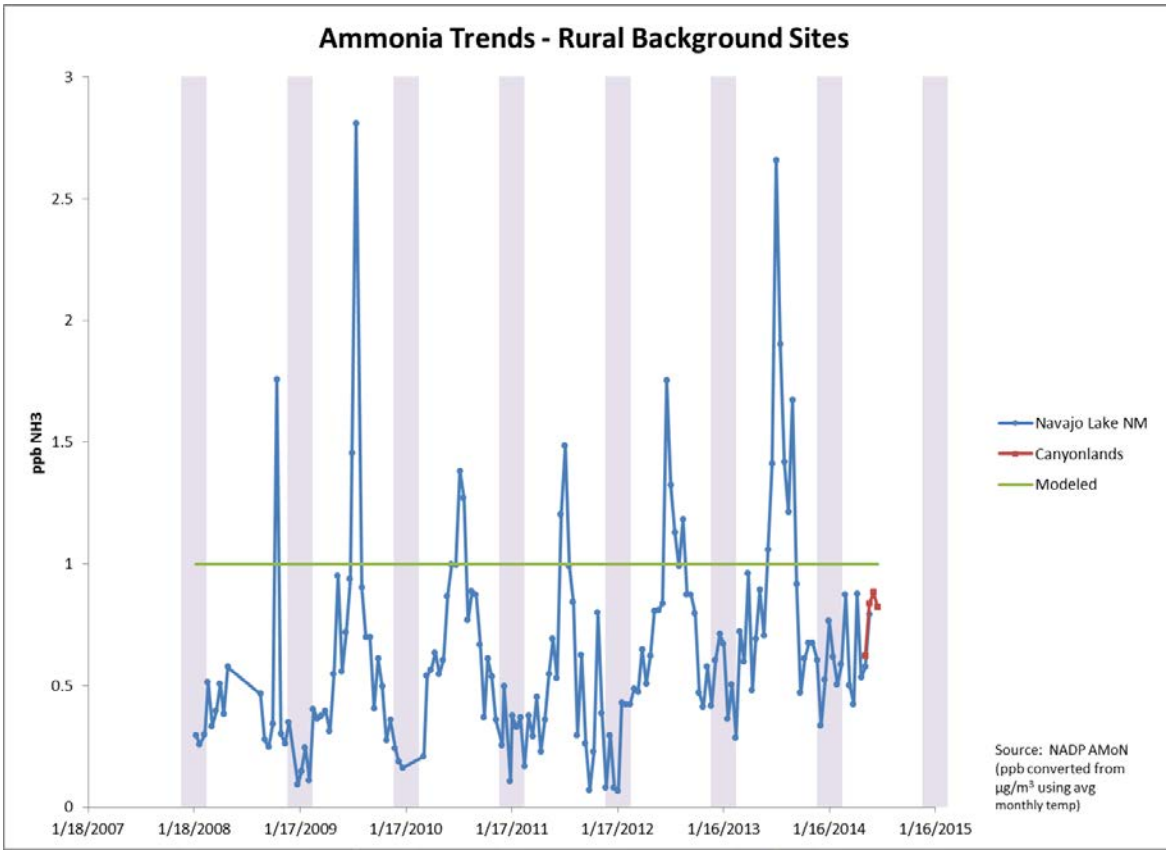
Figure 11. Sulfate and Nitrate Trends in Winter and the Rest of the Year





DAQ required PacifiCorp to use a constant background ammonia concentration of 1 ppb for the visibility modeling in the 5-factor analysis to be consistent with the visibility modeling protocols used by EPA and other western states. PacifiCorp had requested to use a variable ammonia concentration based on monitoring in the Four Corners area that showed lower ammonia levels during the winter months. Figure 12 shows the monitored ammonia values at Navajo Lake, NM. This site was identified as a regional background site during a 2007 study of ammonia emissions in New Mexico and Oklahoma[5]. The shaded bands highlight the winter months of December – February and as can be seen the ammonia values during the winter are typically much lower than 1 ppb.

Figure 12. Ammonia Trends



DAQ agreed that ammonia rates are likely lower in the winter, but the data set was so sparse that it was difficult to determine the appropriate levels that should be used. The Navajo Lake site is about 250 miles from the PacifiCorp EGUs and the only other monitoring sites in Utah were affected by urban emissions or agriculture. Ammonia emission sources are primarily livestock, agriculture, and human populations in urban areas and there are few of these types of emission sources in southern Utah. Because local data were not available and there were so few western ammonia sites, DAQ required PacifiCorp to use the conservative constant ammonia rate that had been used by EPA and other western

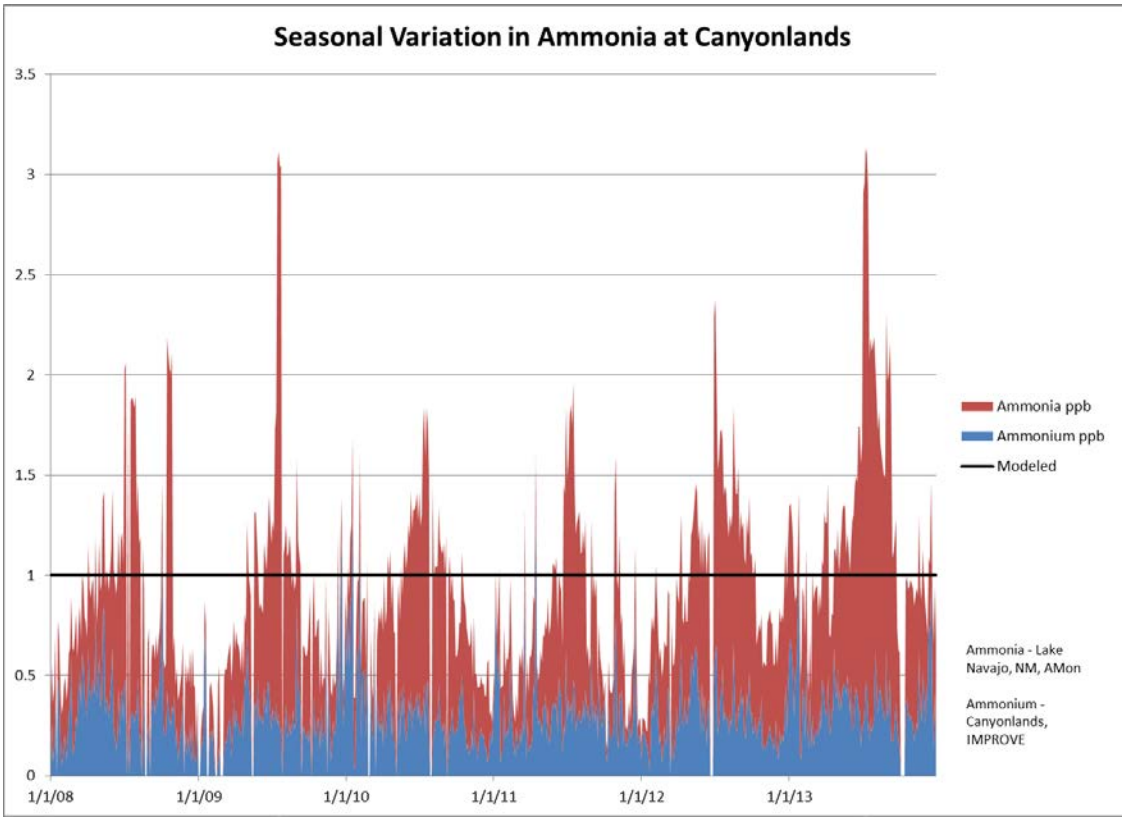
[5] Sather et al., Baseline ambient gaseous ammonia concentrations in the Four Corners area and eastern Oklahoma, USA, *J.Environ. Monit*., 2008, **10**, 1319-1325

states. Modeling performed by the Colorado Department of Public Health and Environment demonstrated that under certain conditions CALPUFF is sensitive to the assumed level of ammonia at levels below 1 ppb[6] so the model may be overpredicting the formation of ammonium nitrate during the winter if ammonia levels are near 0.2 ppb as measured at Navajo Lake during most winters.

In May 2014 DAQ began monitoring ammonia at Canyonlands to gain a better understanding of background ammonia levels. Figure 12 shows that the initial few measurements at Canyonlands are similar to values at Navajo Lake. The dataset is sparse, but indicates that ammonia data from Navajo Lake may be representative for the area.

The ammonium in particulate matter must also be considered when evaluating wintertime ammonia rates. Figure 13 shows the combined ammonia and ammonium (ppm) at Canyonlands, using Navajo Lake ammonia values as a surrogate. The sample frequency is different for the two datasets. The ammonium data are from the IMPROVE network that collects a 24-hour filter every 3 days while the ammonia data are two week average samples so the Figure 13 is best used to determine seasonal trends rather than daily values. This figure illustrates that total ammonia values are lower in the winter and are typically below the 1 ppb level that was used in the modeling in the winter.

Figure 13. Seasonal Variation in Ammonia.



[6] Colorado Department of Public Health and Environment, BART CALPUFF Class I Federal Area Individual Source Attribution Visibility Impairment Modeling Analysis for Public Service Company of Colorado Hayden Station Units 1 and 2, November 1 2005, page 31.

Other NOx Emission Sources

DAQ staff also evaluated the possibility that NOx could be increasing from other sources in the region. Figure 14 shows that NOx emissions are decreasing at other EGUs in the area. Mobile source NOx emissions are decreasing nationwide due to implementation of the Tier 1 and Tier 2 emission standards and should continue to be reduced through the implementation of Tier 3 emission standards.

Figure 14. NOx Emission Trends from EGUs

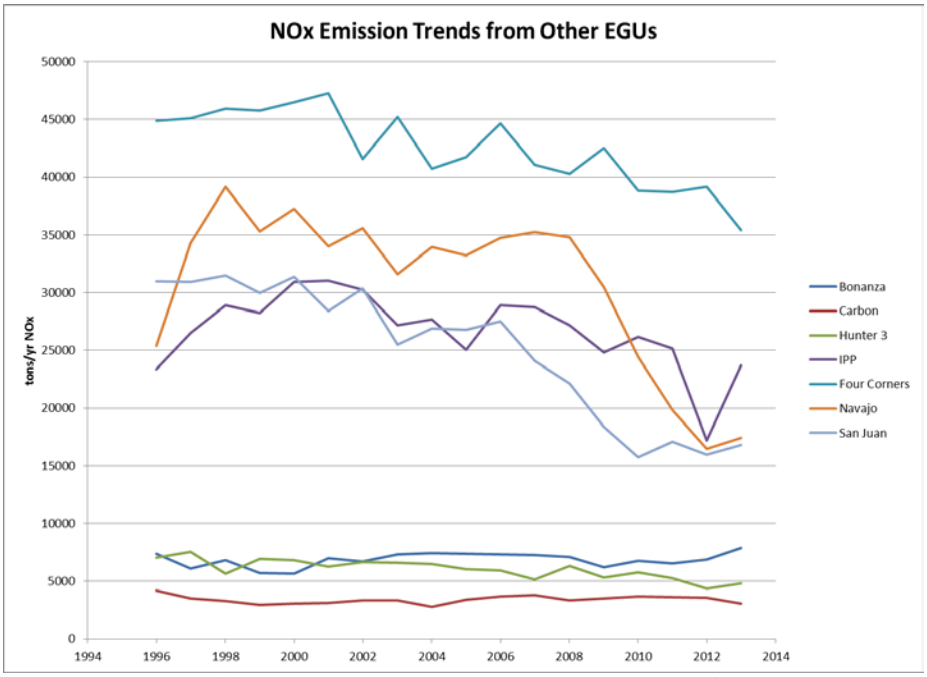


Table 4 shows that oil and gas NOx emissions in the surrounding basins are increasing, but the overall scale of the emission increase is small when compared to the decrease in emissions from EGUs in the region.

Table 4. NOx Emissions from the Oil and Gas Industry

Oil and Gas Inventory

	2006	2012	Change
Uinta Basin	13,093	16,641	3,458
Northern San Juan	5,700	4,195	(1,505)
Southern San Juan	42,075	43,050	975
Piceance	12,390	9,951	(2,439)
Total	73,258	73,747	489

Source: WRAP Phase III Inventory 2012 projection

Other Modeling Considerations

DAQ staff considered several other reasons why the model might indicate a greater improvement in visibility than is measured by the monitoring data.

> 1. The modeling protocol uses conservative assumptions. The model assumes background "natural conditions" while current conditions are affected by regional and international emissions. EPA requires this approach because the goal established in the regional haze rule is to achieve natural conditions by 2064. The impact of an individual emission source is decreased when other emission sources are included in the model because the human eye can perceive differences in visibility more readily under pristine conditions. The deciview metric is designed to reflect this difference. DAQ staff do not disagree with the goal of achieving natural conditions but believe that some consideration must be also be given to visibility improvements that are likely to be experienced within the next few decades. In addition, the emission rate used in the model to evaluate worst case conditions is higher than would typically occur.
>
> 2. The model may need refinements. PacifiCorp performed additional visibility modeling using CALPUFF version 6.42, an updated version of the CALPUFF model that has not yet been validated by EPA. This latest version of the model predicted significantly less visibility impact from the 4 subject-to-BART EGUs at Utah's Class I areas. DAQ does not have the resources or staff expertise to determine whether the updated version of the CALPUFF model provides more accurate results than the currently approved version (CALPUFF 4.8). Therefore, DAQ required PacifiCorp to use the approved version of the model for the 5-factor analysis. EPA is currently reviewing CALPUFF version 6.42. If EPA validates the new version of the model in the near future DAQ will update this staff review to include the results of the new modeling.

The bottom line is that the modeled improvement may be significantly overestimated. When evaluating the 5th factor in the 5-factor analysis (the degree of improvement in visibility which may reasonably be anticipated to result from the use of such [best available retrofit] technology) DAQ is therefore viewing the CALPUFF modeling results as part of a broader analysis of visibility that also considers monitoring data, emission inventory trends, and the regional modeling that was developed by the WRAP to show changes in visibility between 2002 and 2018. This approach is consistent with EPA's Guidelines in Appendix Y. Appendix Y outlines "an approach you may use to determine visibility impacts for the BART determination[7]" using CALPUFF, but also states, "you have flexibility to assess visibility improvements due to BART controls by one or more methods. " [8] The preamble to the BART rule provides additional support for the use of a broader analysis.

> "Because each Class I Area is unique, we believe States should have flexibility to assess visibility improvements due to BART controls by one or more methods, or by a combination of methods, and we agree with the commenters suggestions to do so. We believe the maximum 24-hour modeled impact can be an appropriate measure in

[7] 70 FR 39170

[8] Ibid

> determining the degree of visibility improvement expected from BART reductions (or for BART applicability). We have pointed out, however, that States should have flexibility when evaluating the fifth statutory factor. A State is encouraged to account for the magnitude, frequency, and duration of the contributions to visibility impairment caused by the source based on the natural variability of meteorology. These are important elements to consider as they would provide useful information on both the short term peak impact and long term average assessments which are critical in making the visibility assessment."[9]

Analysis of Particulate Matter Control Options

PacifiCorp's 5-Factor analysis identified three technologies that were available prior to the 2008 BART determination: upgraded electrostatic precipitator (ESP) and flue gas conditioning (0.040 lb PM_{10}/MMBtu); polishing fabric filter (0.015 lb PM10/MMBtu); and replacement fabric filter (0.015 lb PM_{10}/MMBtu). The 2008 BART determination required PacifiCorp to install a fabric filter baghouse with a PM emission rate of 0.015 lb/MMBtu at Hunter Units 1 and 2; a PM_{10} emission rate of 74 lb/hr at Huntington Unit 1; and a PM emission rate of 70 lb/hr at Huntington Unit 2. The pound per hour emission rate for the Huntington units was based on a 0.015 lb/MMBtu emission rate and a maximum hourly heat input. The baghouse technology is considered to be the most stringent technology available and 0.015 lb PM_{10}/MMBtu represents the most stringent emission limit.

Appendix Y allows a streamlined 5-factor analysis when the most stringent controls are already required.

> "If you find that a BART source has controls already in place which are the most stringent controls available (note that this means that all possible improvements to any control devices have been made), then it is not necessary to comprehensively complete each following step of the BART analysis in this section. As long as these most stringent controls available are made federally enforceable for the purpose of implementing BART for that source, you may skip the remaining analyses in this section, including the visibility analysis in step 5. Likewise, if a source commits to a BART determination that consists of the most stringent controls available, then there is no need to complete the remaining analyses in this section." (40 CFR Part 51, Appendix Y, Section D.9)

Because the most stringent technology is in place and the approval orders and operating permits for the Hunter and Huntington plants contain a federally enforceable emission limit for PM_{10} of 0.015 lb/MMBtu (30 day rolling average) no further analysis is required.

[9] 70 FR 39129

Analysis of NOx Control Options

PacifiCorp evaluated 18 different NOx control options, and determined that the following were technically feasible[10]: low NOx burners and overfire air (LNB + OFA – option required by 2008 BART determination), selective non-catalytic reduction (LNB + OFA + SNCR), and selective catalytic reduction (LNB + OFA + SCR). Table 5 shows the emission rates and annual emissions for the different control options. Historic baseline emissions are also shown to illustrate the emission reductions that have already been achieved, but these emissions have little relevance when evaluating future scenarios because LNB + OFA have already been installed on all four EGUs.

Table 5. NOx Control Options

	Hunter 1	Hunter 2	Huntington 1	Huntington 2
Historic Baseline (2001-2003)				
Actual Emission Rate (lb/MMBtu)[a]	0.4	0.38	0.37	0.39
Actual Emissions (tons/yr)[a]	6,380	6,092	5,944	5,816
Current Operations (LNB+OFA)				
Permitted Emission Rate (lb/MMBtu)	0.26	0.26	0.26	0.26
Actual Emissions (2012/13)[a]	6,032	3,412	3,593	3,844
Actual Emission Rate (2012/13)[a]	0.38	0.20	0.22	0.22
LNB + OFA + SNCR				
Emission Rate (lb/MMBtu)	0.160	0.160	0.166	0.166
Emissions (tons/yr)	2,485	2,703	2,685	2,838
LNB + OFA + SCR				
Emission Rate (lb/MMBtu)	0.05	0.05	0.05	0.05
Emissions (tons/yr)	775	843	809	856
[a]Source: EPA Clean Air Markets Division				

Energy Impacts

PacifiCorp's analysis notes that SNCR and SCR will result in increased parasitic load due to the injection of urea or ammonia. An SCR retrofit will impact the existing flue gas fan systems, due to the additional pressure drop associated with the catalyst.

Non-Air Quality Environmental Impacts

PacifiCorp's analysis notes that both an SNCR and SCR installation could impact the salability and disposal of fly ash due to increased ammonia levels. In addition, ammonia slip could potentially create a visible stack plume or increase the background ammonia concentrations which may negate any

[10] Neural network optimization system (NNOS) is also technically feasible but was not evaluated because the potential for significant and consistent NOx reduction was minimal.

perceived visibility improvements. Other environmental impacts involve the storage of ammonia, especially if anhydrous ammonia is used, and the transportation of the ammonia to the power plant.

The potential increase in background ammonia concentrations is a concern during the winter months if the area is ammonia limited. In this case, the efforts to reduce NOx could actually increase the formation of ammonium nitrate due to the ammonia slip. The overall impact on regional ammonia levels, however, is likely to be minimal and would therefore have a limited negative impact on visibility during the winter months. The potential creation of a visible stack plume in the area surrounding the Hunter and Huntington plants is a concern. A visible stack plume could be seen from some of Utah's Class I areas affecting the vista in those areas. In addition, the San Rafael Swell is a large natural area located in close proximity to the two plants. The San Rafael Swell, 2,000 square miles of public land, is known for its scenic sandstone formations, deep canyons, desert streams, and expansive panoramas. The San Rafael Swell is not a Class I area, but visibility is an important factor in all of Southern Utah. Utah's Visibility SIP, Section XVII.J contains the Air Conservation Committee's (since renamed Air Quality Board) Policy Statement for the Protection of Visibility

> "The State recognizes that visibility and the ability to see the great scenic views in Southern Utah is a rare and unique treasure and should be preserved, both for the benefit and pleasure of Utah residents, and to support our large tourist industry. In addition to the distance one can see, the clarity, color, and detail of the visible features are also important."

EPA's Air Pollution Control Fact Sheets for SNCR (EPA-452/F-03-031) and SCR (EPA-452/F-03-032) indicates that ammonia slip may cause increased plume visibility; however, ammonia slip at a level of 2 to 10 ppm, the typical permitted level, does not result in plume formation. SNCR has typically been installed on smaller EGUs due to the difficulty with consistent mixing of the reagent (ammonia or urea) in a large boiler. Inconsistent mixing could also lead to increased ammonia slip. EPA's fact sheet indicates that advancements in SNCR injection and control systems have improved mixing in large boilers (greater than 300 MW). Because SNCR is a relatively new technology for larger boilers there is not a long track record regarding the effectiveness of SNCR at EGUs at plants comparable to Hunter and Huntington.

Remaining Useful Life

The remaining useful life for all 4 subject to BART EGUs is assumed to be 20 years. However, PacifiCorp raised a significant issue in the August 4, 2014, update to their 5-factor analysis.

> "EPA's proposed Carbon Pollution Emission Guidelines for existing Stationary Sources [Clean Power Plan], published June 18, 2014, introduces considerable uncertainty surrounding many of the assumptions that go into any BART determination. For example, the proposed [Clean Power Plan] rule establishes state-specific carbon emission targets based on the calculation of the best system of emission reduction that includes a significant improvement in plant efficiency and an overall reduction in each coal plant's utilization and remaining useful life beginning in 2020. The objectives of the [Clean Power Plan] rule must be reconciled with EPA's required approach to BART

> determinations which do not take these issues into account. EPA recognizes in the [Clean Power Plan] rule that the development of regional haze and other SIPs may 'have significant implications for existing fossil fuel-fired EGUs, as well as the states that are responsible for developing them."
>
> …Unless the 111(d) and regional haze SIPs are coordinated and reconciled, PacifiCorp may be in an untenable position with the prospect that BART determinations could require SCR as NOx BART based on assumptions of higher plant utilization and 20-year useful lives (while at the same time lowering plant efficiencies), only to have those assumptions case aside by the [Clean Power Plan] rule requirements. PacifiCorp requests that Utah consider these aspects as part of its BART analyses and consider these aspects as part of its BART analyses and determine that the intended impacts of the proposed [Clean Power Plan] rule provide yet another reason why NOx BART for the affected Hunter and Huntington units is LNB/OFA as originally ordered by the state and currently installed.

DAQ staff agrees that the current uncertainty regarding future requirements under the Clean Power Plan rule is a significant concern and the possibility of stranded costs should be considered. In addition, potential control requirements under the 2010 SO_2 NAAQS and the expected new 2015 ozone NAAQS are additional areas of uncertainty.

Economic Impact

Cost of Control

PacifiCorp provided cost estimates for installing SNCR or SCR. The cost information for SNCR is based upon generally available industry information. The SCR cost information was provided by Sargent & Lund and reflects the methodologies and costing methods that EPA has found acceptable in other SIP/FIP determinations, including those performed for Wyoming facilities. A summary of the costs is shown in Table 6.

Table 6. NOx Control Options Cost

SNCR	Total	Hunter 1	Hunter 2	Huntington 1	Huntington 2
Capital Cost (Including LNB+OFA)	$ 67,793,347	$ 19,238,047	$ 16,444,561	$ 15,976,323	$ 16,134,416
Annualized Cost (including LNB+OFA)	$ 17,039,977	$ 4,423,789	$ 4,160,103	$ 4,220,581	$ 4,235,504
NOx Emissions	10,711	2,485	2,703	2,685	2,838
Incremental tons removed	3,275	652	709	907	1,006
Incremental Capital Cost	$ 30,447,246	$ 7,651,274	$ 7,572,349	$ 7,651,274	$ 7,572,349
Incremental Annualized Cost	$ 13,514,769	$ 3,330,080	$ 3,322,629	$ 3,434,755	$ 3,427,305
Incremental $/ton	$ 4,246	$ 5,106	$ 4,684	$ 3,787	$ 3,407
SCR	**Total**	**Hunter 1**	**Hunter 2**	**Huntington 1**	**Huntington 2**
Capital Cost (including LNB+OFA)	$711,080,071	$ 180,791,743	$ 177,483,372	$ 176,287,506	$ 176,517,450
Annualized Cost (Including LNB+OFA)	$ 96,914,271	$ 24,539,094	$ 24,144,098	$ 24,101,813	$ 24,129,266
NOx Emissions	3,282	775	843	809	856
Incremental tons removed	10,704	2,362	2,569	2,784	2,988
Incremental Capital Cost	$673,733,970	$ 169,204,970	$ 168,611,160	$ 167,962,457	$ 167,955,383
Incremental Annualized Cost	$ 93,389,063	$ 23,445,385	$ 23,306,624	$ 23,315,987	$ 23,321,067
Incremental $/ton	$ 8,794	$ 9,925	$ 9,072	$ 8,375	$ 7,804

Potential Effect of EPA's Clean Power Plan on Cost Estimates

In the Technical Support Document (TSD) of EPA's Clean Power Plan Proposed Rule ("proposed rule"), the agency lays out the technical basis for the development of the Best System of Emission Reduction (BSER), which includes a combination of four "blocks," including: Block 1 -- a 6% heat rate improvement in a given state's coal EGU fleet, Block 2 -- redispatching to existing natural gas combined cycle (NGCC) plants to a proposed 70% capacity factor, Block 3 -- increased reliance on renewable energy (RE) and some nuclear generation, and Bock 4 -- increased end-use energy efficiency (EE). Specifically the Goal Computation Technical Support Document, Goal Computation Appendix 1 and 2 Data File (XLS) (found here: http://www2.epa.gov/sites/production/files/2014-06/20140602tsd-state-goal-data-computation_1.xlsx) demonstrates that a 70% redispatch to existing NGCC plants in Utah (Block 2) would result in a 23.9% reduction in electricity generation from Utah's coal plants from 27,332,140 MWh in 2012 to 20,797,210 MWh. While EPA does not require a state to utilize the four blocks to reach its emissions goal, the blocks illustrate a potential approach – in fact, EPA's BSER approach – that a state might choose to comply with its goal. As a result, any controls for non-GHG emissions at coal plants could be more costly since coal generation in Utah could decrease by as much as one quarter under Block 2. As an example, if the current actual emissions for Hunter Unit 2 were reduced by 23.9% (to 2,596 tons/yr) and the estimated emissions with SCR controls were also reduced by 23.9% (to 641 tons/yr) to reflect the assumed decrease in utilization of coal plants, then the overall reduction due to the installation of SCR would be 1,955 tons/yr, increasing the cost/ton from $9,072/ton to $11,921/ton. The ultimate requirements and resulting state strategy under the Clean Power Plan are not yet determined so the effect on utilization is unknown. Therefore, the cost of control is most appropriately expressed as a range that reflects current utilization on the lower end, and EPA's BSER utilization on the upper end.

Table 7. Cost Range to Reflect Uncertainty Due to Proposed Clean Power Plan

	Hunter 1	Hunter2	Huntington 1	Huntington 2	Average
SCR					
Lower end of range	$9,925	$9,072	$8,375	$7,804	$8,794
Upper end of range (BSER)	$13,041.76	$11,921.22	$11,005.51	$10,255.04	$11,556
SNCR					
Lower end of range	$5,106	$4,684	$3,787	$3,407	$4,246
Upper end of range (BSER)	$6,709	$6,155	$4,976	$4,477	$5,579

The bottom line is that the proposed Clean Power Plan creates a high degree of uncertainty regarding the cost of control.

System Wide Impact

In addition to the potential costs for further NOx controls at the Hunter and Huntington plants, PacifiCorp is also affected by the costs due to the installation of controls required by EPA's Regional Haze FIP in Wyoming (published January 30, 2014), Wyoming's Regional Haze SIP, and additional regional haze actions in Arizona and Colorado. PacifiCorp outlined their concerns about system wide costs in a letter to EPA dated July 12, 2012.[11] PacifiCorp stated that "more than 80% of PacifiCorp's 6,157 total owned megawatts of coal-fueled generating capacity are BART-eligible and approximately half (more than 3,000 megawatts) of PacifiCorp's coal-fueled generating capacity will be subject to the installation of controls within the next five years… If EPA ultimately attempts to require four additional SCR on PacifiCorp's Utah units as BART controls, which is beyond the NOx controls already installed or planned for those units under the existing Utah SIP, then the impact on PacifiCorp, its customers, and system reliability will be even more severe." EPA recognized the system wide impact on PacifiCorp in their proposed partial approval of Wyoming's SIP, although EPA did not ultimately rely on this justification in their final BART determination in Wyoming.

> EPA is proposing to determine that BART for all units at Jim Bridger would be SCR if the units were considered individually, based on the five factors, without regard for the controls being required at other units in the PacifiCorp system. However, when the cost of BART controls at other PacifiCorp- owned EGUs is considered as part of the cost factor for the Jim Bridger Units, EPA is proposing that Wyoming's determination that NOX BART for these units is new LNB plus OFA is reasonable. Considering costs broadly, it would be unreasonable to require any further retrofits at this source within five years of our final action. We note that the CAA establishes five years at the longest period that can be allowed for compliance with BART emission limits.[12]

[11] www.regulations.gov, EPA-R08-OAR-2012-0026-0044, 7-12-2012 PacifiCorp Comments

[12] 78 FR 34756

Carbon Power Plant

PacifiCorp has announced plans to shut down the Carbon Power Plant in 2015 due to the high cost to control mercury to meet the requirements of EPA's Mercury and Air Toxics Standards (MATS). This plant is located about 30 miles northeast of the Huntington Plant and about 40 miles northeast of the Hunter Plant. Average SO_2 emissions from 2012-13 were 8,005 tons/yr, and average NOx emissions were 3,342 tons /yr. PacifiCorp and ultimately Utah rate payers must pay the cost to replace the electricity generated by this plant, but there will also be a visibility benefit due to the emission reductions. Overall emission reductions of SO_2 and NOx due to the closure of this plant will be equivalent to the NOx reductions that could be achieved by installing the most stringent NOx control, SCR, on the 4 subject-to-BART EGUs and the emission reductions will occur close to the location of the Hunter and Huntington plants. The SO_2 emission reductions from the closure of this plant will be in addition to what was required under the SO_2 milestones in Utah's SIP because regional emissions in 2011 and 2012 were already below the 2018 milestone target.

While PacifiCorp has announced plans to shut down the Carbon Plant, this decision is not enforceable. An enforceable requirement in the Regional Haze SIP to close the Carbon Plant would lock in this substantial emission reduction.

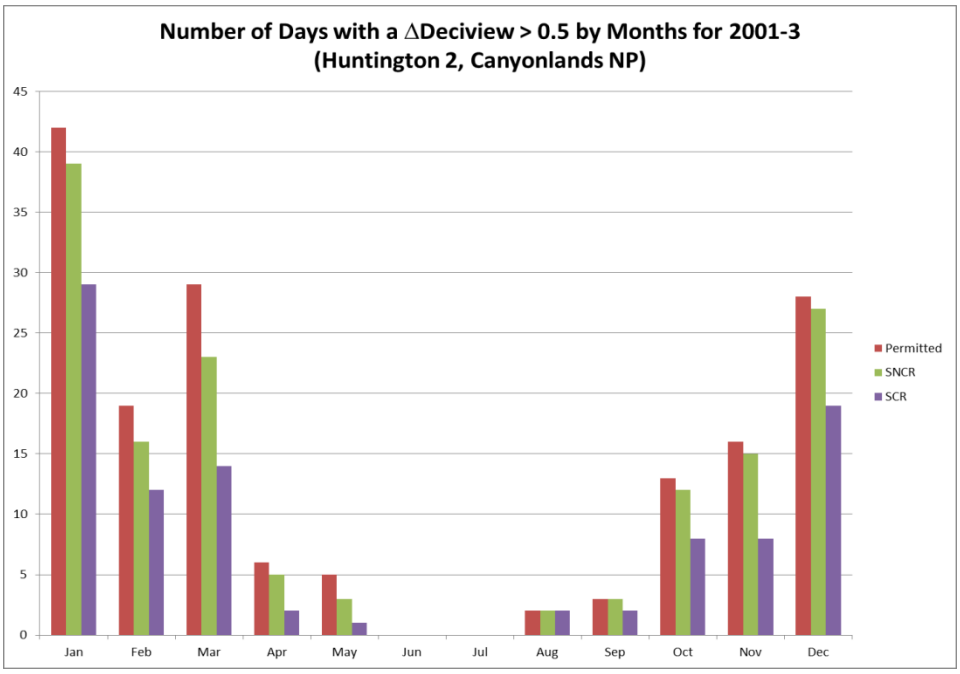
Visibility Impact

PacifiCorp's 2012 modeling showed an improvement in visibility impact due to the installation of either SNCR or SCR (Table 8). Figure 15 shows how the improved days are distributed through the year (results are shown for Huntington 2, similar results are seen for the other 3 units).

Table 8. Modeled Visibility Impact for Control Options

	Current Operation		SNCR		SCR	
	98th Percentile (Δdv)	No. of days >0.5 Δdv	98th Percentile (Δdv)	No. of days >0.5 Δdv	98th Percentile (Δdv)	No. of days >0.5 Δdv
Huntington 1	1.65	64	1.45	57	0.96	38
Huntington 2	1.65	65	1.45	57	0.97	38
Hunter 1	1.75	61	1.51	54	1.00	39
Hunter 2	1.75	61	1.51	54	0.99	39

Figure 15. Modeled days improved at Canyonlands

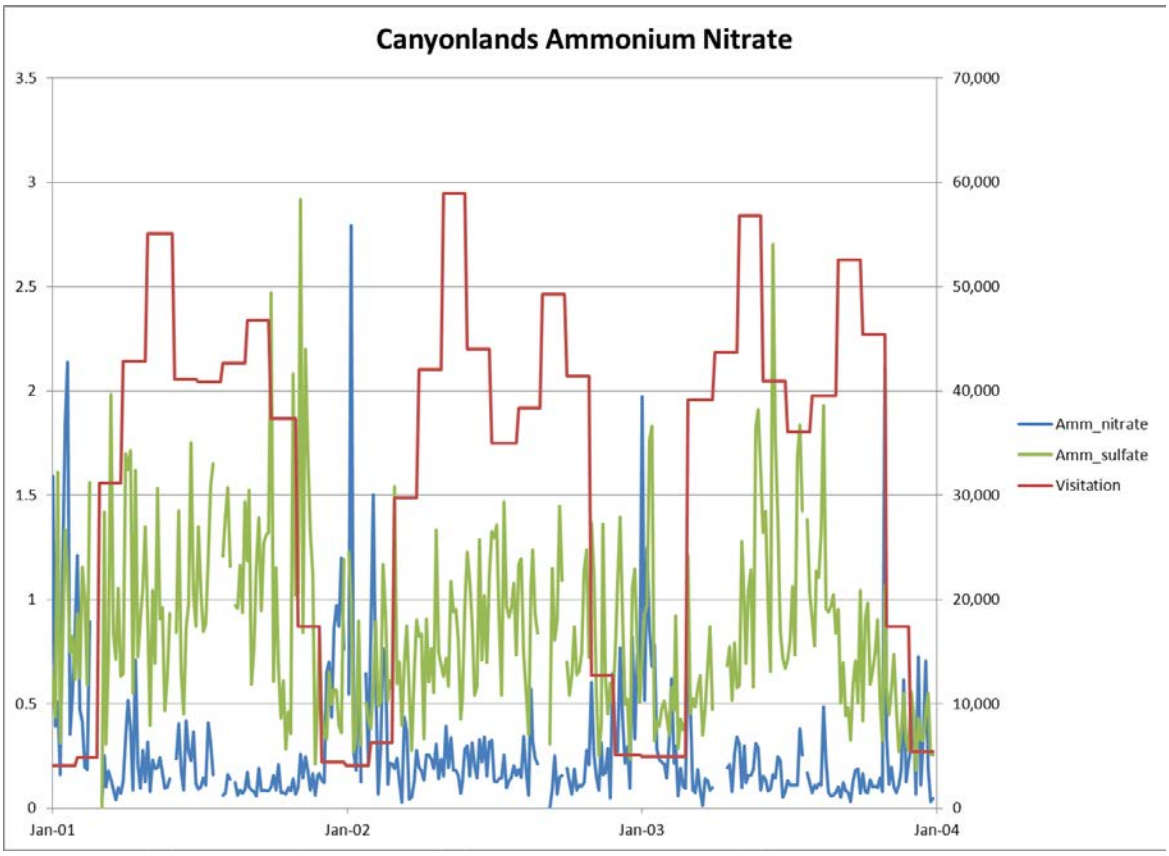


As discussed earlier in the document, the modeled visibility improvement during the winter months of December – February may be overpredicted. DAQ is in the process of remodeling the 2001 – 2003 episodes to incorporate the updated emission rates submitted by PacifiCorp on August 4, 2014. The updated regulatory version of CALPUFF and CALMET will be used along with POSTUTIL to properly apportion ammonia impacts due to multiple units at the plant. DAQ intends to perform a sensitivity analysis for ammonia due to the possibility that Southern Utah is ammonia limited during the winter months. The results of the modeling and the sensitivity analysis will be included in the TSD for public review and comment prior to the start of the comment period. Because the current model results are not validated by the monitoring data, DAQ staff is placing less weight on the modeling results when determining the degree of improvement in visibility which may reasonably be anticipated to result from the use of different technologies.

Seasonal Differences

Sulfate is a problem year round, while the nitrate impact is most significant during the winter months when visitation is low at Utah's national parks, as can be seen in Figure 16. The experience of every visitor is important, but the seasonal differences are important when evaluating the cost/benefit for difference control strategies. A high cost strategy that primarily benefits visibility during low visitation months may not be justified. Utah's RH SIP was weighted to achieve SO_2 reductions because sulfates are a problem year round and sulfates are overall the most significant anthropogenic contributor to haze on the Colorado Plateau.

Figure 16. Seasonal Variability of Ammonium Nitrate Impact and Visitation at Canyonlands



Source: IMPROVE, http://vista.cira.colostate.edu/improve/
National Park Service, http://www.nature.nps.gov/stats/park.cfm

Other Considerations

Timing of Other Regulations

There are a number of new federal regulations that may affect the four subject to BART EGU's. DAQ recognizes that a comprehensive strategy that considers multiple requirements would provide the best outcome for Utah rate payers who will pay for any new pollution controls.

- October 2015, EPA is required to finalize its review of the ozone NAAQS, potentially tightening the standard.
- 2016, plan required to reduce carbon emission from existing power plants under EPA's proposed Clean Power Plan.
- 2017-2019, Source-specific SO_2 monitoring is required under the proposed SO_2 data requirements rule to determine attainment status under NAAQS

2018 SIP Revision

The Regional Haze Rule requires states to submit a new SIP every 10 years with the next major revision due in 2018. The 2018 SIP must establish goals that provide for reasonable progress towards achieving natural visibility conditions by 2064. While BART focused on the direct visibility impact of individual plants including source specific modeling, reasonable progress is a broader goal that will require an evaluation of additional emission reductions that could be achieved from all significant emission sources in Utah. The first planning period was focused on SO_2 reductions. DAQ anticipates that NOx reductions will be important in the next planning period to address the dual requirements of reasonable progress towards the national visibility goal and ozone attainment. NOx controls beyond BART may be required to achieve reasonable progress in the next planning period. By 2018 many of the uncertainties regarding other upcoming regulations will have been resolved providing Utah an opportunity to develop a comprehensive strategy that addresses multiple air quality goals.

Weighting of 5-Factors for PM BART Determination

Because the most stringent technology is in place and the approval orders and operating permits for the Hunter and Huntington plants contain a federally enforceable emission limit for PM, no further analysis is required.

Weighting of 5-Factors for NOx BART Determination

Appendix Y, Section IV(E) establishes the general process for selecting the best alternative for BART and Section IV(E)(5) provides specifics for nitrogen oxide limits for utility boilers. This section states,

> "For coal-fired EGUs greater than 200 MW located at greater than 750 MW power plants and operating without post-combustion controls (i.e., SCR or SNCR), we have provided presumptive NOx limits differentiated by boiler design and type of coal burned. You may determine that an alternative control level is appropriate based on a careful consideration of the statutory factors."

The four subject to BART EGUs are all tangential-fired units that burn bituminous coal. The presumptive NOx emission limit for these units is 0.28 lb/MMBtu. Under Utah's 2008 RH SIP all four EGU's meet the presumptive limit as required by Appendix Y and have met the standard established by EPA as BART. Utah has the option to demonstrate that an alternative control level is appropriate if that is justified by the 5-factor analysis. Since the presumptive BART limit was met by the 2008 BART determination and the controls have already been installed on all four units as required by Utah's SIP, the discussion in this section will focus on whether Utah should choose to go beyond the federal requirement and establish an alternative control level based on a consideration of the five statutory factors.

Utah's Regional Haze SIP demonstrated reasonable progress based on the significant SO_2 emission reductions required by the regional milestones, Utah's smoke management program, and the significant NOx reductions due to the 2008 BART determination and mobile source reductions. Utah's reasonable progress demonstration was fully approved by EPA in 2012 and further emission reductions are not necessary to demonstrate reasonable progress.

The 5-factor analysis provides information about the effect of various control options for BART. States are "free to determine the weight and significance to be assigned to each factor."[13] The preamble to the BART rule states,

> "we also recommend that the States use CALPUFF as a screening application in estimating the degree or visibility improvement that may reasonably be expected from controlling a single source in order to inform the BART determination. As we noted in 2004, this estimate of visibility improvement does not by itself dictate the level of control a State would impose on a source; 'the degree of improvement in visibility which may reasonably be anticipated to result from the use of [BART]' is only one of the five criteria that the State must consider together in making a BART determination. The State makes a BART determination based on the estimates available for each criterion, and as the CAA does not specify how the State should take these factors into account, the States are free to determine the weight and significance to be assigned to each factor." 70 FR 39123

DAQ staff weighted heavily two aspects of the first factor, "cost of compliance": the incremental cost of control between the currently required operations and the SNCR and SCR control scenarios, and the overall cost of control. EPA did not act in a timely manner on Utah's 2008 SIP, allowing controls to be installed on 3 of the 4 EGUs before notifying Utah that the 2008 RH SIP was not adequate and proposing disapproval of Utah's BART determination. PacifiCorp has already incurred capital costs of $587,253,269 to install controls as required by Utah's 2008 BART determination. The 2008 SIP was implemented in good faith by Utah prior to EPA's disapproval, and therefore the cost/benefit analysis must focus on the incremental cost of installing post-combustion controls rather than assuming that the upgrades required in 2008 had never occurred. Even if the upgrades had not occurred, post-combustion controls would have been evaluated as an addition to LNB + OFA rather than an independent control so incremental costs would have been a significant factor. It is also appropriate to weight the incremental cost of control to determine whether an alternative control level is appropriate rather than relying on the presumptive BART level for NOx that EPA has already determined is "highly cost-effective" and "would result in significant improvements in visibility and help to ensure reasonable progress toward the national visibility goal."[14] Focusing specifically on NOx, 11,480 tons of NOx have already been reduced from the 4 subject-to-BART EGUs with an average cost of $307/ton of NOx reduced.

The most stringent control option, SCR would reduce NOx emissions by 2,676 tons/yr (average reduction per EGU) for an incremental cost of $8,794/ton to $11,556/ton (range reflects uncertainty due to Clean Power Plan) while SNCR would reduce NOx emissions by 819 tons/yr (average per EGU) for an incremental cost of $4,246/ton to $5,579/ton (range reflects uncertainty due to Clean Power Plan). The incremental cost to install SCR is very high and is not cost effective. The incremental cost to install SNCR is high and is difficult to justify unless the emission reductions would achieve a significant visibility benefit.

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[13] 40 CFR Appendix Y, section IV.D.5

[14] 70 FR 39131

When considering the second aspect of the "cost of compliance," the overall cost of control, the fact that the Carbon Power Plant is scheduled to close in 2015 resulting in significant reductions of SO_2 and NOx was an important consideration. These reductions will achieve a comparable visibility benefit to the installation of SCR on the Hunter and Huntington EGUs with no additional cost, but would need to be made enforceable to ensure that the plant is not reopened at a later date. DAQ staff also considered the system wide costs that PacifiCorp has already incurred due to the regional haze requirements in Wyoming, Arizona, and Colorado.

DAQ staff weighted heavily the fifth factor, the "degree of improvement in visibility which may reasonably be anticipated to result from the use of BART." Four aspects of visibility improvement were considered equally:

1) The results of the CALPUFF visibility modeling that estimated a significant visibility improvement, using conservative assumptions (natural conditions, highest emission rate, 98th percentile impact).

2) The results of the regional modeling conducted by the WRAP and referenced in Section K of Utah's RH SIP that shows a more modest improvement despite significant regional emission reductions.

3) The monitoring data that do not show visibility improvement at Canyonlands on high nitrate days during the months of December – February. The significant reductions in both SO_2 and NOx that have already occurred due to the 2008 BART determination have resulted in a shift from sulfate to nitrate during the winter at Canyonlands rather than a decrease in total aerosols.

4) The low visitation at Utah's Class I areas during the winter months of December – February when nitrate is most likely to impair visibility. Utah's RH SIP appropriately focused on SO_2, achieving significant benefits during the high visitation months of March – November.

DAQ staff also weighted heavily the uncertainty created by upcoming regulations, particularly the proposed Clean Power Plan rule. The Clean Power Plan rule, as proposed, significantly affects the fourth factor, "remaining useful life," and the first factor, "cost of compliance." Cost of compliance is expressed as cost/ton (a reduction in "remaining useful life" would increase the annualized cost in the numerator while lower utilization would decrease the emission reductions in the denominator leading to an overall higher cost of compliance). DAQ staff also considered that a new RH SIP revision is due in 2018 and potential emission reductions from all significant sources, including EGUs, must be evaluated for the next planning period. NOx reductions are expected to be important in the next RH SIP to address the dual requirements of regional haze and ozone. By 2018 the state plan required by the Clean Power Plan rule will be completed, providing greater certainty regarding the cost and potential emission reductions due to the installation of post-combustion NOx controls.

Staff Recommendation

Staff recommends that the Board retain the 2008 BART determination with the following changes:

1. Correct the typographical error in Table 5 of the SIP to reflect the 0.015 lb/MMBtu PM limit in the approval orders for Hunter Units 1 and 2 and include the 74 lb/hr emission rate for Huntington Unit 1 and the 70 lb/hr emission rate for Huntington Unit 2.
2. Add an enforceable requirement to shut down Carbon Unit 1 and Carbon Unit 2 by April 15, 2015.
3. Add enforceable BART conditions to Part H of the SIP to address EPA's determination that the approval orders and operating permits for PacifiCorp's Hunter and Huntington plants are not practicably enforceable.

Utah State Implementation Plan

Section XX

Regional Haze

Addressing Regional Haze Visibility Protection for the Mandatory Federal Class I Areas Required Under 40 CFR 51.309

Adopted by the Air Quality Board
[~~April 6, 2011~~]January 7, 2015

1

6. Best Available [~~Control~~]Retrofit Technology (BART) Assessment for NO_x and PM.

a. Regional Haze Rule BART Requirements

Pursuant to 40 CFR 51.309(d)(4)(vii), certain major stationary sources are required to evaluate, install, operate and maintain BART technology or an approved BART alternative for NO_x and PM emissions. BART requirements can be addressed through a case-by-case review under 40 CFR 51.308(e)(1) or through an alternative program under 40 CFR 51.308(e)(2). The State of Utah has chosen to evaluate BART for NO_x and PM under the case-by-case provisions of 40 CFR 51.308(e)(1). BART for SO_2 is addressed through an alternative program under 40 CFR 51.309 that is described in Part E of this plan.

EPA issued guidelines for BART determinations on July 6, 2005 that are codified in Appendix Y to 40 CFR Part 51. These guidelines establish a three step process.

- States identify sources which meet the definition of BART eligible
- States determine which BART eligible sources are "subject to BART"
- For each source subject to BART States identify the appropriate control technology.

The determination of NO_x limits for fossil-fuel fired power plants having a total generating capacity greater than 750 megawatts must be made pursuant to the guidelines in 40 CFR 51 Appendix Y, Section E.5. [1]

b. BART-Eligible Sources.

BART-eligible sources are those sources that fall within one of 26 specific source categories, were built during the 15-year window of time from 1962 to 1977, and have potential emissions of at least 250 tons per year of any visibility impairing air pollutant (40 CFR 51.301). Pursuant to 40 CFR 51.308 (e)(1)(i) a State is required to list all BART-eligible sources within the State.

Four BART-eligible electric generating units have been identified in the State of Utah: PacifiCorp's Hunter Units 1 and 2 and Huntington Units 1 and 2. The units are located at fossil-fuel fired steam electric plants of more than 250 million Btu per hour heat input, one of the 26 specific BART source categories. The units have potential emissions greater than 250 tons per year of a visibility impairing pollutant. The units had commenced construction within the BART time frame of August 7, 1962 to August 7, 1977.

[1] 40 CFR Part 51 Appendix Y Guidelines for BART Determinations under the Regional Haze Rule (70 FR 39158)

Table 1. BART-Eligible Sources in Utah.

SOURCE	UNIT ID	SERVICE DATE	NET DEPENDABLE CAPACITY (MWn)	BART CATEGORY	COAL TYPE	BOILER TYPE
Hunter	1	1978	430	Fossil fuel fired	Bituminous	Tangential
Hunter	2	1980	430	Fossil fuel fired	Bituminous	Tangential
Huntington	1	1977	430	Fossil fuel fired	Bituminous	Tangential
Huntington	2	1974	430	Fossil fuel fired	Bituminous	Tangential

Note: Hunter Unit 3 commenced construction after 1977 and is therefore not BART-eligible.

c. Sources Subject to BART

Pursuant to 40 CFR 51.308(e)(1)(ii) the State is required to determine which BART-eligible sources are also "subject to BART." BART-eligible sources are subject to BART if they emit any air pollutant that may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area.

PacifiCorp's Hunter Units 1 and 2 and Huntington Units 1 and 2 were determined by the State to be subject to BART. The State utilized the technical modeling services of the WRAP Regional Modeling Center (RMC). Modeling was performed according to the RMC modeling protocols[2]. For the WRAP BART exemption screening modeling, the RMC followed the EPA BART Guidelines in 40 CFR 51, Appendix Y and the applicable CALMET/CALPUFF modeling guidance (e.g., IWAQM, 1998; FLAG, 2000; EPA, 2003c) including EPA's March 16, 2006 memorandum: "Dispersion Coefficients for Regulatory Air Quality Modeling in CALPUFF".[3]

The basic assumptions of the WRAP BART CALMET/CALPUFF modeling protocols are as follows:

- Three years of modeling (2001, 2002 and 2003) were used.
- Visibility impacts due to emissions of SO_2, NO_x and primary PM emissions were calculated
- Visibility was calculated using the Original IMPROVE equation and Annual Average Natural Conditions.
- The effective range of CALPUFF modeling was set at 300km from the sources
- For pre-control modeling, maximum 24-hour average actual emissions from the Acid Rain database were used in CALPUFF model.

[2] CALMET/CALPUFF Protocol for BART Exemption Screening Analysis for Class I Areas in the Western United States

[3] Atkinson and Fox, 2006

- ~~For post-control modeling, expected New Source Review (NSR) permitted limits were used in the CALPUFF model.~~

According to 40 CFR Part 51, Appendix Y, a BART-eligible source is considered to "contribute" to visibility impairment in a Class I area if the modeled 98th percentile change in deciviews is equal to or greater than the "contribution threshold." The State of Utah evaluated BART exemption screening modeling results at the EPA-suggested contribution threshold of 0.5 deciviews within a 300 Km radius of the BART-eligible sources.[4] BART-eligible sources Hunter Unit 1, Hunter Unit 2, Huntington Unit 1, and Huntington Unit 2 had a modeled impact greater than the threshold level of 0.5 change in deciviews in at least one of the seven Class I areas within a 300 km radius of the sources.

[4] WRAP RMC BART Modeling for Utah Draft #6 April 21, 2007

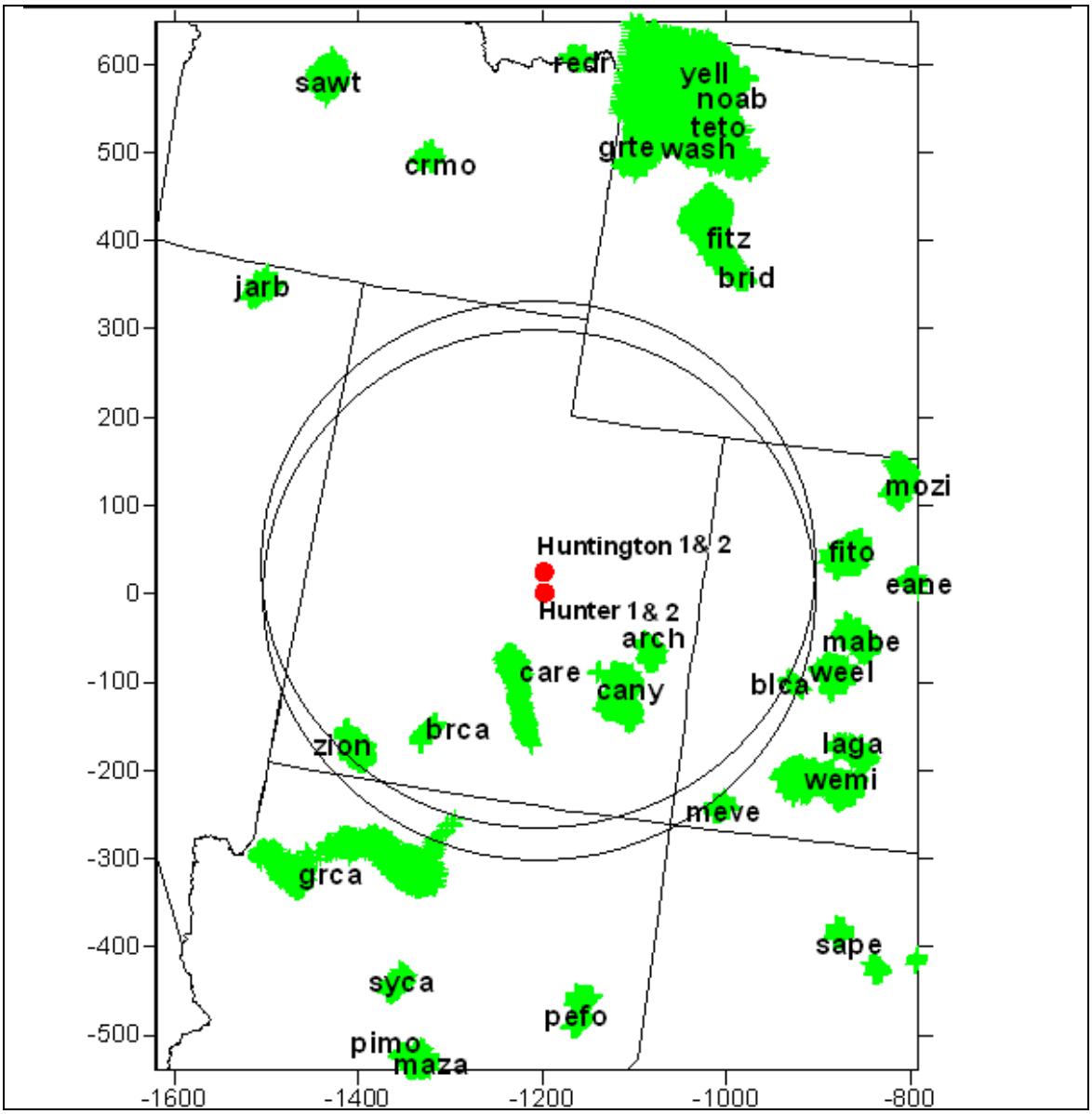

Figure 1. Relationship between Utah potential BART-eligible sources and Class I areas. Hunter Units 1 and 2 and Huntington Units 1 and 2 modeled separately at maximum 300 km.

Table 2. Subject to BART Modeling

	Subject to BART Modeling - 98th Percentile 3 year average Delta Deciview							
	Capitol Reef	Canyonlands	Arches	Bryce Canyon	Zion	Grand Canyon	Black Canyon Gunnison	Mesa Verde
Hunter 1	2.13	1.87	1.53	0.55	0.46	0.59	0.60	0.53
Hunter 2	1.89	1.62	1.36	0.47	0.41	0.52	0.53	0.47
Huntington 1	1.92	1.64	1.39	0.48	0.43	0.55	0.56	0.48
Huntington 2	2.43	2.26	1.89	.091	.078	.099	1.14	0.91

d. BART [~~Determination~~]Analysis

As required under 51.308 (e)(1)(A) the determination of BART must be based on an analysis of the best system of continuous emission control technology available. In the analysis the State must take in to account five factors:

- Available technology
- Costs of compliance
- Energy and non-air quality environmental impacts
- Existing control equipment and the remaining useful life of the facility
- The degree of improvement in visibility reasonably anticipated to result from the use of such technology

40 CFR Part 51 Appendix Y (Appendix Y) requires coal-fired electric generating plants of greater than 750 MW to meet BART presumptive limits. The four subject-to-BART EGUs meet the presumptive limit for SO_2 and NOx as required by Appendix Y[5] While EPA considers presumptive limits to be appropriate for all coal-fired power plants greater than 750 MW, the State may establish different requirements if the State can demonstrate that an alternative is justified based on a consideration of the five BART factors.

> "For Coal-fired EGU's greater than 200 MW located at greater than 750 MW power plants and operating without post-combustion controls (i.e. SCR or SNCR), we have provided presumptive NOx limits, differentiated by boiler design and type of coal burned. You may determine that an alternative control level is appropriate based on careful consideration of the statutory factors." (Appendix Y Part 51 – IV (E)(5)).[6]

In 2008 Utah determined that BART for NOx and PM was the emission rate established in approval orders for the subject-to-BART EGUs that met the presumptive BART emission rate established in Appendix Y. Utah relied on EPA's extensive technical work that was developed to support the presumptive limits to meet the requirement for a 5-factor analysis. PacifiCorp installed the control technology, as required, and significant emission reductions of SO_2, NOx, and PM were achieved.

[5] Utah developed an alternative to BART program for SO_2 in Part E of this plan, however, the four subject-to-BART EGU's also meet the presumptive BART limits for SO_2 independently of the alternative program.

[6] 70 Federal Register 39171

Table 3. [~~Table 6.~~]Change in Actual Emissions (tons/yr) for Retrofitted Subject-to-BART EGUs.

Unit	Pre-Control SO_2	Pre-Control NO_x	Post-Control SO_2	Post-Control NO_x	Delta SO_2	Delta NO_x
Hunter 1	2,535	6,380	*	*	*	*
Hunter 2	2,531	6,092	1,529	3,412	-1,003	-2,680
Huntington 1	2,380	5,944	1,033	3,593	-1,213	-2,352
Huntington 2	12,308	5,816	1,168	3,844	-11,121	-1,973

Note: Pre-control emissions 2001-2003 (2002 excluded for Huntington 2 due to partial operation), Post-control emissions 2012-2013. The upgrades were completed on Hunter 1 in the Spring of 2014 therefore actual emissions are not yet available but should be comparable to Hunter 2. PM emissions are not comparable due to significant changes in reporting methodology.

On December 12, 2012, the EPA disapproved Utah's BART determination for NOx and PM after concluding that EPA's own technical analysis did not satisfy the 5-factor analysis requirement in the BART Rule. In June 2012 PacifiCorp provided a new 5-factor analysis for each of the four subject to BART EGUs. On August 4, 2014 PacifiCorp provided additional information to supplement that analysis.

The Division of Air Quality's detailed review of the 5-factor analysis is included in the Technical Support Document.[7] The currently installed baghouse technology is the most stringent technology available for control of particulate matter. The currently installed low-NOx burners with overfire air meet the presumptive BART emission rate established in Appendix Y and were cost-effective with an average cost of $307/ton. After carefully considering the 5 factors, post-combustion controls for NOx are not justifiable.

Significant emission reductions (8,005 tons/yr SO_2 and 3.342 tons/yr NOx) beyond those achieved through the installation of BART will occur due to the expected closure of PacifiCorp's Carbon Plant in 2015. The Carbon Plant is located 30 miles northeast of the Huntington Plant and 40 miles northeast of the Hunter Plant and affects visibility in the same general area as the Hunter and Huntington Plants.

[7] Utah Division of Air Quality, Staff Review of 2008 Best Available Retrofit Technology (BART) Determination, September 12, 2014.

e. BART Determination

The State of Utah reaffirms the 2008 determination that the following retrofit control equipment at the Hunter Unit 1, Hunter Unit 2, Huntington Unit 1, and Huntington Unit 2 EGUs is BART.

[~~PacifiCorp has installed or has received permits to install the following retrofit control equipment at the Hunter Unit 1, Hunter Unit 2, Huntington Unit 1, and Huntington Unit 2 fossil fuel fired electric generating units (EGU):~~]

Hunter Units 1 and 2:

- Conversion of existing electrostatic precipitators to pulse jet fabric filter bag-houses
- The replacement of existing, first generation low-NO_x burners with Alstom TSF 2000TM low-NO_x firing system and installation of two elevations of separated overfire air.
- Upgrade of existing flue gas desulfurization system to > 90% sulfur dioxide removal.

Huntington Units 1 and 2:

- Conversion of existing electrostatic precipitators to pulse jet fabric filter bag-houses
- The replacement of existing, first generation low-NO_x burners with Alstom TSF 2000TM low-NO_x firing system and installation of two elevations of separated overfire air.
- Installation of a new wet-lime, flue gas de-sulfurization system at Unit 2 (FGD).
- Upgrade of existing flue gas desulfurization system to > 90% sulfur dioxide removal at Unit 1.

Carbon Units 1 and 2

- PacifiCorp shall retire Carbon Units 1 and 2 by April 15, 2015

The BART emission rates for NOx and PM are summarized in Table 6. While Utah has chosen to meet the SO_2 BART requirement through an alternative to BART program established in Part E of this plan, the SO_2 emission rate established in the approval orders for the four EGUs meets the presumptive SO_2 emission rate established in Appendix Y independently of the alternative program. The enforceable BART emission limits and monitoring requirements are included in Section IX, Part H.21 and H.22 of the State Implementation Plan.

Table 4. [~~Table 5.~~]Emissions Rates [~~(lb/MMBtu)~~]for the Retrofitted Hunter and Huntington Units

Units	Utah [~~Permitted Rates~~]BART Emission Rate[8]			Presumptive BART Limits[9]	
~~Rate: lb/MMBtu~~	SO_2 lb/MMBtu	NOx lb/MMBtu	PM lb/MMBtu	SO_2 lb/MMBtu	NO_x lb/MMBtu
Hunter 1	0.12	0.26	0.015	0.15	0.28
Hunter 2	0.12	0.26	0.015	0.15	0.28
			lb/hr		
Huntington 1	0.12	0.26	[~~0.05~~] 74 (PM_{10})	0.15	0.28
Huntington 2	0.12	0.26	[~~0.05~~]70	0.15	0.28

~~**Table 6. Change in Emissions (tons/yr) for Retrofitted BART Units**~~

~~**Unit**~~	~~**Pre-Control SO_2**~~	~~**Pre-Control NOx**~~	~~**Pre-Control PM_{10}**~~	~~**Post-Control SO_2**~~	~~**Post-Control NO_x**~~	~~**Post-Control PM_{10}**~~	~~**Delta SO_2**~~	~~**Delta NO_x**~~	~~**Delta PM_{10}**~~
~~**Hunter 1**~~	~~2741~~	~~6833~~	~~533~~	~~2239~~	~~4851~~	~~280~~	~~-502~~	~~-1981~~	~~**-253**~~
~~**Hunter 2**~~	~~2425~~	~~5922~~	~~533~~	~~2185~~	~~4734~~	~~273~~	~~-240~~	~~-1187~~	~~**-260**~~
~~**Huntington 1**~~	~~2538~~	~~5676~~	~~444~~	~~2052~~	~~4445~~	~~256~~	~~-486~~	~~-1231~~	~~**-188**~~
~~**Huntington 2**~~	~~13703~~	~~5582~~	~~443~~	~~1743~~	~~3776~~	~~218~~	~~-11960~~	~~-1806~~	~~**-225**~~
~~**TOTALS**~~	~~**21,407**~~	~~**24,013**~~	~~**1,953**~~	~~**8,219**~~	~~**17,807**~~	~~**1,027**~~	~~**-13,189**~~	~~**-6,206**~~	~~**-926**~~

Pursuant to 51.308(e)(1)(C)(iv) each source subject to BART is required to install and operate BART no later than 5 years after approval of the implementation plan. The 5-year deadline was met for all four units.[~~The PacifiCorp schedule for the four EGUs at Huntington and Hunter sources is as follows.~~]

Source	Notice of Intent Submitted	Permit Issued	Estimated In Service Date
Hunter 1	June 2006	March 2008	Spring 2014
Hunter 2	June 2006	March 2008	Spring 2011
Huntington 1	April 2008	August 2009	Fall 2010
Huntington 2	October 2004	April 2005	Dec 2006

[8] ~~Utah Division of Air Quality Approval Orders: Huntington Unit 2 – AN0238012-05, Huntington Unit 1 – DAQE-AN0102380019-09 (note – on January 19, 2010 an administrative amendment was made to the 2009 AO), Hunter Units I and 2 – DAQE-AN0102370012-08~~

[9] 40 CFR Part 51 Appendix Y Guidelines for BART Determinations under the Regional Haze Rule (70 Federal Register 39135)

[~~EPA under the BART Rule requires coal-fired electric generating plants of greater than 750 MW to meet BART presumptive limits. While EPA considers presumptive limits to be appropriate for all coal-fired power plants greater than 750 MW, the State may establish different requirements if the State can demonstrate that an alternative is justified based on a consideration of the five BART factors.~~

> ~~"States, as a general matter, must require owners and operators of greater than 750 MW power plants to meet these BART emission limits… a State may establish different requirements if the State can demonstrate that an alternative determination is justified based on a consideration of the five statutory factors."~~[10]
>
> ~~"For Coal-fired EGU's greater than 200 MW located at greater than 750 MW power plants and operating without post-combustion controls (i.e. SCR or SNCR), we have provided presumptive NOx limits, differentiated by boiler design and type of coal burned. You may determine that an alternative control level is appropriate based on careful consideration of the statutory factors." (Appendix Y Part 51 – IV (E)(5).~~[11]

~~EPA determined presumptive limits for SO_2 and NO_x for EGUs based on a methodology equivalent to that required in 50 CFR 51 Appendix Y for BART Rule. The EPA determination of presumptive limits included:~~

- ~~Identification of all potential BART-eligible EGUs (all BART-eligible EGU's were assumed to be Subject to BART)~~
- ~~Technical analyses and industry research to determine applicable and appropriate SO_2 and NO_x control options,~~
- ~~Economic analysis to determine cost effectiveness for each potentially BART-eligible EGU~~
- ~~Evaluation of historical emissions and forecast emission reductions for each potentially BART-eligible EGU~~[12]~~.~~
- ~~NOx and SO_2 CALPUFF modeling of emission impacts at model Class I area.~~

> ~~The analysis included 491 potential BART EGUs including Hunter Units 1 and 2 and Huntington Units 1 and 2. The technical analysis conducted by EPA to determine presumptive BART limits for SO_2 and NO_x is in effect a BART~~

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[10] ~~Ibid. (70 Federal Register 39131).~~

[11] ~~70 Federal Register 39171~~

[12] ~~Ibid. (70 Federal Register 39134)~~

~~determination analysis for 419 EGUs including Hunter Units 1 and 2 and Huntington Units 1 and 2.~~[13]

~~Section IV (E) (5) of Appendix Y Part 51 clearly requires the implementation of presumptive NOx limits for coal-fired EGU's greater than 200 MW located at greater than 750 MW power plants. Under Appendix Y, states are given the discretion to challenge presumptive limits through a five factor analysis, but presumptive limits were developed by EPA as a reasonable, equivalent and mandated substitution for a five factor analysis.~~[14]

]

Utah's long-standing Prevention of Significant Deterioration (PSD) permitting program (SIP Section VII and R307-405), New Source Review permitting program (SIP Section II and R307-401) and Visibility program (SIP section XVII and R307-406) will continue to protect Class I area visibility by ensuring that the BART emission rates established in Part H.21 and H.22 of this plan are maintained, requiring best available control technology for new sources, and assuring that there is not a significant degradation in visibility at Class I areas due to new or modified major sources.

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[13] ~~"Methodology for Developing BART NOx Presumptive Limits" EPA Clean Air Market Division June 15, 2005 HQ-OAR-2002-0076-0445 and "Technical Support Document for BART NOx Limits for Electric Generating Units Excel Spreadsheet, Memorandum April 15, 2005 HQ-OAR-2002-0076-0369~~

[14] ~~CFR Part 51 Appendix Y Guidelines for BART Determinations under the Regional Haze Rule (70 Federal Register 39171)~~

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Utah State Implementation Plan

Emission Limits and Operating Practices

Section IX, Part H

Adopted by the Air Quality Board
[~~December 3, 2014~~]January 7, 2015

SIP Section IX.H.21 and 22

1

H.21. General Requirements: Control Measures for Area and Point Sources, Emission Limits and Operating Practices, Regional Haze Requirements

a. Except as otherwise outlined in individual conditions of this Subsection IX.H.21 listed below, the terms and conditions of this Subsection IX.H.21 shall apply to all sources subsequently addressed in Subsection IX.H.22. Should any inconsistencies exist between these two subsections, the source specific conditions listed in IX.H.22 shall take precedence.

b. The definitions contained in R307-101-2, Definitions, apply to Section IX, Part H.

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.

d. All emission limitations listed in Subsections IX.H.22 apply during steady-state operation, unless otherwise specified in the source specific conditions listed in IX.H.22.

e. Stack Testing:

i. As applicable, stack testing to show compliance with the emission limitations for the sources in Subsection IX.H.22 shall be performed in accordance with the following:

A. Sample Location: The testing point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, or other EPA-approved methods acceptable to the Director.

B. Volumetric Flow Rate: 40 CFR 60, Appendix A, Method 2 or other EPA-approved testing methods acceptable to the Director.

C. Particulate (PM): 40 CFR 51, Appendix M, Method 5B, or other EPA approved testing methods acceptable to the Director. The back half condensibles shall also be tested using Method 202. The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

D. Calculations: To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors to give the results in the specified units of the emission limitation.

E. A stack test protocol shall be provided at least 30 days prior to the test. A pretest conference shall be held if directed by the Director.

f. Continuous Emission and Opacity Monitoring.

i. For all continuous monitoring devices, the following shall apply:

A. Except for system breakdown, repairs, calibration checks, and zero and span adjustments required under paragraph (d) 40 CFR 60.13, the owner/operator of an affected source shall continuously operate all required continuous monitoring systems and shall meet minimum frequency of operation requirements as outlined in R307-170 and 40 CFR 60.13.

B. The monitoring system shall comply with all applicable sections of R307-170; 40 CFR 13; and 40 CFR 60, Appendix B – Performance Specifications.

H.22. Source Specific Emission Limitations: Regional Haze Requirements, Best Available Retrofit Technology

a. PacifiCorp Hunter

i. Particulate Limitations on Units #1 and #2

A. Emissions of particulate (PM) shall not exceed 0.015 lb/MMBtu heat input from each boiler based on a 3-run test average.

B. Stack testing for the emission limitation shall be performed each year on each boiler.

ii. NOx Limitations on Units #1 and #2

A. Emissions of NOx from each boiler shall not exceed 0.26 lb/MMBtu heat input for a 30-day rolling average.

B. Measuring of all NOx emissions shall be performed by CEM.

b. PacifiCorp Huntington

i. Conditions on Boiler Unit #1

A. Emissions of PM10 shall not be greater than 74 lb/hr.

B. Stack testing to show compliance with the PM10 emission limitation shall be performed each year.

C. Emissions of NOx shall be no greater than 0.26 lb NOx/MMBtu heat input (1,290 lb/hr) on a 30-day rolling average.

D. Measuring of all NOx emissions shall be performed by CEM.

ii. Conditions on Boiler Unit #2

A. Emissions of particulate matter (PM) from Boiler Unit #2 shall not be greater than 70 lb/hr.

B. Stack testing to show compliance with the PM emission limitation shall be performed each year.

C. Emissions of NOx shall be no greater than 0.26 lb/MMBtu heat input on a 30-day rolling average.

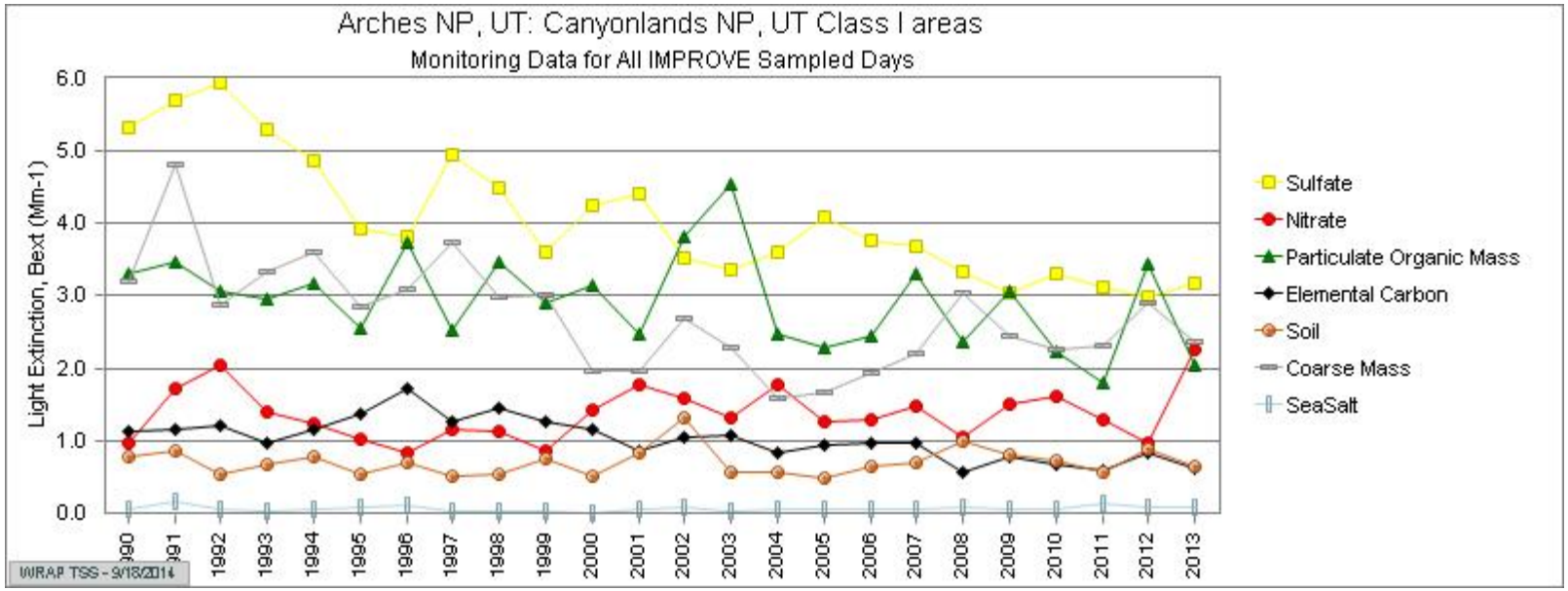
D. Measuring of all NOx emissions shall be performed by CEM.

Review of 2008 BART Determination

Utah Air Quality Board

October 1, 2014

Colleen Delaney, Environmental Scientist


Arches NP, UT: Canyonlands NP, UT Class I areas
Monitoring Data for All IMPROVE Sampled Days
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1998
1999
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2001
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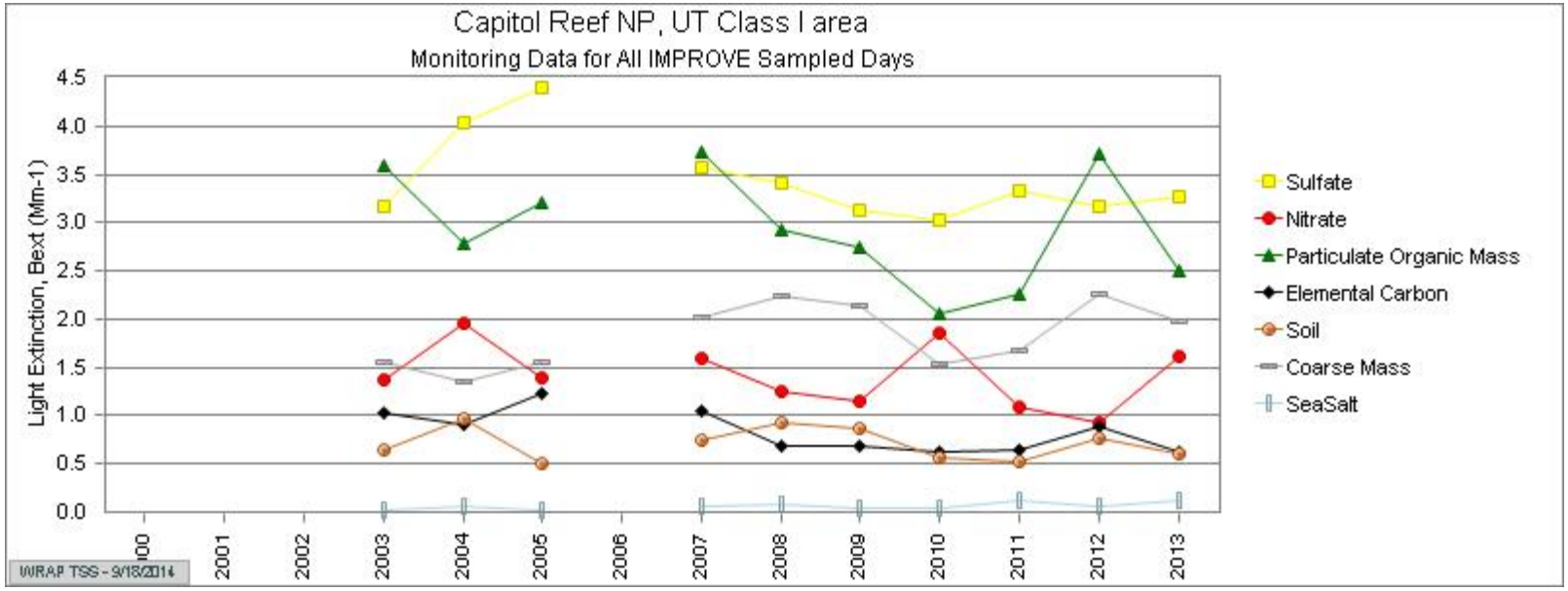
Nitrate
Particulate Organic Mass
Elemental Carbon
Soil
Coarse Mass
SeaSalt
WRAP TSS - 9/18/2014


Capitol Reef NP, UT Class I area
Monitoring Data for All IMPROVE Sampled Days
Light Extinction, Bext (Mm-1)
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4.0
3.5
3.0
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2.0
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0.5
0.0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
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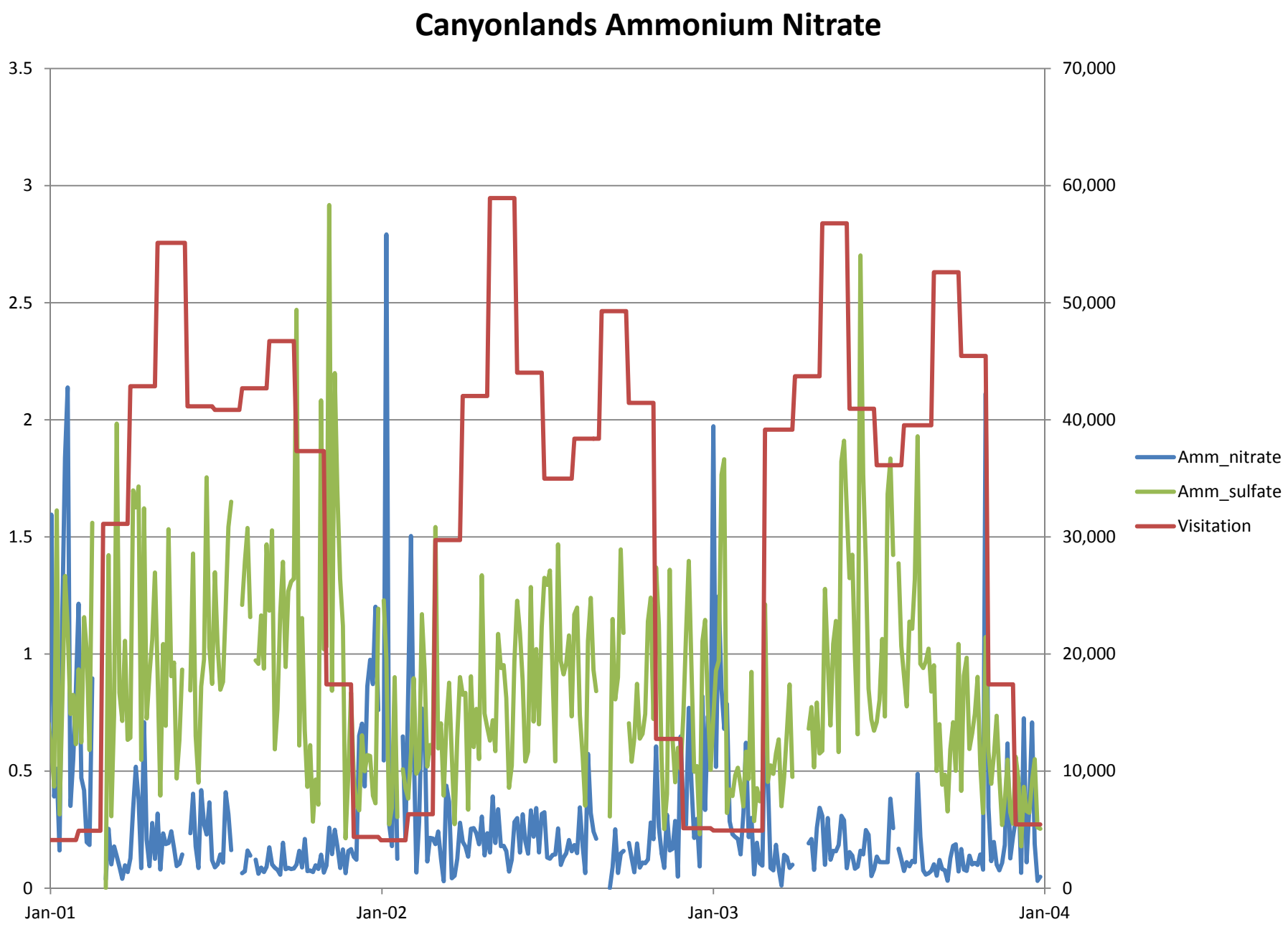
2013
Sulfate
Nitrate
Particulate Organic Mass
Elemental Carbon
Soil
Coarse Mass
SeaSalt
WRAP TSS - 9/18/2014


Canyonlands Ammonium Nitrate
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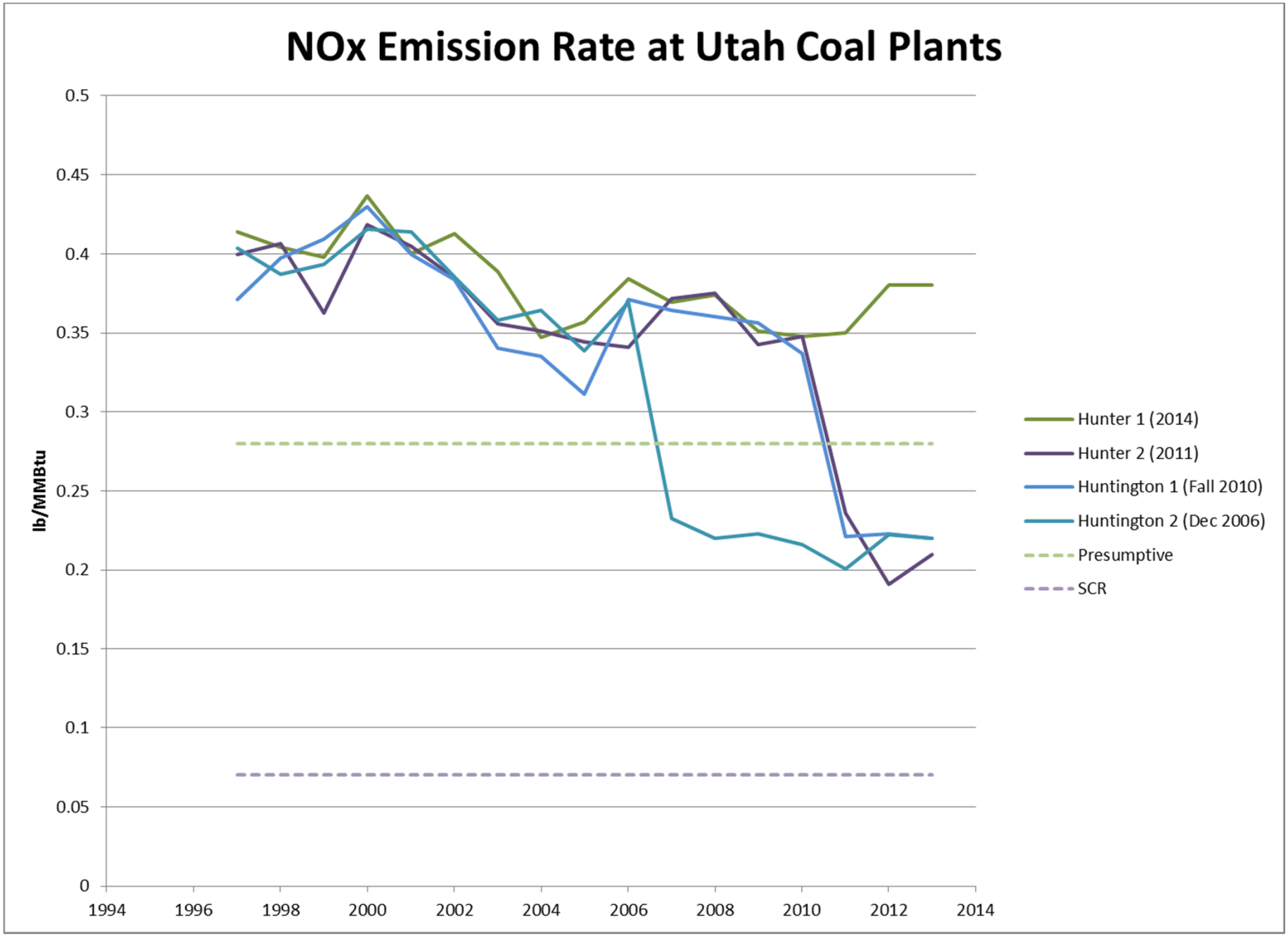
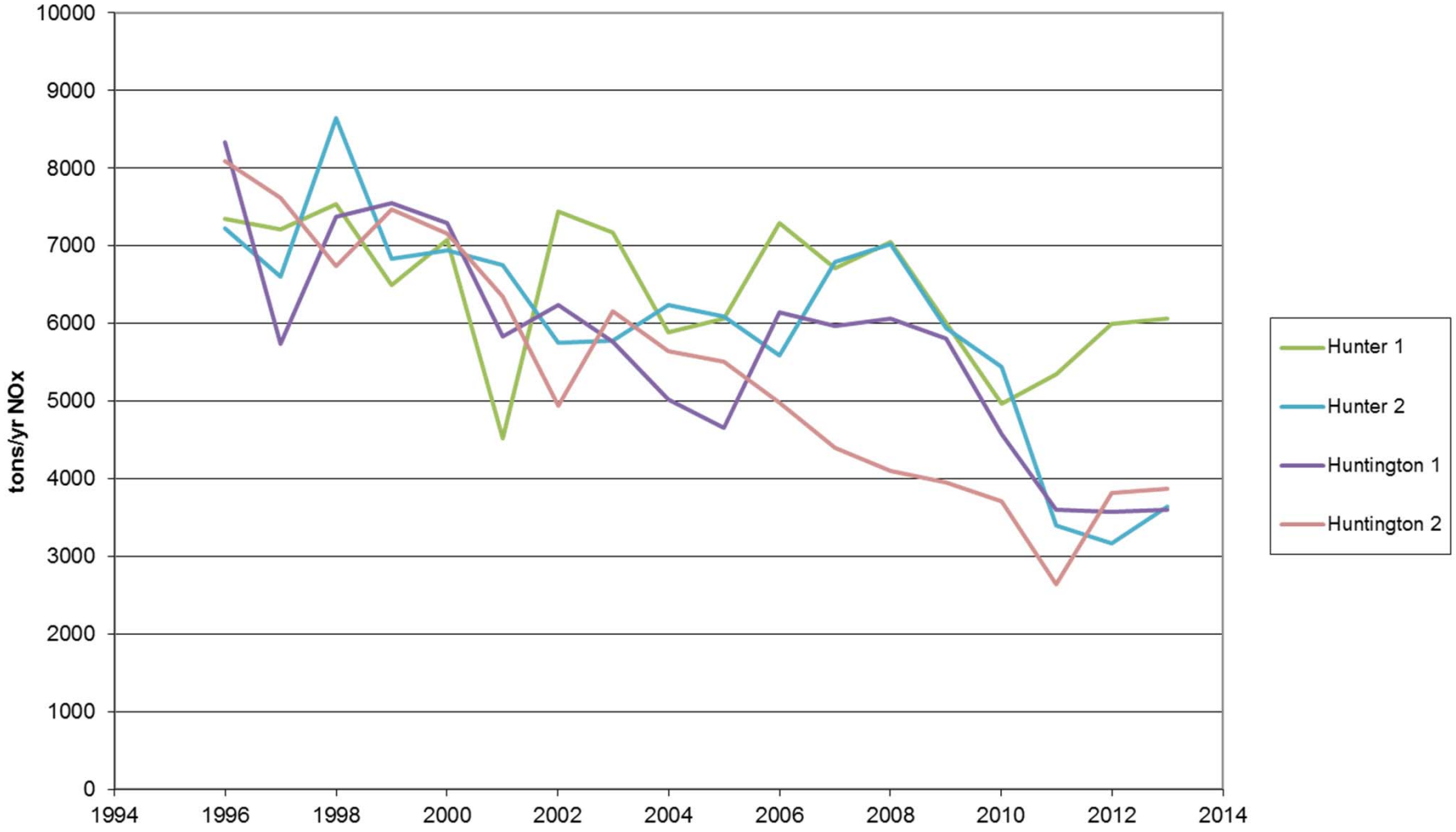
3
2.5
2
1.5
1
0.5
0
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Jan-01
Jan-02
Jan-03
Jan-04
Amm_nitrate
Amm_sulfate
Visitation

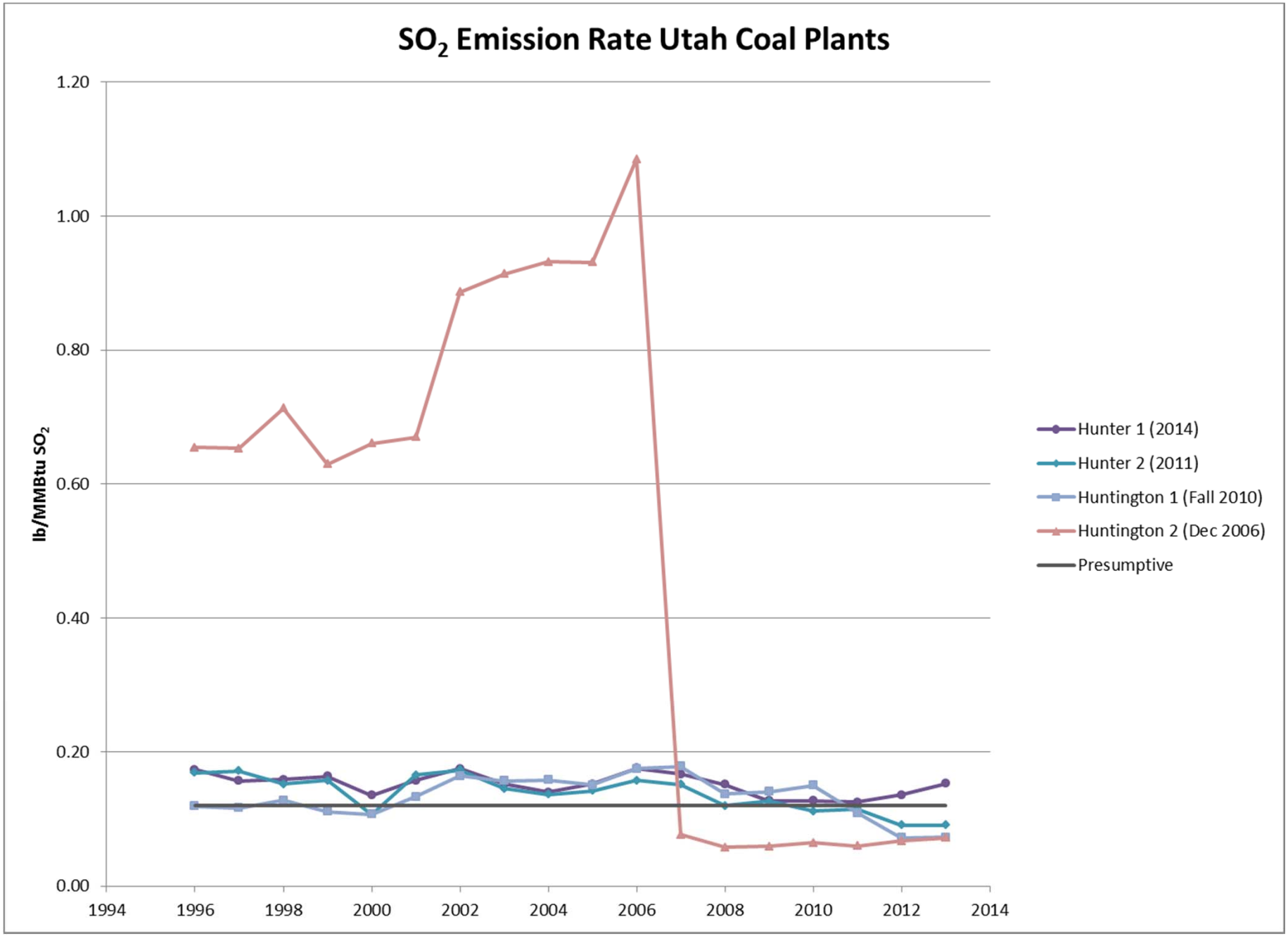
2008 BART Determination for NOx and PM

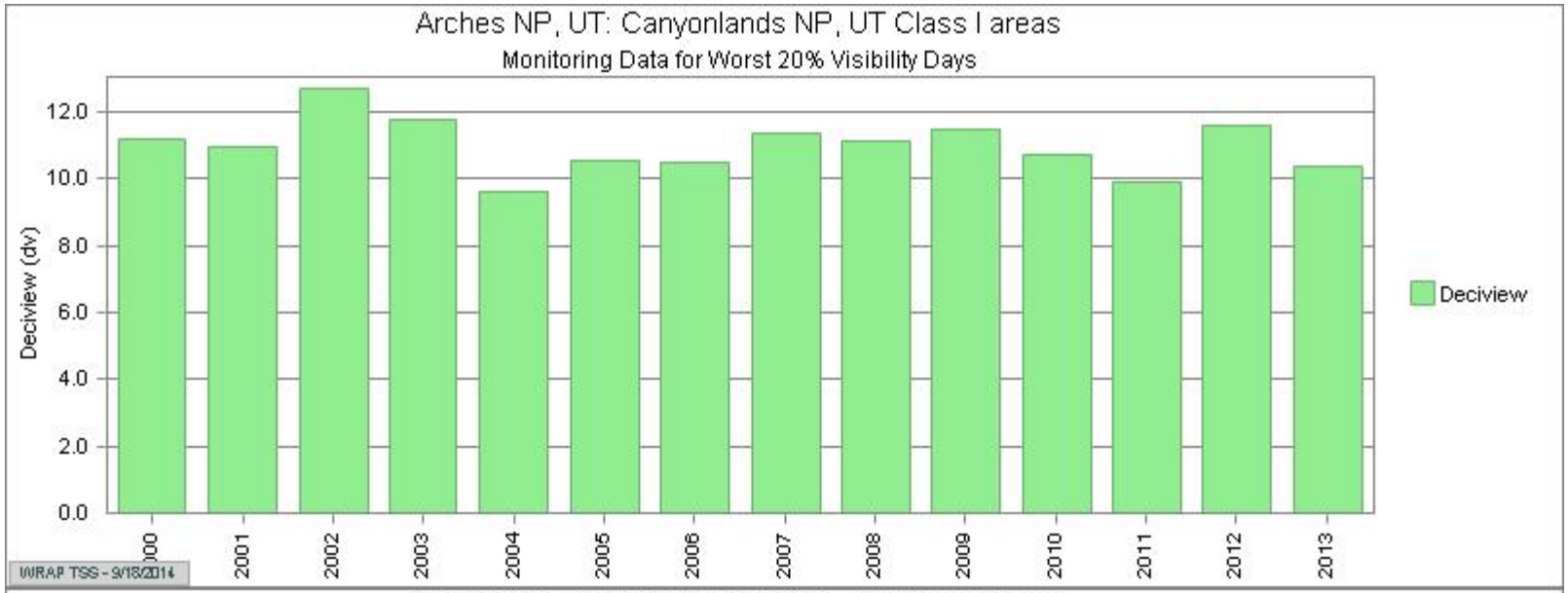
- Hunter Units 1 and 2, Huntington Units 1 and 2
  - Required installation of low-NOx burners with overfire air
  - NOx emission rate of 0.26 lb/MMBtu meets the presumptive limit of 0.28 lb/MMBtu
  - Required replacement of electrostatic precipitators with baghouses, the most stringent control technology
    - Baghouses in conjunction with SO_2 scrubbers also reduce mercury as required by R307-424 that was adopted in 2007
- BART Retrofits installed as required by Utah's SIP
  - Dec 2006 Huntington Unit 2
  - Fall 2010 Huntington Unit 1
  - Spring 2011 Hunter Unit 2
  - Spring 2014 Hunter Unit 1

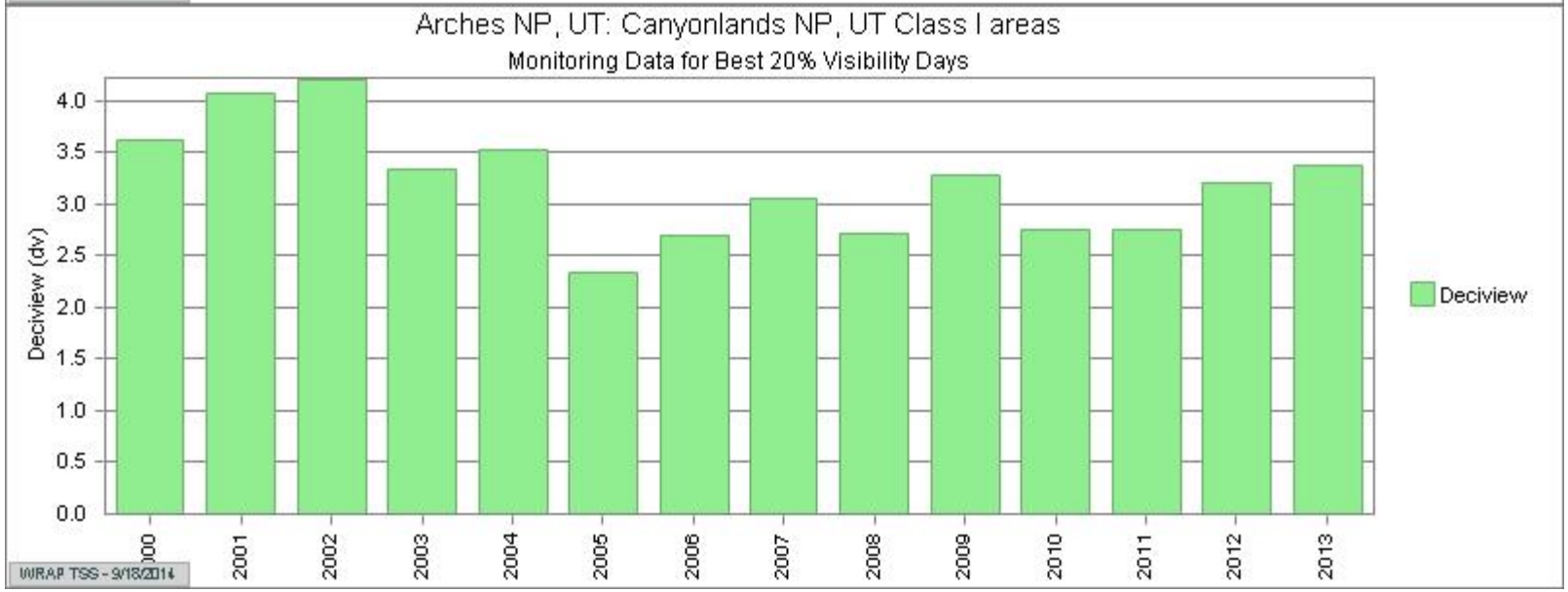

NOx Emission Rate at Utah Coal Plants
lb/MMBtu
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Hunter 1 (2014)
Hunter 2 (2011)
Huntington 1 (Fall 2010)
Huntington 2 (Dec 2006)
Presumptive
SCR

NO_x Emission Trends Utah Subject-to-BART EGUs




SO2 Emission Rate Utah Coal Plants
lb/MMBtu SO2
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Hunter 1 (2014)
Hunter 2 (2011)
Huntington 1 (Fall 2010)
Huntington 2 (Dec 2006)
Presumptive


Arches NP, UT: Canyonlands NP, UT Class I areas
Monitoring Data for Worst 20% Visibility Days
Deciview (dv)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Deciview
WRAP TSS - 9/18/2014


Arches NP, UT: Canyonlands NP, UT Class I areas
Monitoring Data for Best 20% Visibility Days
Deciview (dv)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Deciview
WRAP TSS - 9/18/2014

EPA Partial Approval/Disapproval

- On December 14, 2012, EPA approved the majority of Utah's Regional Haze SIP
- EPA disapproved the BART determination for NOx and PM
  - Did not contain a 5-Factor analysis as required by the BART Rule
  - Emission limits in the approval orders and operating permits issued to PacifiCorp were not practicably enforceable
- Revised SIP or federal implementation plan required by January 2015
  - PacifiCorp prepared a 5-factor analysis in 2012 and supplemented the information in 2014
  - DAQ staff have reviewed the analysis and other relevant information to evaluate whether the 2008 BART determination should be changed
    - Under the BART rule states "may" determine that an alternate control level is appropriate based on careful consideration of the 5 statutory factors
    - Staff review was focused on whether Utah should take the optional step to establish a BART emissions rate that is more stringent than the presumptive BART emission rate

Staff Review of 2008 BART Determination - NOx

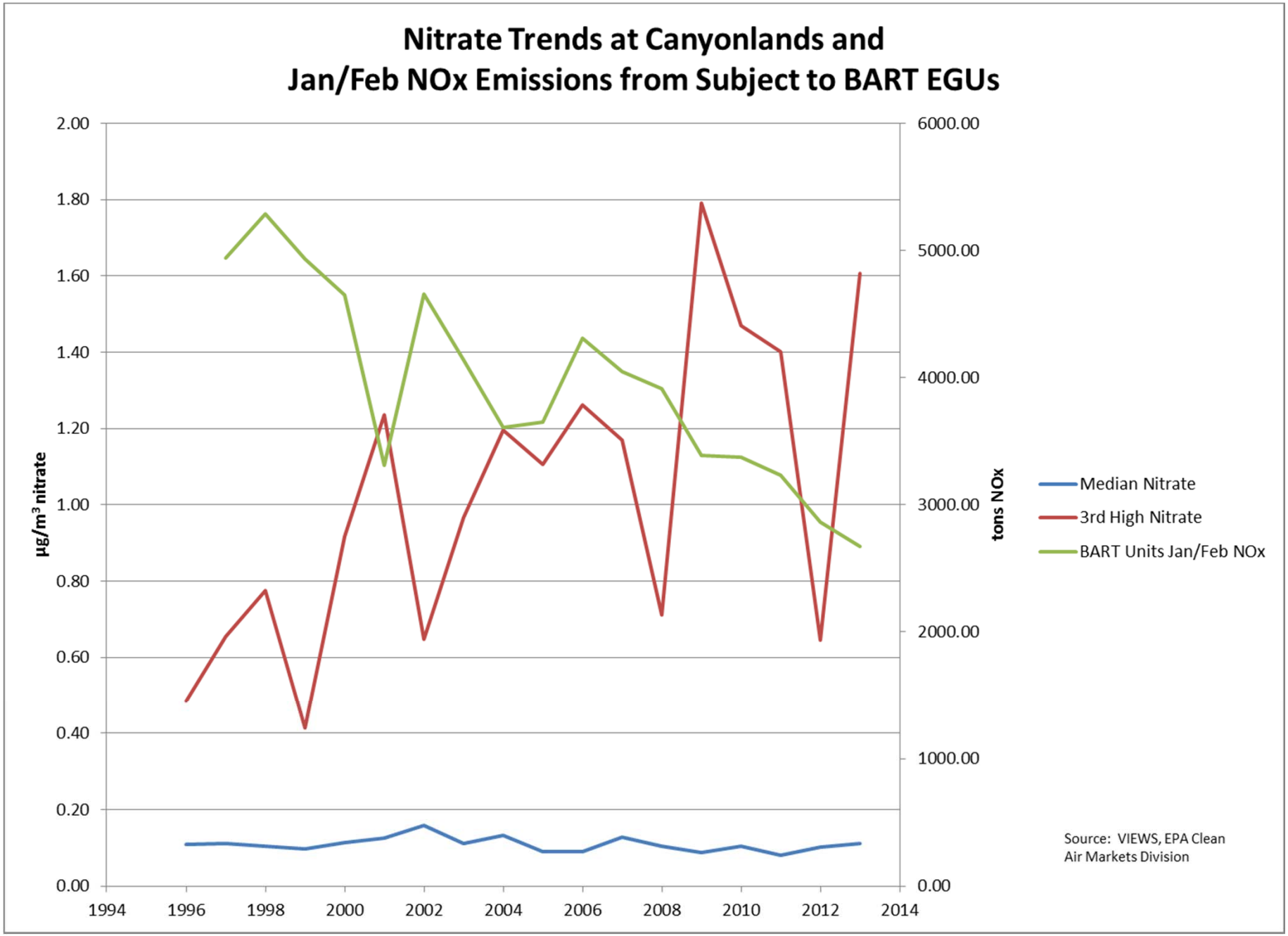
- Evaluation of currently required NOx controls
  - Economic Impact
    - 11,480 tons/yr NOx reduced (all 4 EGUs)
    - $307/ton (average cost-effectiveness)
    - Capital cost for NOx controls $37,346,101
    - Total capital cost (NOx, SO_2, PM) $588,436,552
  - Degree of visibility improvement which may reasonable be anticipated to result from the use of such technology

Visibility Improvement

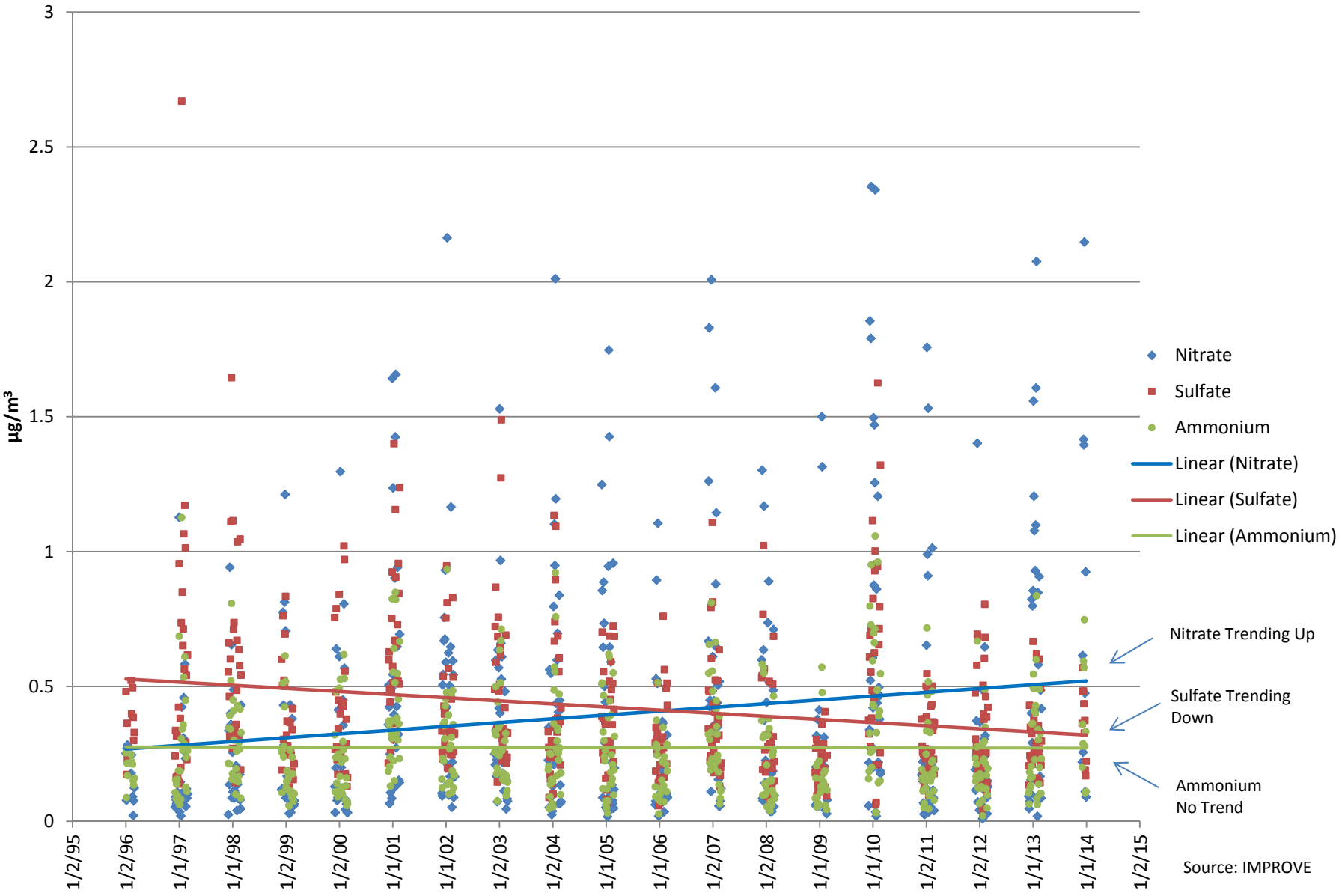
- PacifiCorp performed visibility modeling using CALPUFF as required by the BART rule

	Baseline		Permitted Controls	
	98th Percentile (Δdv)	No. of days >0.5 Δdv	98th Percentile (Δdv)	No. of days >0.5 Δdv
Huntington 1	3.00	130	1.65	64
Huntington 2	3.66	156	1.65	65
Hunter 1	3.07	131	1.75	61
Hunter 2	3.08	132	1.75	61

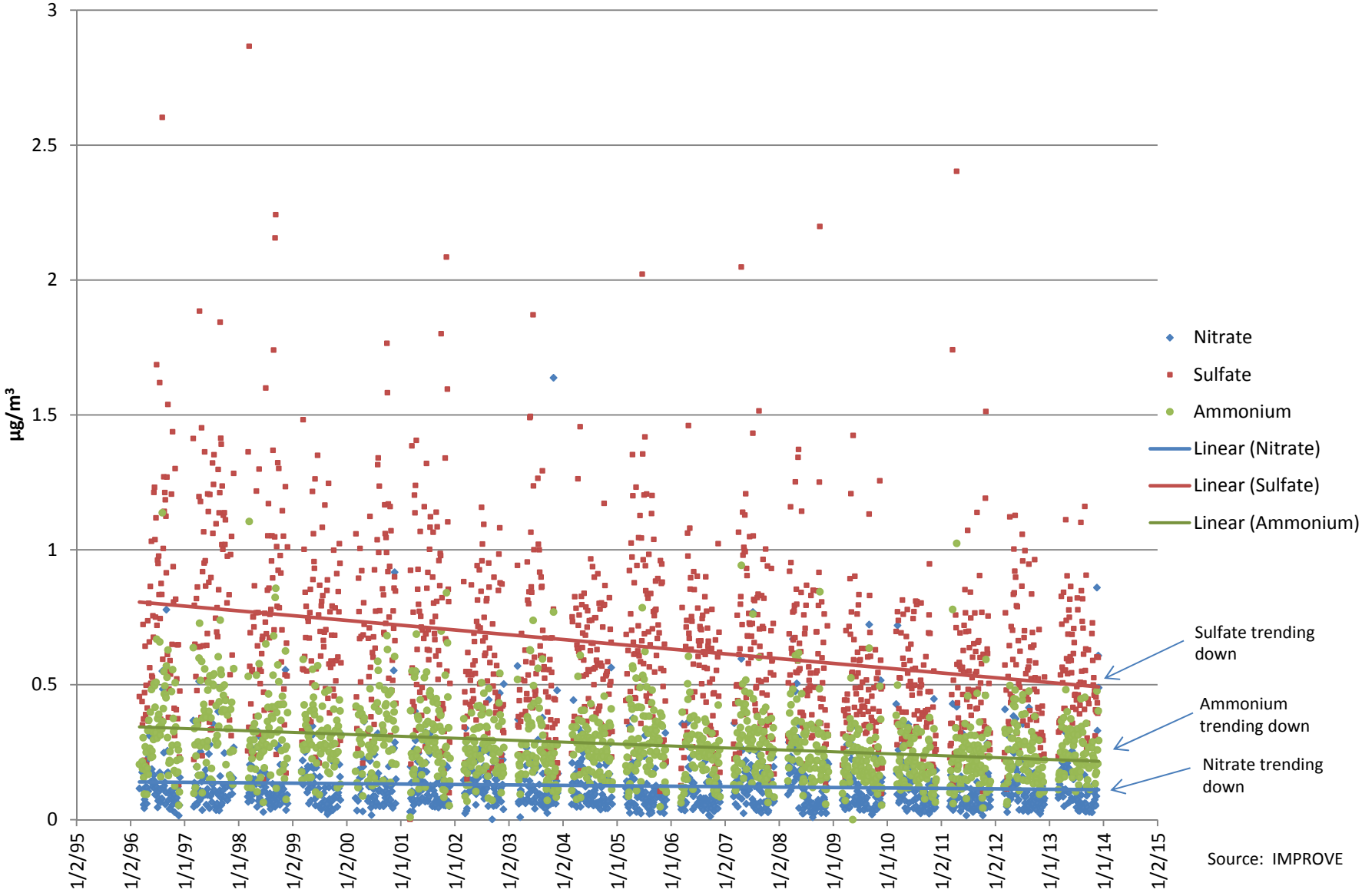
Results shown for Canyonlands


Nitrate Trends at Canyonlands and
Jan/Feb NOx Emissions from Subject to BART EGUs
µg/m³ nitrate
tons NOx
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Median Nitrate
3rd High Nitrate
BART Units Jan/Feb NOx
Source: VIEWS, EPA Clean
Air Markets Division

Canyonlands Sulfate, Nitrate, and Ammonium Trends, Dec-Feb



Canyonlands Sulfate, Nitrate, and Ammonium Trends, March-November



Source: IMPROVE

Potential Additional NOx Control Technologies

- Non-Selective Catalytic Reduction (SNCR)
  - Ammonia or urea injected directly into the boiler
  - Typically used for smaller plants, is now required for some larger plants
- Selective Catalytic Reduction (SCR)
  - Additional control equipment added to allow reaction of ammonia or urea in the presence of a catalyst
  - Existing control equipment must be configured to fit SCR in the middle

Cost of Compliance – SNCR and SCR

- SNCR
  - Reduce NOx emissions by additional 3,275 tons/yr (total for all 4 EGUs)
  - Average incremental cost of $4,246/ton to $5,579/ton NOx (range reflects uncertainty due to Clean Power Plan)
  - Incremental capital cost for SNCR, $30,447,246
  - Total capital cost (NOx, SO_2, PM), $618,883,798
- SCR
  - Reduce NOx emissions by additional 10,704 tons/yr (total for all 4 EGUs)
  - Average incremental cost of $8,794/ton to $11,556/ton NOx (range reflects uncertainty due to Clean Power Plan)
  - Incremental capital cost for SCR, $673,733,970
  - Total capital cost (NOx, SO_2, PM), $1,262,170,522
- High systemwide costs to meet BART requirements in Utah, Wyoming, Arizona, and Colorado
- Carbon Power Plant
  - Scheduled to be closed in 2015
  - Current emissions of 8,005 tons/yr SO_2 and 3,342 tons/yr NOx
  - Same general vicinity as Hunter and Huntington plants

Degree of Visibility Improvement

- PacifiCorp CALPUFF modeling results

	Current Operation		SNCR		SCR	
	98th Percentile (Δdv)	No. of days >0.5 Δdv	98th Percentile (Δdv)	No. of days >0.5 Δdv	98th Percentile (Δdv)	No. of days >0.5 Δdv
Huntington 1	1.65	64	1.45	57	0.96	38
Huntington 2	1.65	65	1.45	57	0.97	38
Hunter 1	1.75	61	1.51	54	1.00	39
Hunter 2	1.75	61	1.51	54	0.99	39

Degree of Visibility Improvement

- Monitoring data indicate that the model may significantly overpredict improvement in the winter
  - DAQ is in the process of remodeling to evaluate the effect of ammonia
    - Sensitivity analysis
    - Available prior to public comment period
- Seasonality
  - Nitrates are primarily formed during the winter, when visitation is low in Utah's National Parks
  - Sulfates (the focus of Utah's Regional Haze SIP) are formed year round
- Conclusion the degree of visibility improvement is uncertain – NOx reductions may not improve wintertime nitrate levels

Staff Review of 2008 BART Determination - PM

- Evaluation of currently required PM controls
  - The 2008 SIP requires installation of baghouses on all 4 EGUs, the most stringent control technology available
  - No additional analysis is required
- Enforceable emission limits
  - DAQ staff disagree with EPA's contention that the emission limits in PacifiCorp's approval orders and operating permits are not practicably enforceable
  - Proposed enforceable conditions are included in Part H of the SIP

Recommendation

- Staff recommends that the Board retain the 2008 BART determination with the following changes:
  - Add enforceable BART conditions to Part H of the SIP to address EPA's determination that the approval orders and operating permits for PacifiCorp's Hunter and Huntington plants are not practicably enforceable.
  - Add a requirement to make the planned shut down of Carbon Unit 1 and Carbon Unit 2 by April 15, 2015, enforceable.

ITEM 9

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-081-14

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C Bird, Executive Secretary

FROM: Mark Berger, Environmental Planning Consultant

DATE: September 12, 2014

SUBJECT: PROPOSE FOR PUBLIC COMMENT: Amend R307-110-17. General Requirements: State Implementation Plan. Section IX, Control Measures for Area and Point Sources, Part H, Emissions Limits; and R307-110-28. General Requirements: State Implementation Plan. Regional Haze.

The new State Implementation Plan (SIP) for regional haze, along with the new emission limits added to Part H, will have to be incorporated into the Air Quality Rules. R307-110-17 and R307-110-28 are the rules that do this. The proposed rules will update the latest versions of these SIPs that could be adopted by the Board in January.

Staff Recommendation: Staff recommends R307-110-17 and R307-110-28 be proposed for public comment.

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R307. Environmental Quality, Air Quality.
R307-110. General Requirements: State Implementation Plan.
R307-110-17. Section IX, Control Measures for Area and Point Sources, Part H, Emissions Limits.

The Utah State Implementation Plan, Section IX, Control Measures for Area and Point Sources, Part H, Emissions Limits, as most recently amended by the Utah Air Quality Board on [~~December 3, 2014~~]January 7, 2015, pursuant to Section 19-2-104, is hereby incorporated by reference and made a part of these rules.

R307-110-28. Regional Haze.

The Utah State Implementation Plan, Section XX, Regional Haze, as most recently amended by the Utah Air Quality Board on [~~April 6, 2011~~]January 7, 2015, pursuant to Section 19-2-104, is hereby incorporated by reference and made a part of these rules.

KEY: air pollution, PM10, PM2.5, ozone
Date of Enactment or Last Substantive Amendment: [~~January 9, 2014~~]2015
Notice of Continuation: February 1, 2012
Authorizing, and Implemented or Interpreted Law: 19-2-104(3)(e)

ITEM 10

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQ-087-14

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Colleen Delaney, Environmental Scientist

DATE: September 18, 2014

SUBJECT: PROPOSE FOR PUBLIC COMMENT: Amend R307-401-19. General Approval Order.

In November 2013, the Air Quality Board adopted a new rule that provides authority for the director to issue a general approval order (GAO) that would apply to a category of similar type sources. The first GAO developed by DAQ was issued in June 2014 and applies to crude oil and natural gas well sites. During the development of this GAO, DAQ engineers discovered that a limitation in the rule is unnecessarily restrictive. Under the individual approval order process, a source that increases emissions of hazardous air pollutants must provide documentation regarding the impact of the increase. There are three levels of review that may be triggered.

1. The first level in R307-410-5(1)(c)(i) requires the source to calculate the emission threshold value using emission threshold factors that are listed in the rule. This process is intended to be an initial screening, using conservative assumptions.
2. If the calculated emission threshold value is equal to or greater than the emission threshold limit, then the source must complete the second level of review in R307-410-5(c)(ii). The estimated ambient concentration must be documented and compared with the applicable toxic screening level.
3. If the estimated concentration is greater than the toxic screening level, then the source must complete the third level of review in R307-410-5(c)(iii). The third level of review requires a detailed evaluation of the impact of the proposed emissions.

The GAO currently restricts applicability to sources that meet the first level of review. However, the threshold limit values are very conservative and may screen out sources that could meet the second level of review based on an evaluation of the expected ambient concentration. This limitation is unnecessarily restrictive. The draft rule change would allow coverage under a GAO if a demonstration is completed that

meets the requirements of R307-410-5(1)(c)(ii). The third level of review requires a case-by-case analysis and any source that would require this review should receive an individual approval order.

Staff Recommendation: Staff recommends the Board propose for public comment the attached revisions to R307-401-19.

R307. Environmental Quality, Air Quality.
R307-401. Permit: New and Modified Sources.
R307-401-19. General Approval Order.

(1) The director may issue a general approval order that would establish conditions for similar new or modified sources of the same type or for specific types of equipment. The general approval order may apply throughout the state or in a specific area.

(a) A major source or major modification as defined in R307-403, R307-405, or R307-420 for each respective area is not eligible for coverage under a general approval order.

(b) A source that is subject to the requirements of R307-403-5 is not eligible for coverage under a general approval order.

(c) A source that is subject to the requirements of R307-410-4 is not eligible for coverage under a general approval order unless a demonstration that meets the requirements of R307-410-4 was conducted.

(d) A source that is subject to the requirements of R307-410-5(1)(c)(ii) [~~or~~]is not eligible for coverage under a general approval order unless a demonstration that meets the requirements of R307-410-5(1)(c)(ii) was conducted.

(e) A source that is subject to the requirements of R307-410-5(1)(c)(iii) is not eligible for coverage under a general approval order.

(2) A general approval order shall meet all applicable requirements of R307-401-8.

(3) The public notice requirements in R307-401-7 shall apply to a general approval order except that the director will advertise the notice of intent in a newspaper of statewide circulation.

(4) Application.

(a) After a general approval order has been issued, the owner or operator of a proposed new or modified source may apply to be covered under the conditions of the general approval order.

(b) The owner or operator shall submit the application on forms provided by the director in lieu of the notice of intent requirements in R307-401-5 for all equipment covered by the general approval order.

(c) The owner or operator may request that an existing, individual approval order for the source be revoked, and that it be covered by the general approval order.

(d) The owner or operator that has applied to be covered by a general approval order shall not initiate construction, modification, or relocation until the application has been approved by the director.

(5) Approval.

(a) The director will review the application and approve or deny the request based on criteria specified in the general approval order for that type of source. If approved, the director will issue an authorization to the applicant to operate under the general approval order.

(b) The public notice requirements in R307-401-7 do not apply to the approval of an application to be covered under the general approval order.

(c) The director will maintain a record of all stationary sources that are covered by a specific general approval order and this record will be available for public review.

(6) Exclusions and Revocation.

(a) The director may require any source that has applied for or is authorized by a general approval order to submit a notice of intent and obtain an individual approval order under R307-401-8. Cases where an individual approval order will be required include, but are not limited to, the following:

(i) the director determines that the source does not meet the criteria specified in the general approval order;

(ii) the director determines that the application for the general approval order did not contain all necessary information to evaluate applicability under the general approval order;

(iii) modifications were made to the source that were not authorized by the general approval order or an individual approval order;

(iv) the director determines the source may cause a violation of a national ambient air quality standard; or

(v) the director determines that one is required based on the compliance history and current compliance status of the source or applicant.

(b)(i) Any source authorized by a general approval order may request to be excluded from the coverage of the general approval order by submitting a notice of intent under R307-401-5 and receiving an individual approval order under R307-401-8.

(ii) When the director issues an individual approval order to a source subject to a general approval order, the applicability of the general approval order to the individual source is revoked on the effective date of the individual approval order.

(7) Modification of General Approval Order. The director may modify, replace, or discontinue the general approval order.

(a) Administrative corrections may be made to the existing version of the general approval order. These corrections are to correct typographical errors or similar minor administrative changes.

(b) All other modifications or the discontinuation of a general approval order shall not apply to any source authorized under previous versions of the general approval order unless the owner or operator submits an application to be covered under the new version of the general approval order. Modifications under R307-401-19(7)(b) shall meet the public notice requirements in R307-401-19(3).

(c) A general approval order shall be reviewed at least every three year. The review of the general approval order shall follow the public notice requirements of R307-401-19(3).

(8) Modifications at a source covered by a general approval order. A source may make modifications only as authorized by the approved general approval order. Modifications outside the scope authorized by the approved general approval order shall require a new application for either an individual approval order under R307-401-8 or a general approval order under R307-401-19.

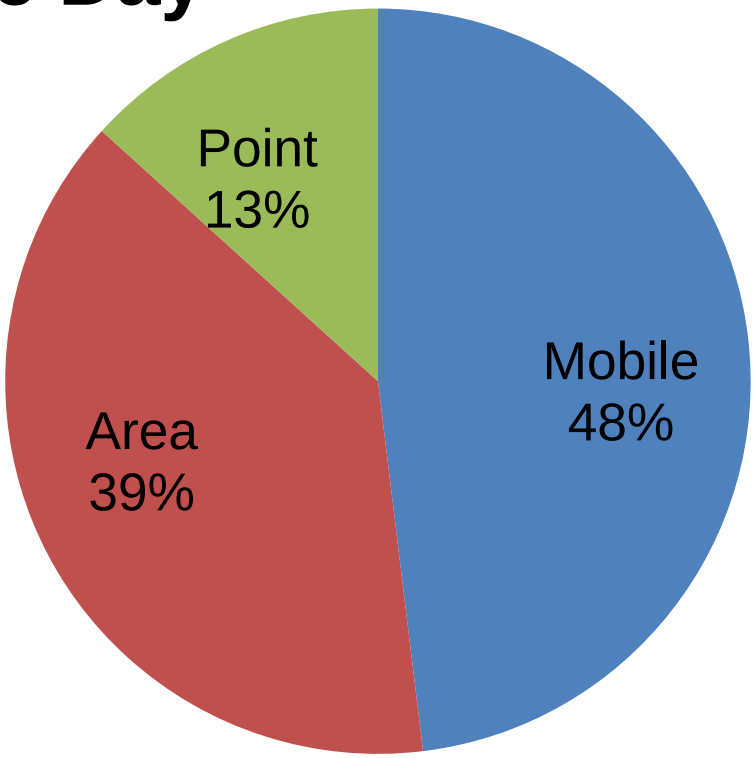
KEY: air pollution, permits, approval orders, greenhouse gases
Date of Enactment or Last Substantive Amendment: [~~January 6, 2014~~]2015
Notice of Continuation: June 6, 2012
Authorizing, and Implemented or Interpreted Law: 19-2-104(3)(q); 19-2-108

ITEM 11

Utah Clean Air Action Team Legislative Recommendations

Clean Air Action Team Recommendations

2014 Winter Average Day 4-County Wasatch Front



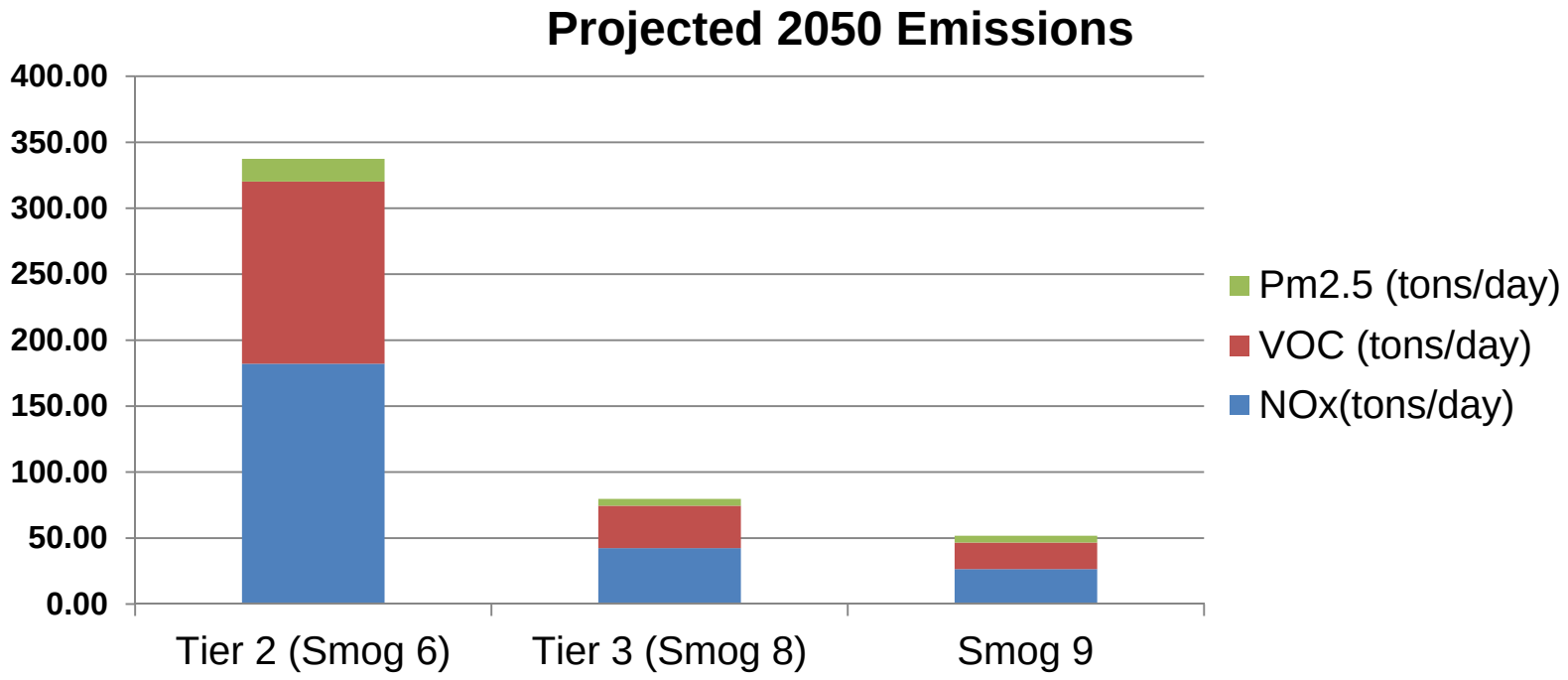
Projections

	2010 Estimates	2050 Projection
Buildings	746,609	1,532,371
Vehicle Miles Traveled	48,265,335	71,281,221

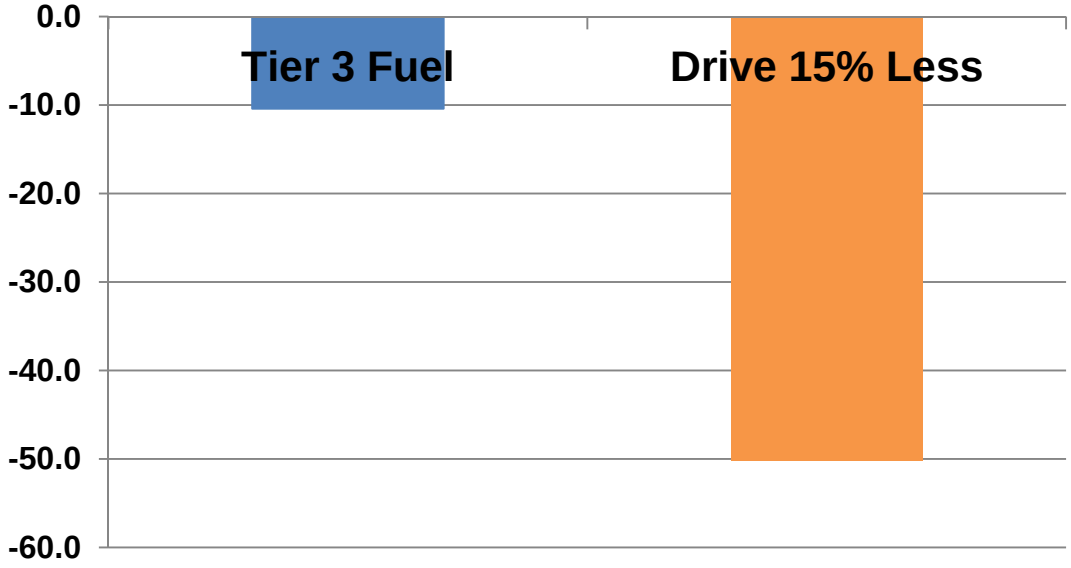
Mobile Source Recommendations

- Use low-sulfur (tier 3) fuels in our automobiles
- Get Tier 3 cars to Utah as quickly as possible
- Reduce driving by promoting public transit and active transportation

Effect of Cleaner Cars



Cleaner Fuel & Less Driving

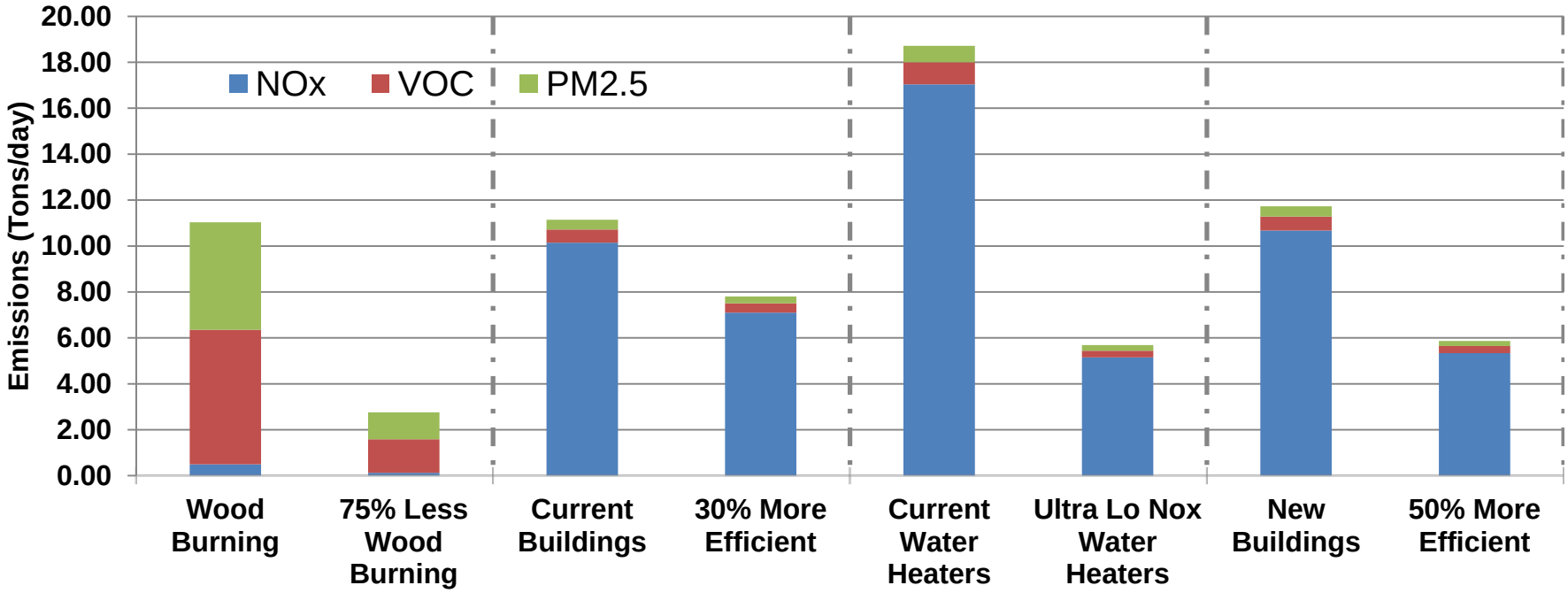


Area Source Recommendations

- Eliminate residential wood burning during inversion periods
- Replace current water heaters with Ultra-low NOx models
- Improve energy efficiency of existing and new buildings

Building Efficiency

- Allow Residential PACE programs
- Include a HERS rating on MLS listings
- Adopt the 2015 International Energy Conservation Code



- **Total projected building emissions for 2050 are approximately 50 tons/day.**
- **With all above changes, total building emissions would be cut in half.**

Other Recommendations

- Uintah Basin – Continue current efforts to reduce emissions from the oil & gas operations within the Uintah Basin.
- Allow the Air Quality Board and Division of Air Quality to adopt rules that are more stringent than federal regulations and continue to give the Division of Air Quality sufficient budget to continue effectively achieving its mission.

Progress Report for Utah's State Implementation Plane for Regional Haze

PROGRESS REPORT FOR UTAH'S STATE IMPLEMENTATION PLAN FOR REGIONAL HAZE

September 22, 2014

Prepared by staff of the:

Utah Division of Air Quality
Utah Department of Environmental Quality
195 North 1950 West
Salt Lake City, UT 84116

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1.0 INTRODUCTION

On December 12, 2003, the State of Utah submitted a Regional Haze State Implementation Plan (RH SIP) to meet the requirements of 40 CFR 51.309 (309 SIP) to improve visibility in Utah's five Federal Class I Areas. The 2003 version of the 309 SIP and subsequent revisions to it address the first phase of requirements, with an emphasis on stationary source sulfur dioxide (SO_2) emission reductions, smoke management, and a focus on improving visibility on the Colorado Plateau.

On December 14, 2012, the EPA approved the majority of Utah's RH SIP, but disapproved the BART determination for nitrogen oxide (NOx) and particulate matter (PM). Utah is in the process of updating the five-factor analysis to address EPA's concerns. The results of that analysis will be addressed in a separate SIP submittal. The 2008 BART determination has been fully implemented and significant emission reductions of NOx, SO_2, and PM have already been achieved.

1.1 State Implementation Plan Requirements for the 5-Year Progress Report

Provisions of the Regional Haze (RH) rule contained in 40 CFR §51.309(d)(10) require that each state submit a progress report five years after the submittal of their initial RH SIP. The progress report must be in the form of a SIP revision and must include a determination regarding the adequacy of the existing regional haze SIP. This report has been prepared to fulfill all applicable requirements pertaining to the five-year progress report of the initial RH SIP. The State of Utah concludes that based on the progress made over the five year period reviewed, no revisions to the Utah Regional Haze SIP are needed at this time.

The progress report SIP must include 1) the status for implementation of control measures included in the original regional haze SIP, 2) a summary of emission reductions achieved through the implementation of control measures, 3) an assessment of visibility conditions, 4) an analysis of the changes in emission pollutants, 5) an assessment of significant changes in emissions that may have limited or impeded progress in improving visibility, 6) an assessment of whether the current SIP elements and strategies are sufficient to meet reasonable progress goals and 7) a review of the State's visibility monitoring strategy.

The technical data included in this progress report are from the "*Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report*" (Appendix A) developed by the Western Regional Air Partnership (WRAP)[1] in June of 2013 and the WRAP Technical Support System (TSS). The WRAP progress report technical support document (TSD) has been prepared on behalf of the 15 western state members in the WRAP region. It serves as the technical basis for use by states to develop the first of their individual reasonable progress reports for the 116 Federal Class I areas located in the western states. Data are presented in this report on a regional, state, and Class I area-specific basis that characterize the difference between 2000-2004 baseline conditions and current conditions, represented here by the most recent successive 5-year average. The WRAP progress report TSD was focused on the first 5-year period, 2005-2009, and therefore the monitoring and emission inventory data reflect that time

[1] The WRAP is a collaborative effort of tribal governments, state governments and various federal agencies representing the western states that provides technical and policy tools for the western states and tribes to comply with the EPA's RH regulations. Detailed information regarding WRAP support of air quality management issues for western states is provided on the WRAP website, www.wrapair2.org. Data summary descriptions and tools specific to RHR support are available on the WRAP Technical Support System website, http://vista.cira.colostate.edu/tss/.

period. Changes in visibility impairment are characterized using aerosol measurements form the IMPROVE network (the primary monitoring network for regional haze, both nationwide and in Utah), and the differences between emissions inventory years represent both the baseline and current progress period.

As required by 40 CFR §51.308(i), the regional haze SIP must include procedures for continuing consultation between the states and federal land managers (FLMs) on the implementation of the visibility protection program, including development and review of implementation plan revisions and 5-year progress reports, and on the implementation of other programs having the potential to contribute to impairment of visibly in any mandatory Federal Class I area within the state. Utah intends to consult with federal land as required under 40 CFR §51.308. The state of Utah reaffirms its commitment to participate in a regional planning process with Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, Washington, Wyoming, the United States Department of Interior (USDI) Fish and Wildlife Services (FWS) and National Park Services (NPS), and the United States Department of agriculture (USDA) Forest Service (FS).

Pursuant to the Tribal Authority Rule, any tribe whose lands are within the boundaries of the State of Utah has the option to develop a RH Tribal Implementation Plan (TIP) for their lands to assure reasonable progress in the five Class I areas in Utah. Accordingly, no provisions of this periodic report shall be construed as being applicable to Indian Country.

2.0 UTAH CLASS I AREAS

Utah has five Federal Class I areas within its borders: Arches National Park, Bryce Canyon National Park, Canyonlands National Park, Capitol Reef National Park, and Zion National Park. All five of Utah's Federal Class I areas are located on the Colorado Plateau (Figure 2.1).

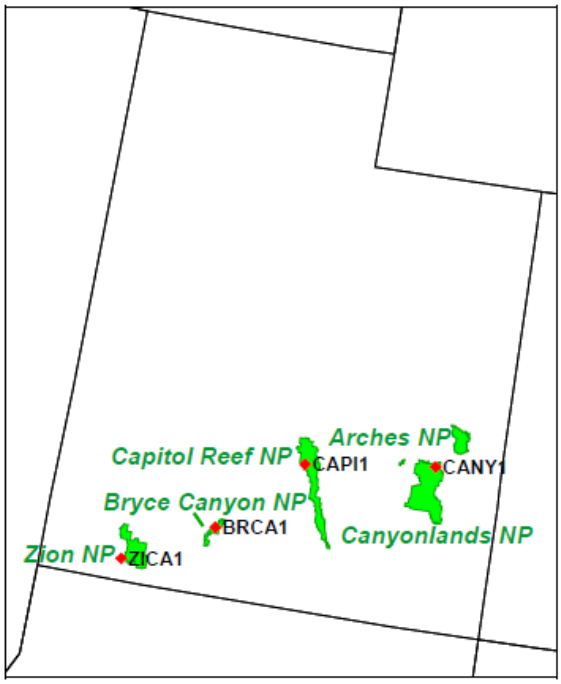

Figure 2.1. Map Depicting Federal Class I Areas and Representative IMPROVE Monitors in Utah

Utah's Department of Environmental Quality's (DEQ) Division of Air Quality (DAQ) is responsible for developing the RH progress report. This progress report compares the current visibility conditions at each of these Class I areas to the 2018 reasonable progress goals to determine if Utah is on track to reach these goals. The progress report also reviews the long-term strategy to determine if there have been any changes that need to be addressed.

In developing the initial RH SIP, DAQ also considered that emission sources outside of Utah may affect the visibility at Utah's Class I areas, and that emission sources within Utah may affect the visibility at Class I areas in neighboring states. Through WRAP, the western states worked together to assess state-by-state contributions to visibility impairment in specific Class I areas, including those in Utah and those affected by emissions from Utah. The sources identified in the initial RH SIP either impacting Utah's Class I areas or Class I areas outside Utah will be reviewed as part of this progress report.

2.1 Progress Towards Reasonable Progress Goals (40 CFR §51.309(d)(10(i))

Based on IMPROVE monitoring data, all of Utah's Class I areas show visibility improvement on the 20% least impaired days, while on the 20% most impaired days, three areas (Arches, Canyonlands and Zion National Parks) show visibility improvement and two areas (Bryce Canyon and Capitol Reef National Parks) do not. The largest contributor to increases at these sites was particulate organic mass which was associated with large fire events in July and August of 2009. These increases were offset by decreases in ammonium nitrate and ammonium sulfate.

The baseline and current visibility conditions as well as the reasonable progress goals for 2018 for the 20% worst and 20% best days are displayed in Table 2.1.

Table 2.1. Utah Class I Area IMPROVE Sites Visibility Conditions for the 20% Most and Least Impaired days – Including 2010 to 2012.

Class I Area	Baseline (2000-2004) (dv)	Current (2005-2009) (dv)	(2010-2012) (dv)	2018 Preliminary Reasonable Progress Case (PRP18a) (dv)
20% Worst Days				
Arches NP (CANY1)	11.2	11.0	10.6	10.9
Bryce Canyon NP (BRCA1)	11.6	11.9	10.0	11.2
Canyonlands NP (CANY1)	11.2	11.0	10.6	10.9
Capitol Reef NP (CAPI1)	10.9	11.3	10.1	10.5
Zion NP (ZICA1)	12.5[2]	12.3	10.8[3]	N/A[4]
20% Best Days				
Arches NP (CANY1)	3.7	2.8	2.8	3.5
Bryce Canyon NP (BRCA1)	2.8	2.1	1.7	2.6
Canyonlands NP (CANY1)	3.7	2.8	2.8	3.5
Capitol Reef NP (CAPI1)	4.1	2.7	2.4	3.9
Zion NP (ZICA1)	5.0	4.3	4.4 (see footnote 2)	N/A (see footnote 3)

3.0 REGIONAL HAZE PROGRESS REPORT

The requirements for regional haze progress reports are outlined in 51.309(d)(10)(i). The progress report for Section 309 RH SIPs must be in the form of a formal SIP submittal and at a minimum must contain the following elements:

3.1 40 CFR § 51.309(D)(10)(i) Progress Report Requirements

(A) A description of the status of implementation of all measures included in the SIP for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the state.

(B) A summary of the emission reductions achieved throughout the state through implementation of the measures described in (A) above.

(C) For each mandatory Class I Federal area within the state, an assessment of the following: the current visibility conditions for the most impaired and least impaired days; the difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions; and the change in visibility impairment for the most impaired and least impaired days over the past 5 years.

[2] The monitor originally intended to represent Zion National Park was the ZION1 IMPROVE monitor, which began operation in 2000. In 2003, a second site, ZICA1, was established approximately 19 miles from the original ZION1 monitor. The second site was installed in part because elevated ammonium nitrate at the original site was influenced by mobile sources from the interstate highway that were not representative of park conditions. Section 6.13.1.1 in the WRAP Report (Appendix A) describes how the baseline for the ZICA1 was determined.

[3] Includes 2012 data only; there were no results available for 2011 and 2012

[4] There is no PRP18a established for the new ZICA1 monitor. The PRP18a was originally established for the original ZIONI IMPROVE monitor, which was discontinued on July 29, 2004.

(D) An analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities with the state. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.

(E) An assessment of any significant changes in anthropogenic emissions within or outside the state that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.

(F) An assessment of whether the current SIP elements and strategies are sufficient to enable the state, or other states with mandatory Federal Class I areas affected by emissions from the state, to meet all established reasonable progress goals.

(G) A review of the state's visibility monitoring strategy and any modifications to the strategy as necessary.

In the sections to follow, the Utah DAQ will address the various periodic review requirements as outlined above.

3.2 Status of Implementation Control Measures: 40 CFR §51.309(d)(10)(i)(A)

40 CFR §51.309(d)(10)(i)(A) requires "a description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State."

This section provides a description of the emission reduction measures that were included in the State of Utah's Section 309 RH SIP. A summary of the most significant emission reduction strategies and the status of controls is provided below.

Utah has been and continues to be committed to implementing the long-term strategies adopted into the state's Section 309 RH SIP. The implementation status of these emission reduction measures are described below.

SO_2 Milestone and Backstop Trading Program

As a 309 state, Utah continues to participate in the Regional SO_2 Milestone and Backstop Trading Program. Utah has been participating in this program since 2003, and in March of 2014, submitted the annual Regional SO_2 Emissions and Milestone Report for 2012. The report shows that the regional SO_2 emissions of 115,115 tons were below the 2012 milestone of 200,722 tons. Further information on emissions reductions from this program are summarized in Section 3.3 of this report.

Prevention of Significant Deterioration (PSD); New Source Review (NSR) Permitting; and Visibility Programs

Utah's PSD program, promulgated in SIP Section VII and R307-405; NSR permitting program, promulgated in SIP Section II and R307-401; and Visibility program, promulgated in SIP Section XVII and R307-406 continue to protect Class I area visibility by requiring best available control technology for

new sources and assuring that there is not a significant degradation in visibility at Class I areas due to new or modified major sources.

BART

Utah has four BART-eligible sources that are subject to BART. They are PacifiCorp Hunter Units 1 and 2 and PacifiCorp Huntington Units 1 and 2.

Utah's 2008 BART determination for Hunter Units 1 and 2 included conversion of existing electrostatic precipitators to pulse jet fabric filter bag-houses; the replacement of existing, first generation low-NOx burners with Alstom TSF 2000TM low-NOx firing system and installation of two elevations of separated overfire air; and the upgrading of the existing flue gas desulfurization system to >90% sulfur dioxide removal. These controls were installed on Hunter Unit 2 in 2011 and Hunter Unit 1 in 2014. Average annual emissions decreased by 1,306 tons SO_2 and 3,028 tons NOx for these two units between 2001-3 and 2012-13.

For Huntington Units 1 and 2, the 2008 BART determination included converting existing electrostatic precipitators to pulse jet fabric filter bag-houses; the replacement of existing, first generation low-NOx firing system and installation of two elevations of separated overfire air; the installation of a new wet-lime, flue gas de-sulfurization system at Unit 2 (FGD); and upgrading existing flue gas desulfurization system to >90% sulfur dioxide removal at Unit 1. These controls were installed on Huntington Unit 1 in 2010 and Huntington Unit 2 in 2006. Average annual emissions decreased by 12,344 tons SO_2 and 4,324 tons NOx for these two units between 2001-3 and 2012-13.

EPA disapproved Utah's BART determination for NOx and PM on December 14, 2012, because they determined that Utah did not perform an adequate 5-factor analysis as required by 40 CFR Part 51, Appendix Y. Utah is addressing EPA's concerns in a separate SIP submittal concurrent with this progress report.

Enhanced Smoke Management Program

The State of Utah has developed *The Utah Smoke Management Plan (SMP)* which provides operating procedures for federal and state agencies that use prescribed fire, wildfire, and wildland fire on federal, state and private wildlands in Utah. The SMP includes the program elements listed in 40 CFR 51.309(d)(6)(i), with the exception of alternatives to fire. The SMP was certified by the EPA on November 8, 1999 under EPA's April 1998 *Interim Air Quality Policy on Wildland and Prescribed Fires (Policy).* The requirements of the SMP were also codified into Utah's Air Quality Rule R307-204, which applies to all persons using prescribed fire or wildland fire on land they own or manage, including federal, state, and private wildlands.

New Source Performance Standards Program

Utah's New Source Performance Standards (NSPS) rule, R307-210, incorporates the latest version of 40 CFR Part 60 into Utah's administrative rules. These technology based standards which apply to specific categories of stationary sources, result in significant emissions reductions – 40 CFR Part 60 Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines; and Subpart IIII,

Standards of performance for Stationary Compression Ignition Internal Combustion Engines, are just two examples.

Maximum Achievable Control Technology (MACT) Standards Program

Utah's administrative rule, R307-214, National Emission Standards for Hazardous Air Pollutants, incorporates the latest version of 40 CFR Parts 61 and 63 into Utah's Air Quality rules. NESHAPs are the result of MACT standards, performance-based standards, EPA has developed specific to source categories. As with NSPS, these NESHAPS result in significant emissions reductions – 40 CFR Part 63 Subpart ZZZZ, Standards for Reciprocating Internal Combustion Engines, is just one example.

Mobile Sources

The adoption of new on-road vehicle emission and fuel standards by EPA resulted in a substantial reduction of projected mobile source emissions. As stated in Section F.2.b of the SIP, Utah is committed to monitoring the emissions from mobile sources to assure a continuous decline in emissions as defined in 40 CFR 51.309(b)(6). If Utah determines that a continuous decline in emissions is not being achieved, additional control measures will be reviewed to determine if they are needed to make reasonable progress.

Enforceability of Utah's Measures

40 CFR §51.309(d)(9) of the RH rule requires states to ensure that emission limitations and control measures used to meet reasonable progress goals are enforceable.

Utah has ensured that all existing emission limitations and control measures for which it is responsible that were used to meet reasonable progress goals are enforceable, either through Utah's Administrative Rules or SIP measures previously approved by the Utah Air Quality Board and the EPA. Enforceability of future emission limitations and control measures for which the State is responsible will be enforceable through permit conditions or SIP measures to be approved in the future by EPA.

3.3 Summary of Emission Reduction Achieved: 40 CFR § 51.309(d)(10)(i)(B)

40 CFR § 51.309(d)(10)(i)(B) requires "a summary of the emissions reductions achieved throughout the State through implementation of the measures in paragraph (g)(1)."

This section provides a summary of emissions reduced as a result of implementation measures discussed in Section 3.2. Since the submittal of Utah's Section 309 SIP in 2003, there has been a significant decrease in SO_2 emissions in accordance with the state's SO_2 Milestone and Backstop Trading Program. Each year since 2003, states have been able to demonstrate through milestone reports that actual SO_2 emissions have declined every year and are well below the milestones. Sulfur dioxide emission reductions associated with the Backstop Trading Program will continue through 2018, as shown through declining milestone commitments. The actual emissions and their respective milestones are shown below:

Regional Sulfur Dioxide Emissions and Milestone Report Summary

Year	3-State Adjusted SO_2 Emissions (tons)	3-Year Average (tons)	Milestone (tons)
2003	214,780	214,780	303,264
2004	232,388	223,584	303,264
2005	215,793	220,987	303,264
2006	207,316	218,499	303,264
2007	187,599	203,569	303,264
2008	165,595	186,837	269,083
2009	143,704	165,633	234,903
2010	131,124	146,808	200,722
2011	117,976	130,935	200,722
2012	96,246	115,115	200,722

While Utah has not quantified the emissions reductions due to the remaining strategies, the state saw an overall improvement in visibility at all of Utah's Class I areas for the 20% best days and an overall improvement in visibility at three of Utah's Class I areas for the 20% worst days between 2000 and 2009 (See Figures 3.1 and 3.2). Changes in the overall emission inventory are described in section 3.5 of this report.

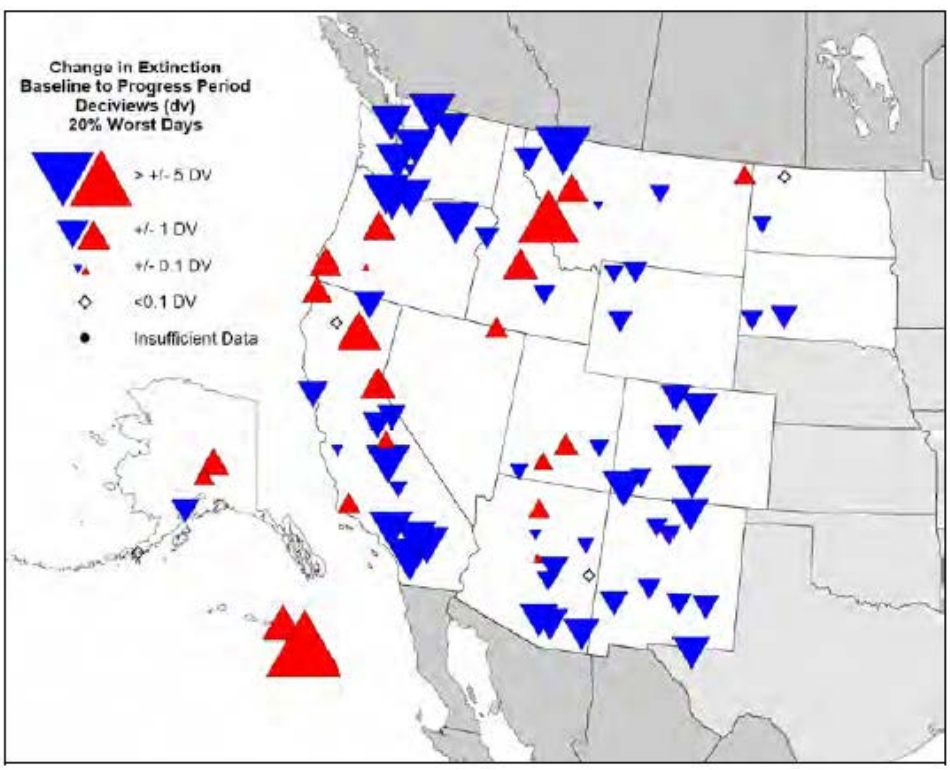

Figure 3.1. Change in Deciview Extinction between Baseline Period Average (2000-2004) and the First Progress Period Average (2005-2009) for the 20% Worst Visibility Days

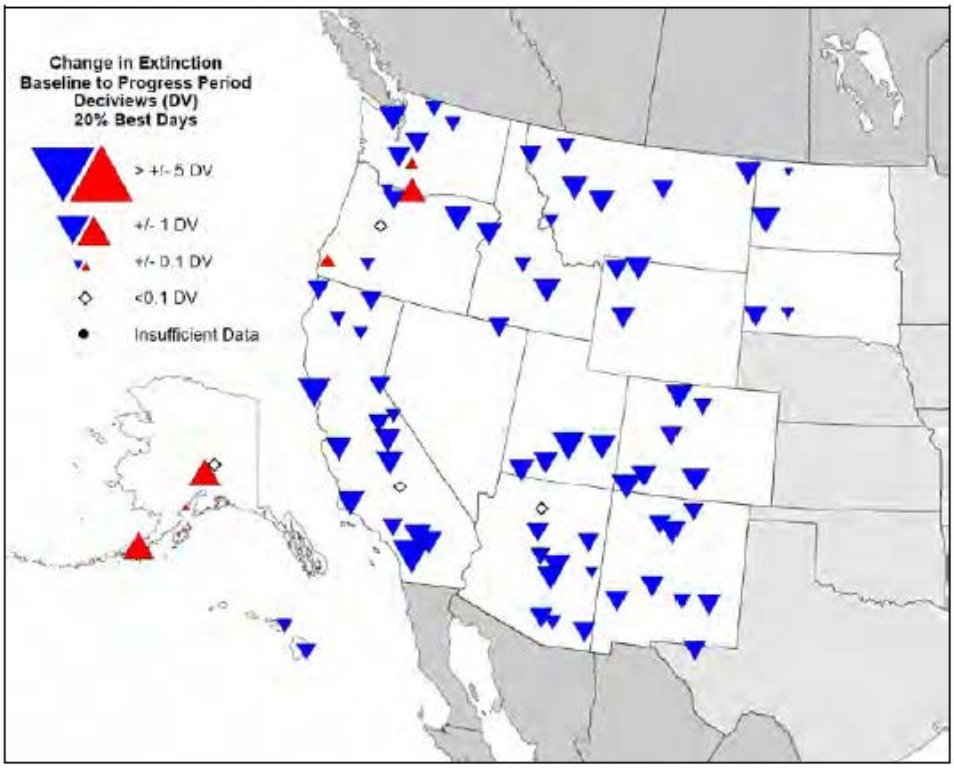

Figure 3.2. Change in Deciview Extinction between Baseline Period Average (2000-2004) and the First Progress Period Average (2005-2009) for the 20% Best Visibility Days

The RH rule haze index, as defined using deciview units, does not provide information regarding the relative contributions of specific pollutants to overall visibility impairment. The calculation of visibility impairment is based on the cumulative impacts of several different species measures at IMPROVE network sites. Analyzing the behavior of each individual species has important implications for control measures, as some species originate from largely anthropogenic sources while others may originate form a mixture of both anthropogenic and natural sources.

Figures 3.3 and 3.4 present regional maps of average aerosol extinction for the most impaired days during the baseline period (2000-2004), and the first progress period average (2005-2009), respectively, for the IMPROVE monitors representing Federal Class I areas in the WRAP region. The size of the pie chart is related to the magnitude of visibility impairment, and colors represent the relative contribution of the pollutants measured by the IMPROVE network.

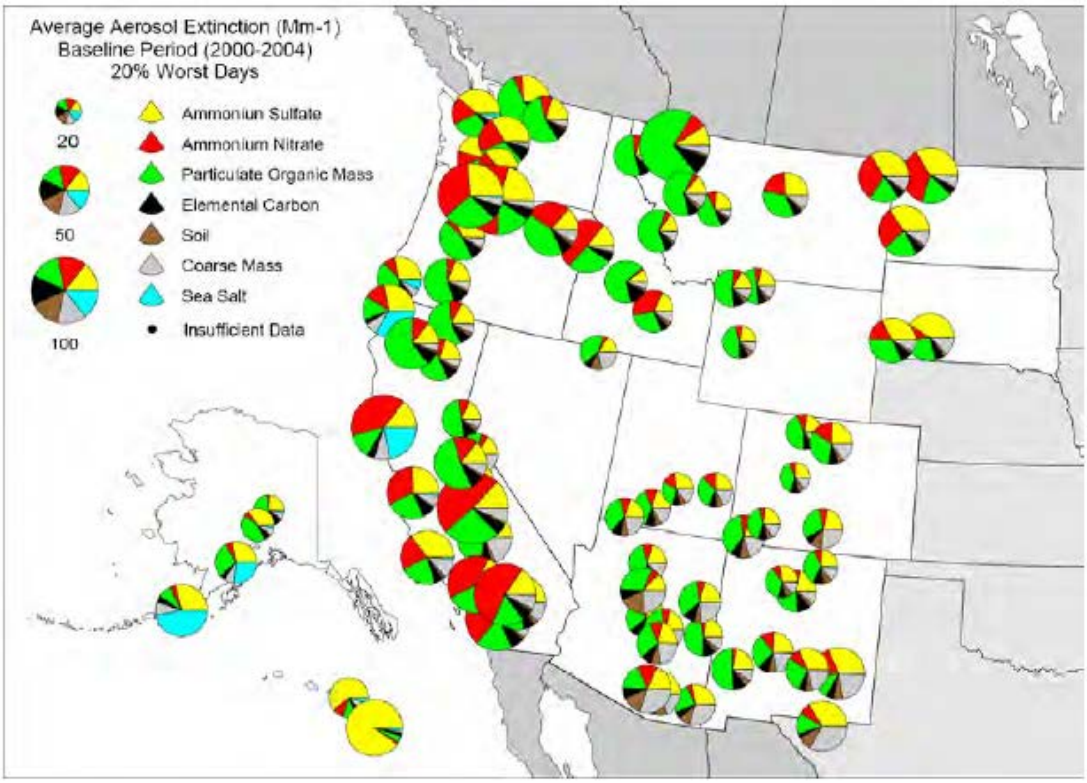

Figure 3.3. Regional Average of Aerosol Extinction by Pollutant for Baseline Period average (2000-2004) for 20% Worst Days.

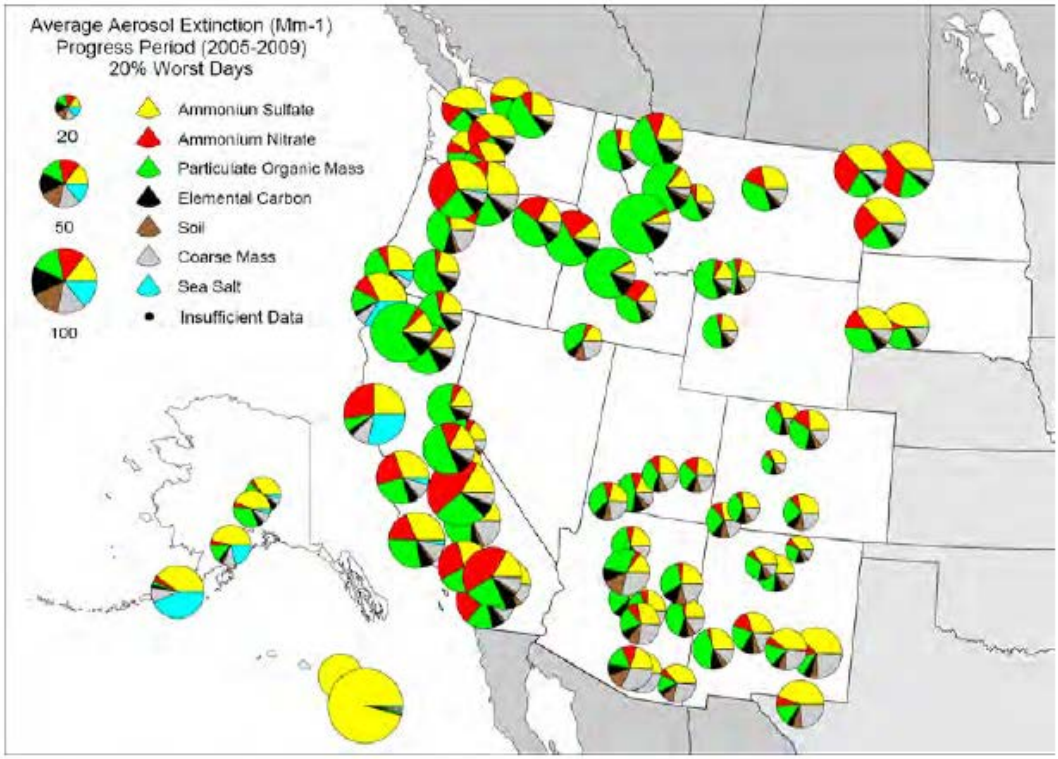

Figure 3.4. Regional Average of Aerosol Extinction by Pollutant for the First Progress Period Average (2005-2009) for 20% Worst Days.

Figure 3.5 presents the individual species of haze that have decreased between the 2000-2004 baseline period and the 2005-2009 progress period, where sites with corresponding decreases in deciview measurements are highlighted with blue circles.

For Utah, Figure 3.5 depicts most of the decreases in deciview averages that were associated with decreases in ammonium nitrate, ammonium sulfate, coarse mass and particulate organic mass. The decrease in ammonium nitrate and ammonium sulfate is most likely due to the implementation of the SO_2 milestones beginning in 2003, BART controls beginning at the end of 2006 and federal mobile source regulations. The decrease in coarse mass and particulate organic mass is likely due to the decreasing effect of natural events, such as windblown dust storms and wild fires.

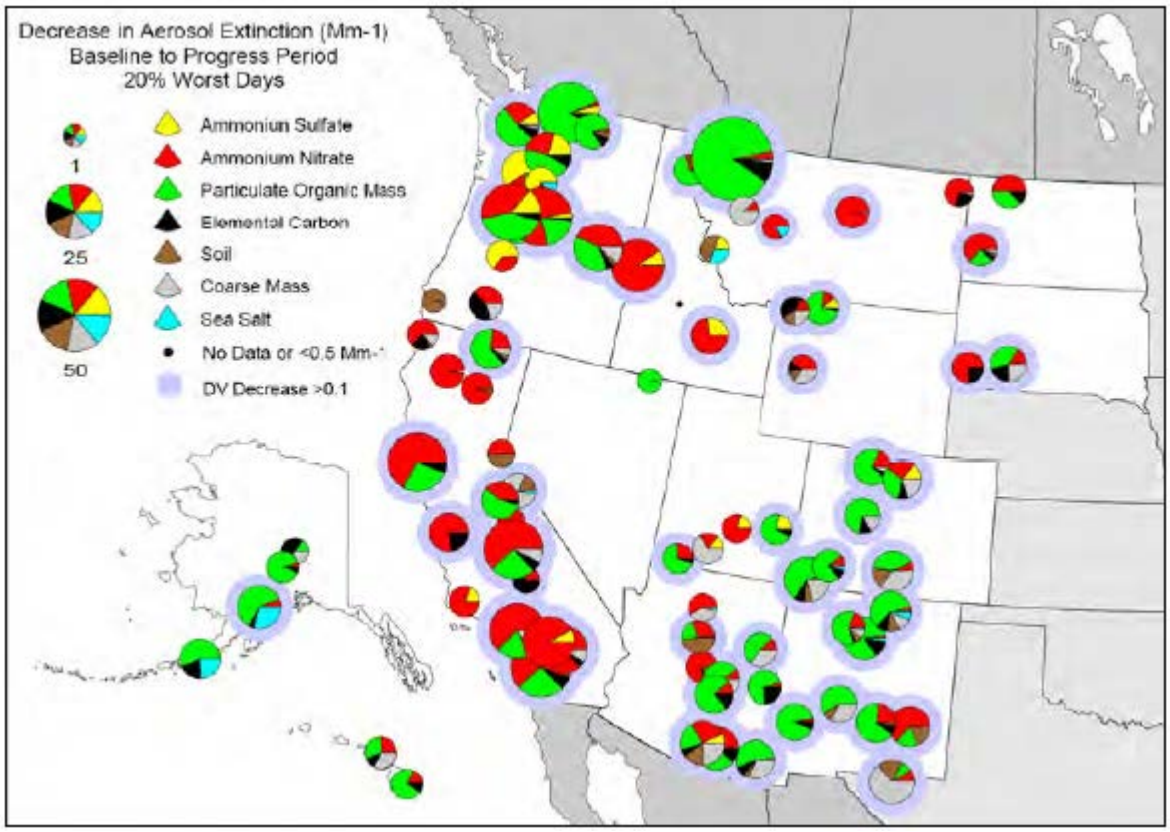

Figure 3.5. Magnitude of Aerosol Extinction Species that have Decreased Between the Baseline Average (2000-2004) and the First Progress Period Average (2005-2009) for the 20% Worst Days.

3.4 Assessment of Visibility Conditions: 40 CFR § 51.309(d)(10)(i)(C)

40 CFR § 51.309(d)(10)(i)(C) requires "*for each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of 5-year averages of these annual values*

The current visibility conditions for the most impaired and least impaired days;
The difference between current visibility conditions for the most impaired and least days and baseline visibility conditions;
The changes in visibility impairment for the most impaired and least impaired days over the past 5-years."

This section addresses RH rule regulatory requirements for monitored data as measured by IMPROVE monitors representing Federal Class I areas in Utah.

Regional haze progress in Federal Class I areas is tracked using calculations based on speciated aerosol mass as collected by IMPROVE monitors. The RH rule calls for tracking haze in units of deciviews, where the deciview metric was designed to be linearly associated with human perception of visibility. In a pristine atmosphere, the deciview metric is near zero, and a one deciview change is approximately equivalent to a 10% change in cumulative species extinction. To better understand visibility conditions, summaries here include both the deciview metric and the apportionment of haze into extinction due to the various measured species in units of inverse megameters (Mm^{-1}).

3.4.1 Current Visibility Conditions for the Most and Least Impaired Days

EPA guidance for the 2003 RH SIP specifies that 5-year averages be calculated over successive 5-year periods; i.e., 2000-2004, 2005-2009, 2010-2014, etc.[5] Current visibility conditions are represented in Table 3.1 and 3.2 as the most recently incorporated successive 5-year average period available, the 2005-2009 period average. While the most recent IMPROVE monitoring data currently available in the WRAP TSS includes 2012 data, the 2005-2009 period was the most recent data set available when the WRAP summary report was generated. The information and data presented in this section are from that "*Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report*" (Appendix A).

Tables 3.1 and 3.2 present the calculated deciview values for current conditions at each site, along with the percent contribution to extinction from each aerosol species for the 20% worst and best days for each of the Federal Class I area IMPROVE monitors in Utah. Appendix M of the WRAP Progress Report includes figures that represent the annual and 5-year period averages for the 20% most and least impaired visibility days at each IMPROVE site from 2000 to 2010.

Figure 3.6 presents 5-year average extinction for the current progress period for both the 20% worst and best days. Note that the percentages in the tables consider only the aerosol species which contribute to extinction, while the charts also show Rayleigh, or scattering due to background gases in the atmosphere. Specific observations for the current visibility conditions on the 20% most impaired days are as follows:

- The largest contributors to aerosol extinction at Utah sites were particulate organic mass, ammonium sulfate and coarse mass.
- The highest aerosol extinction (12.3 dv) was measured at the ZICA1 site, where particulate organic mass was the largest contributor to aerosol extinction, followed by coarse mass.
- The lowest aerosol extinction (11.0 dv) was measured at the CANY1 site.

Specific observations for the current visibility conditions on the 20% least impaired days are as follows:

- The aerosol contribution to total extinction on the beset days was less than Rayleigh, or the background scattering that would occur in clean air.
- Average extinction (including Rayleigh) ranged from 2.1 dv (BRCA2) to 4.3 dv (ZICA1).

[5] EPA's September 2003 Guidance for Tracking Progress Under the Regional Haze Rule specifies that progress is tracked against the 2000-2004 baseline period using corresponding averages over successive 5-year periods; i.e., 2005-2009, 2010-2014, etc. (see page 4-2 in the Guidance document).

- For all sites, ammonium sulfate was the largest contributor to the non-Rayleigh aerosol species of extinction.

Table 3.1, Utah Class I Area IMPROVE Sites
Current Visibility Conditions, 2005-2009 Progress Period,
20% Most Impaired Days

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	11.9	19% (2)	9% (5)	**45% (1)**	10% (4)	5% (6)	12% (3)	0% (7)
CANY1	11.0	23% (2)	14% (4)	**27% (1)**	7% (5)	7% (6)	20% (3)	0% (7)
CAPI1	11.3	24% (2)	12% (4)	**32% (1)**	8% (5)	7% (6)	17% (3)	0% (7)
ZICA1	12.3	21% (3)	7% (5)	**33% (1)**	9% (4)	7% (6)	22% (2)	0% (7)

*Highest aerosol species contribution per site is highlighted in bold.

Table 3.2, Utah Class I Area IMPROVE Sites
Current Visibility Conditions, 2005-2009 Progress Period,
20% Least Impaired Days

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	2.1	**40% (1)**	15% (3)	22% (2)	7% (5)	4% (6)	11% (4)	1% (7)
CANY1	2.8	**43% (1)**	12% (4)	15% (3)	7% (5)	5% (6)	17% (2)	1% (7)
CAPI1	2.7	**38% (1)**	13% (4)	21% (2)	8% (5)	5% (6)	14% (3)	1% (7)
ZICA1	4.3	**30% (1)**	11% (4)	23% (2)	10% (5)	6% (6)	18% (3)	1% (7)

*Highest aerosol species contribution per site is highlighted in bold.

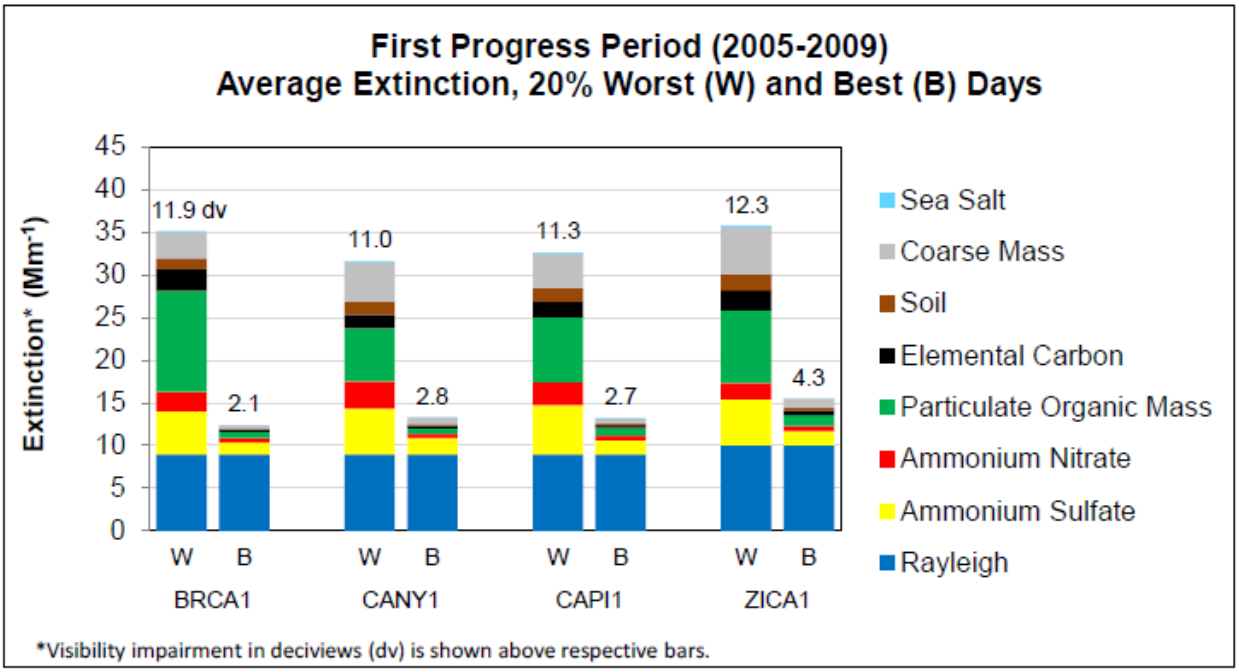

Figure 3.6. Average Extinction for Current Progress Period (2005-2009) for the Worst (Most Impaired) and Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites

3.4.2 Differences Between Current Visibility Conditions for the Most and Least Impaired Days and Baseline Visibility Conditions

Included here are comparisons between the 5-year average baseline conditions (2000-2004) and the current progress period extinction (2005-2009).

Table 3.3 presents the differences between the 2000-2004 baseline period average extinction and the 2005-2009 progress period average for each site in Utah for the 20% most impaired days, and Table 3.4 presents similar data for the least impaired days. Averages that increased are depicted in red text, and averages that decreased are depicted in blue.

Figure 3.7 presents the differences in the 5-year average extinction for the baseline and current progress period average for the worst days and Figure 3.8 presents the differences in averages by aerosol species, with increases represented above the zero line and decreases below the zero line. Figures 3.9 and 3.10 present similar plots for the best days.

For the 20% most impaired days, the 5-year average Regional Haze Rule (RHR) deciview metric increased between the 2000-2004 and 2005-2009 periods at the BRCA1 and CAPI1 sites and decreased at the CANY1 and ZICA1 sites. Notable differences for individual species averages were as follows:

Increases in 5-year average deciviews at the BRCA1 and CAPI1 sites were mostly due to increases in particulate organic mass, with some increases also measured in elemental carbon and soil. Coarse mass also contributed to increases at the CAPI1 site. Increases were offset by decreases in ammonium nitrate and ammonium sulfate at both sites.

Ammonium sulfate decreased at all sites except ZICA1. Note that data was not collected at the ZICA site during the baseline years, and changes reported here are proportional to average changes in extinction as measured at regional sites.

Increases in ammonium nitrate at CANY1 may be due to decreases in SO_2 emissions that reduce the formation of ammonium sulfate and therefore result in an increase in ammonium nitrate in ammonia limited conditions.

For the 20% least impaired days, the 5-year average deciview metric decreased at all sites. Notable differences for individual species averages on the 20% least impaired days were as follows:

All species at all sites either decreased or stayed the same between the baseline and current progress period for the best days. The largest decreases on the best days were measured in particulate organic mass, ammonium nitrate, ammonium sulfate, and coarse mass.

Table 3.3. Utah Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species, 2000-2004 Baseline Period to 2005-2009 Progress Period

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	11.6	11.9	+0.3	-0.2	-0.3	+2.5	+0.2	+0.1	-0.9	0.0
CANY1	11.2	11.0	-0.2	-0.3	+0.3	-0.9	-0.1	+0.1	+0.8	0.0
CAPI1	10.9	11.3	+0.4	-0.2	-0.7	+1.8	+0.2	+0.3	+0.7	+0.1
ZICA1	12.5	12.3	-0.2	+0.2	-0.3	-0.8	-0.1	+0.1	0.0	+0.1

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

Table 3.4. Utah Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species, 2000-2004 Baseline Period to 2005-2009 Progress Period
20% Least Impaired Days

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	2.8	2.1	-0.7	-0.1	-0.2	-0.3	-0.2	0.0	-0.1	0.0
CANY1	3.7	2.8	-0.9	-0.3	-0.1	-0.5	-0.1	-0.1	-0.2	0.0
CAPI1	4.1	2.7	-1.4	-0.3	-0.4	-0.5	-0.3	-0.1	-0.4	0.0
ZICA1	5.0	4.3	-0.7	-0.1	-0.2	-0.5	-0.2	0.0	-0.1	0.0

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

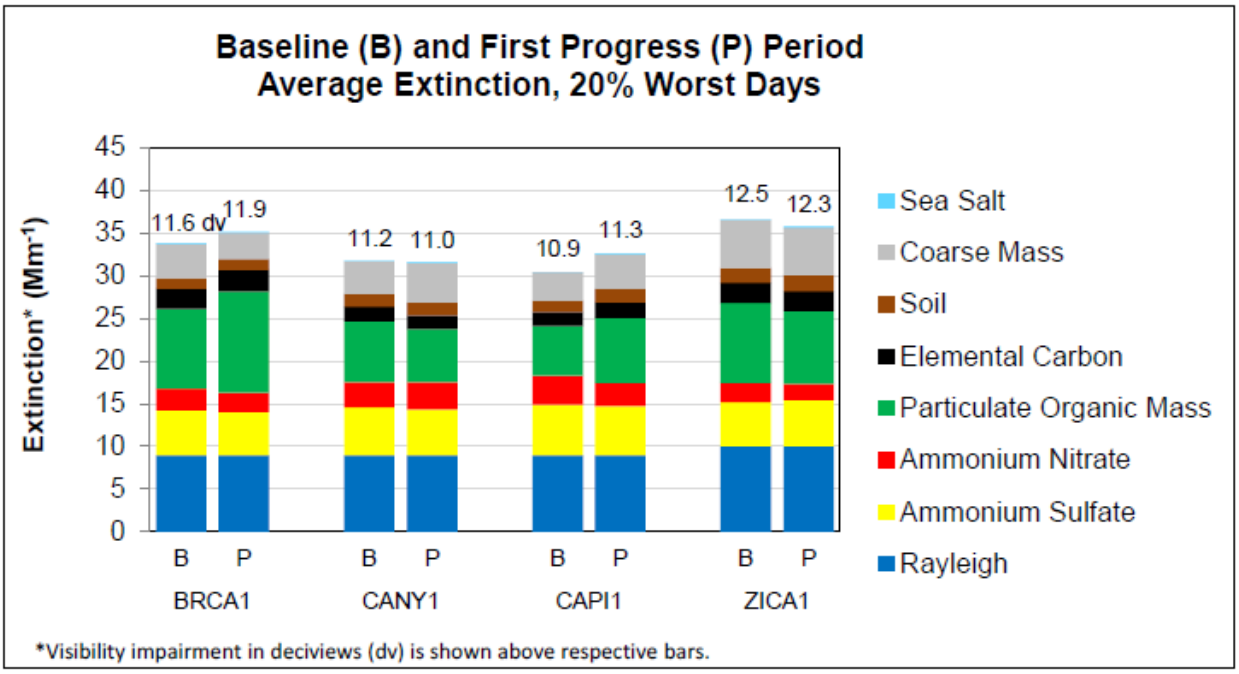

Figure 3.7. Average Extinction for Baseline and Progress Period Extinction for Worst (Most Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

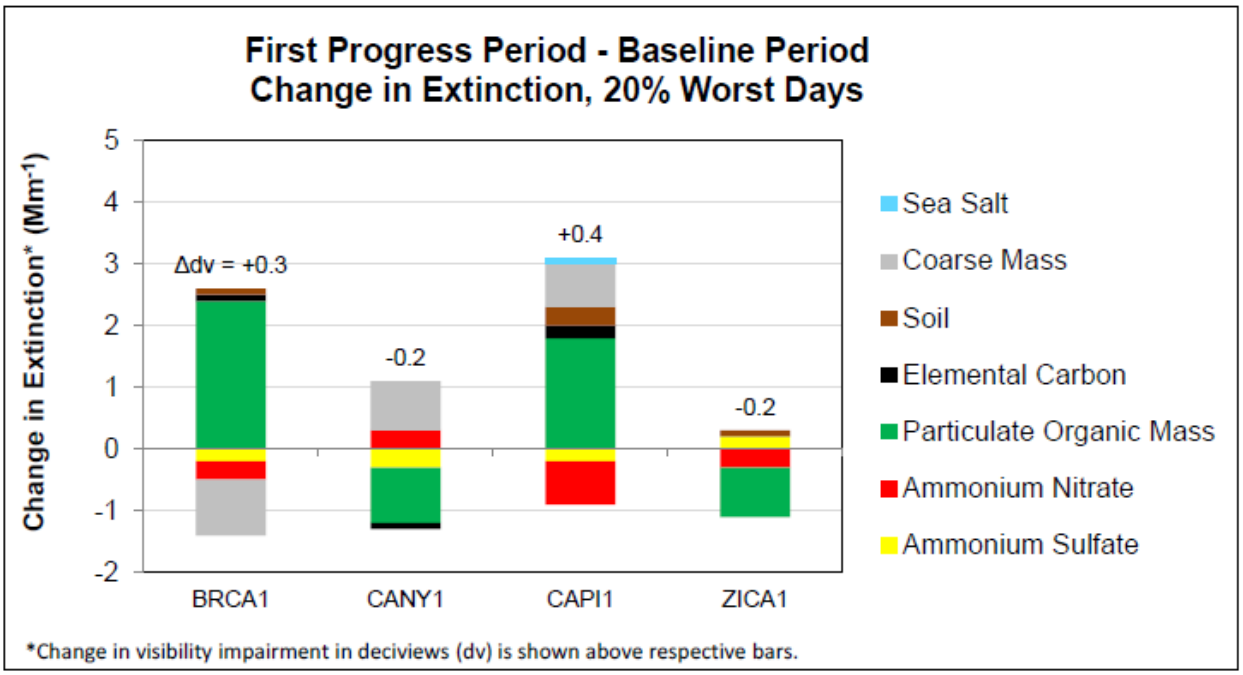

Figure 3.8. Difference between Average Extinction for Current Progress Period (2005-2009) and Baseline Period (2000-2004) for the Worst (Most Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

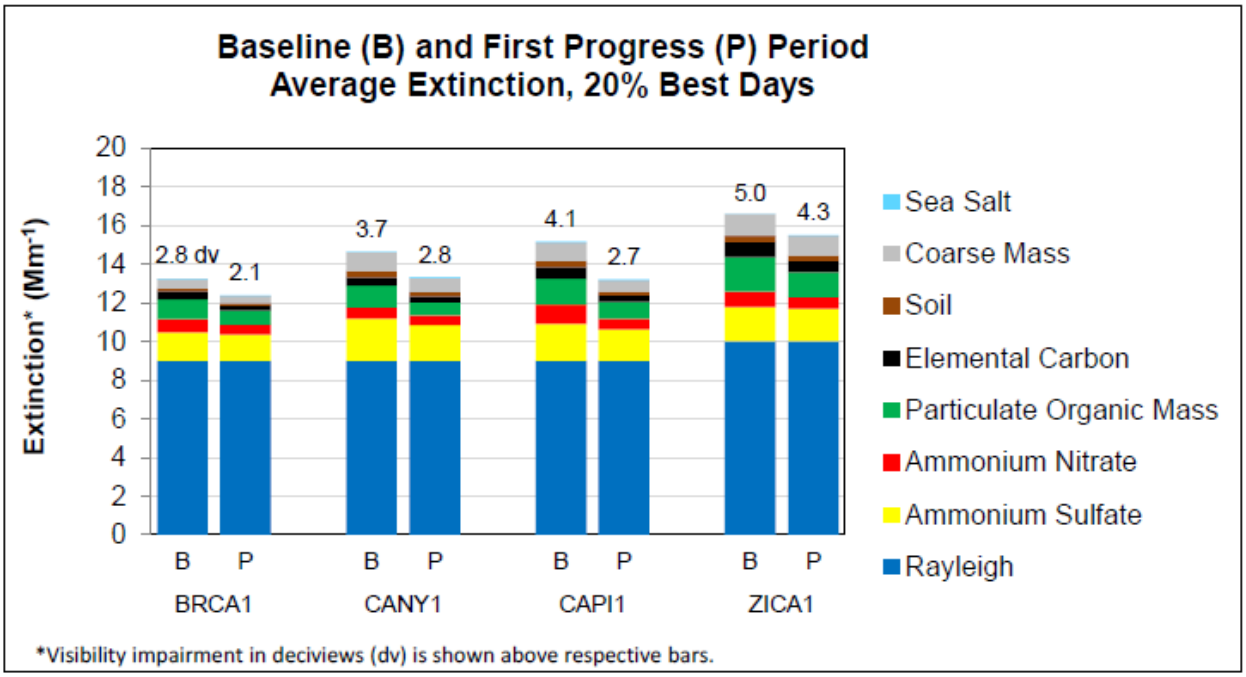

Figure 3.9. Average Extinction for Baseline and Progress Period Extinction for Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites

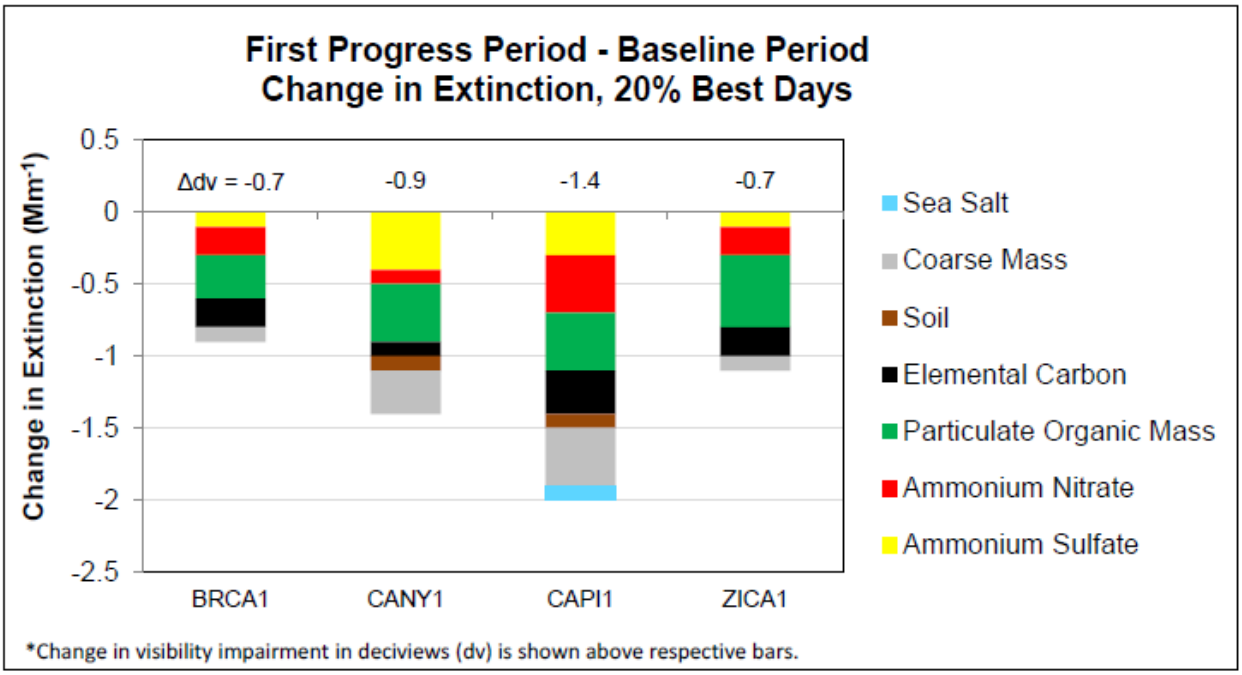

Figure 3.10. Difference Between Average Extinction for Current Progress Period (2005-2009) and Baseline Period (2000-2004) for the Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites

3.4.3 Change in Visibility Impairment for the Most Impaired and Least Impaired Days Over the Past Five Years

Included here are changes in visibility impairment as characterized by annual average trend statistics and some general observations regarding local and regional events and outliers on a daily and annual basis that affected the current 5-year progress period. The regulatory requirement asks for a description of changes over the past 5-year progress period, but trend analysis is better suited to longer periods of time, so trends for the entire 10-year planning period are presented here.

Trend statistics for the years 2000-2009 for each species at each site in Utah are summarized in Table 3.5[6]. Only trends for aerosol species trends with p-value statistics less than 0.15 (85% confidence level) are presented in the table here, with increasing slopes in red and decreasing slopes in blue[7]. In some cases, trends may show decreasing tendencies while the difference between the 5-year averages do not (or vice versa). In these cases, the 5-year average for the best and worst days is the important metric for the RHR regulatory purposes, but trend statistics may be of value to understand and address visibility impairment issues for planning purposes.

For each site, a more comprehensive list of all trends for all species, including the associated p-values, is provided in Appendix M of the *Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report*. Additionally, the appendix includes plots depicting 5-year, annual, monthly and daily average extinction for each site. Some general observations regarding changes in visibility impairment at sites in Utah are as follows:

- Particulate organic mass was the largest contributor to aerosol extinction at all sits in Utah. The largest difference between the 5-year average baseline and progress periods was measured for particulate organic mass at the BRCA1 site. This difference average was influenced by high particulate organic mass events in July and August, 2009.

- For ammonium sulfate, annual average trend statistics for all measured days indicated decreasing trends at all Utah sites. A slight increase in the 5-year average ammonium sulfate was reported for the ZICA1 site, but this was based on a baseline average estimate (Section 6.13.1.1 of Appendix M of the WRAP Report). Actual data measured between 2004 and 2009 at the ZICA1 site indicated a slightly decreasing annual average trend.

[6] Annual trends were calculated for the years 2000-2009, with a trend defined as the slope derived using Theil statistics. Trends derived from Theil statistics are useful in analyzing changes in air quality data because these statistics can show the overall tendency of measurements over long periods of time, while minimizing the effects of year-to-year fluctuations which are common in air quality data. Theil statistics are also used in EPA's National Air EPA's National Air Quality Trends Reports (http://www.epa.gov/airtrends/) and the IMPROVE program trend reports (http://vista.cira.colostate.edu/improve/Publications/improve_reports.htm)

[7] The significance of the trend is represented with p-values calculated using Mann-Kendall trend statistics. Determining a significance level helps to distinguish random variability in data from a real tendency to increase or decrease over time, where lower p-values indicate higher confidence levels in the computed slopes.

- For ammonium nitrate, annual average trend statistics for all measured days indicated a decreasing trend at the CAPI1 site and either no trend or insignificant trends at the other Utah sites.

- For soil, slightly increasing annual average tends were measured at the ZICA1 site and an increasing trend for the worst days was measured at the CAPI1 site.

- Coarse mass increased at the CAPI1 and CANY1 sites, but these sites did not show increasing trends. Higher 5-year current period averages were influenced by higher than average coarse mass events in late April of 2008 at both sites.

Table 3.5. Utah Class I Area IMPROVE Sites
Change in Aerosol Extinction by Species
200-2009 Annual Average Trends

Site	Group	Annual Trend* (Mm^{-1}/year)						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	20% Best	--	0.0	-0.1	0.0	--	0.0	0.0
	20% Worst	-0.2	--	0.5	0.1	--	--	0.0
	All Days	-0.1	0.0	--	--	--	--	--
CANY1	20% Best	-0.1	--	-0.1	0.0	--	-0.1	0.0
	20% Worst	-0.1	--	--	--	--	--	0.0
	All Days	-0.1	0.0	--	0.0	0.0	--	0.0
CAPI1	20% Best	-0.1	-0.1	-0.1	0.0	--	-0.1	--
	20% Worst	--	-0.2	--	--	0.1	--	0.0
	All Days	-0.1	-0.1	--	0.0	--	--	0.0
ZICA1	20% Best	0.0	--	--	0.0	0.0	--	0.0
	20% Worst	-0.5	--	--	--	--	--	--
	All Days	-0.2	--	--	-0.1	0.1	--	--

3.5 Analysis of Emissions: 40 CFR 40 CFR § 51.309(d)(10)(i)(D)

40 CFR §51.309(d)(10(i)(D) requires "*An analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.*"

Included here are summaries depicting differences between two emission inventory years that are used to represent the 5-year baseline and current progress periods. The baseline period is represented using a 2002 inventory developed by the WRAP for use in the initial WRAP state SIPs, and the progress period is represented by a 2008 inventory which leverages recent WRAP inventory work for modeling efforts. For reference, Table 3.6 lists the pollutants inventoried, the related aerosol species, some of the key sources for each pollutant, and some notes regarding implications of these pollutants. Differences between these

baseline and progress period inventories, and a separate summary of annual emissions from electrical generating units (EGUs), are presented in this section.

Table 3.6
Utah
Pollutants, Aerosol Species, and Major Sources

Emitted Pollutant	Related Aerosol	Major Sources	Notes
Sulfur Dioxide (SO_2)	Ammonium Sulfate	Point Sources; On- and Off-Road Mobile Sources	SO_2 emissions are generally associated with anthropogenic sources such as coal-burning power plants, other industrial sources such as refineries and cement plants, and both on- and off-road diesel engines.
Oxides of Nitrogen (NO_X)	Ammonium Nitrate	On- and Off-Road Mobile Sources; Point Sources; Area Sources	NO_X emissions are generally associated with anthropogenic sources. Common sources include virtually all combustion activities, especially those involving cars, trucks, power plants, and other industrial processes.
Ammonia (NH_3)	Ammonium Sulfate and Ammonium Nitrate	Area Sources; On-Road Mobile Sources	Gaseous NH_3 has implications in particle formation because it can form particulate ammonium. Ammonium is not generally directly measured by the IMPROVE program, but affects formation potential of ammonium sulfate and ammonium nitrate. All measured nitrate and sulfate is assumed to be associated with ammonium for IMPROVE reporting purposes.
Volatile Organic Compounds (VOCs)	Particulate Organic Mass (POM)	Biogenic Emissions; Vehicle Emissions; Area Sources	VOCs are gaseous emissions of carbon compounds, which are often converted to POM through chemical reactions in the atmosphere. Estimates for biogenic emissions of VOCs have undergone significant updates since 2002, so changes reported here are more reflective of methodology changes than actual changes in emissions (see Section 3.2.1).
Primary Organic Aerosol (POA)	POM	Wildfires; Area Sources	POA represents organic aerosols that are emitted directly as particles, as opposed to gases. Wildfires in the west generally dominate POA emissions, and large wildfire events are generally sporadic and highly variable from year-to-year.
Elemental Carbon (EC)	EC	Wildfires; On- and Off-Road Mobile Sources	Large EC events are often associated with large POM events during wildfires. Other sources include both on- and off-road diesel engines.
Fine Soil	Soil	Windblown Dust; Fugitive Dust; Road Dust; Area Sources	Fine soil is reported here as the crustal or soil components of $PM_{2.5}$.
Coarse Mass (PMC)	Coarse Mass	Windblown Dust; Fugitive Dust	Coarse mass is reported by the IMPROVE Network as the difference between PM_{10} and $PM_{2.5}$ mass measurements. Coarse mass is not separated by species in the same way that $PM_{2.5}$ is speciated, but these measurements are generally associated with crustal components. Similar to crustal $PM_{2.5}$, natural windblown dust is often the largest contributor to PMC.

For these summaries, emissions during the baseline years are represented using a 2002 inventory, which was developed with support from the WRAP for use in the original RH SIP strategy development (termed plan02d). Differences between inventories are represented as the difference between the 2002 inventory and a 2008 inventory which leverages recent inventory development work performed by the WRAP for the West-wide Jumpstart Air Quality Modeling Study (WestJumpAQMS) and Deterministic & Empirical Assessment of Smoke's contribution to Ozone (DEASCO$_3$) modeling projects (termed WestJump2009). Note that the comparison of differences between inventories does not necessarily reflect a change in emissions, as a number of methodology changes and enhancements have occurred between development of the individual inventories (See Appendix A). Inventories for all major visibility impairing pollutants are presented for major source categories, and categorized as either anthropogenic or natural emissions.

Table 3.7 and Figure 3.11 present the differences between the 2002 and 2008 sulfur dioxide (SO_2) inventories by source category. Table 3.8 and Figure 3.11 present data for oxides of nitrogen (NO_x), and Tales 3.9 through 3.14 and Figures 3.12 through 3.18 present data for ammonia (NH_3), volatile organic compounds (VOCs), primary organic aerosol (POA), elemental carbon (EC), fine soil, and coarse mass. General observations regarding emissions inventory comparisons are listed below.

- The largest differences for point source inventories were a decrease in SO_2 emissions and an increase in NO_X.
- Area source inventories showed decreases in SO_2 and increases in NO_X, NH_3, POA, and VOCs. These changes may be due to a combination of population changes and differences in methodologies used to estimate these emissions (see Section 3.2.1 of Appendix A). One methodology change was the reclassification of some off-road mobile sources (such as some types of marine vessels and locomotives) into the area source category in 2008, which may have contributed to increases in area source inventory totals, but decreases in off-road mobile totals.
- On-road mobile source inventory comparisons showed decreases in most parameters, especially NOX and VOCs, with increases in POA, EC, and coarse mass. Reductions in NOX and VOC are likely influenced by federal and state emissions standards that have already been implemented. The increases in POA, EC, and coarse mass occurred in all of the WRAP states for on-road mobile inventories, regardless of reductions in NO_X and VOCs, indicating that these increases were likely due use of different on-road models, as referenced in Section 3.2.1 of Appendix A.
- Off-road mobile source inventories showed decreases in NO_x, SO_2, and VOCs, and increases in fine soil and coarse mass, which was consistent with most contiguous WRAP states. These differences were likely due to a combination of actual changes in source contributions and methodology differences, as referenced in Section 3.2.1 of Appendix A. As noted previously, one major methodology difference was the reclassification of some off-road mobile sources (such as some types of marine vessels and locomotives) into the area source category in 2008, which may have contributed to decreases in the off-road inventory totals, but increases in area source totals.
- Inventory comparison results for area oil and gas showed an increase in NOX and a decrease in VOCs. Note that inventory methodologies for these sources may have evolved substantially between the baseline and 2008 inventories as referenced in Section 3.2.1. Also, WRAP Phase III oil and gas inventories are reported here for entire basins, and include oil and gas emissions within tribal boundaries.

- For most parameters, especially POAs, VOCs, and EC, fire emission inventory estimates decreased. Note that these differences are not necessarily reflective of changes in monitored data, as the baseline period is represented by an average of 2000-2004 fire emissions, and the progress period is represented only by the fires that occurred in 2008, as referenced in Section 3.2.1 of Appendix A.
- Comparisons between VOC inventories showed large decreases in biogenic emissions, which was consistent with other contiguous WRAP states. Estimates for biogenic emissions of VOCs have undergone significant updates since 2002, so changes reported here are more reflective of methodology changes than actual changes in emissions, as referenced in Section 3.2.1 of Appendix A.
- Fine soil and coarse mass increased for the windblown dust inventory comparisons and the combined fugitive/road dust inventories. Large variability in changes in windblown dust was observed for the contiguous WRAP states, which was likely due in large part to enhancements in dust inventory methodology rather than in changes in actual emissions.

Table 3.7
Sulfur Dioxide Emissions by Category

Source Category	Sulfur Dioxide Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point	41,863	28,206	-13,658
Area	3,434	1,988	-1,447
On-Road Mobile	1,777	497	-1,280
Off-Road Mobile	4,504	286	-4,218
Area Oil and Gas	17	114	98
Fugitive and Road Dust	0	0	0
Anthropogenic Fire	70	8	-62
Total Anthropogenic	**51,665**	**31,099**	**-20,566 (-40%)**
Natural Sources			
Natural Fire	2,418	92	-2,326
Biogenic	0	0	0
Wind Blown Dust	0	0	0
Total Natural	**2,418**	**92**	**-2,326 (-96%)**
All Sources			
Total Emissions	**54,083**	**31,190**	**-22,892 (-42%)**

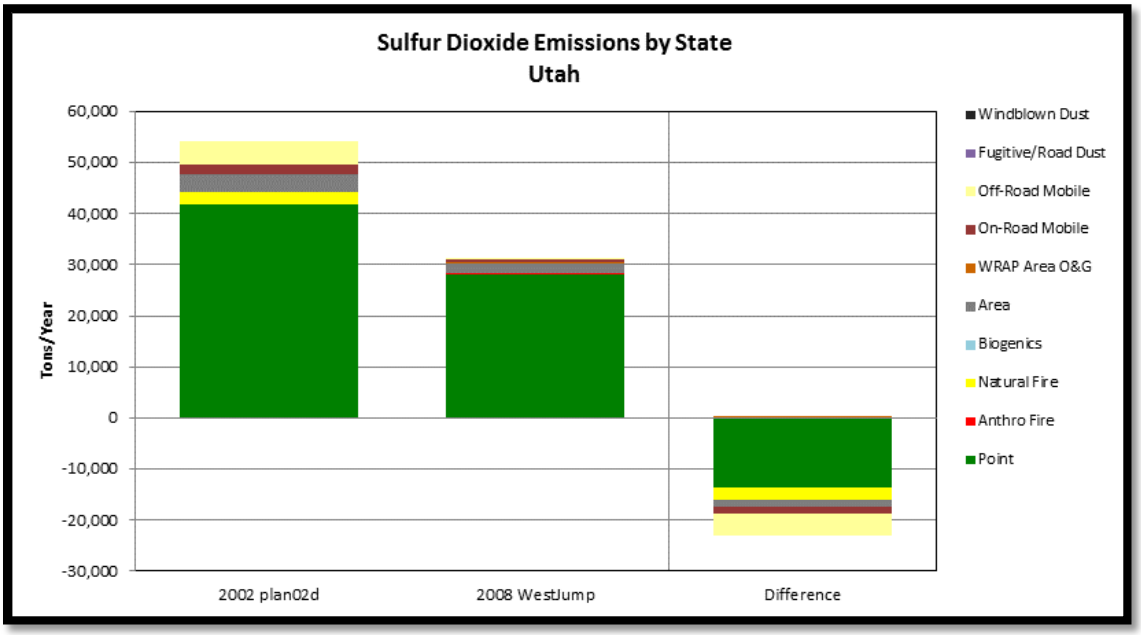

Figure 3.11. 2002 and 2008 Emission and Difference between Emissions Inventory Totals, for Sulfur Dioxide by Source Category for Utah

Table 3.8
Oxides of Nitrogen Emissions by Category

Source Category	Oxides of Nitrogen Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point	84,218	87,623	3,405
Area	6,146	17,269	11,124
On-Road Mobile	77,381	64,186	-13,195
Off-Road Mobile	47,100	13,249	-33,851
Area Oil and Gas	3,335	4,136	801
Fugitive and Road Dust	0	0	0
Anthropogenic Fire	319	65	-254
Total Anthropogenic	**218,499**	**186,528**	**-31,971 (-15%)**
Natural Sources			
Natural Fire	8,873	650	-8,223
Biogenic	12,597	6,144	-6,453
Wind Blown Dust	0	0	0
Total Natural	**21,470**	**6,793**	**-14,676 (-68%)**
All Sources			
Total Emissions	**239,969**	**193,322**	**-46,647 (-19%)**

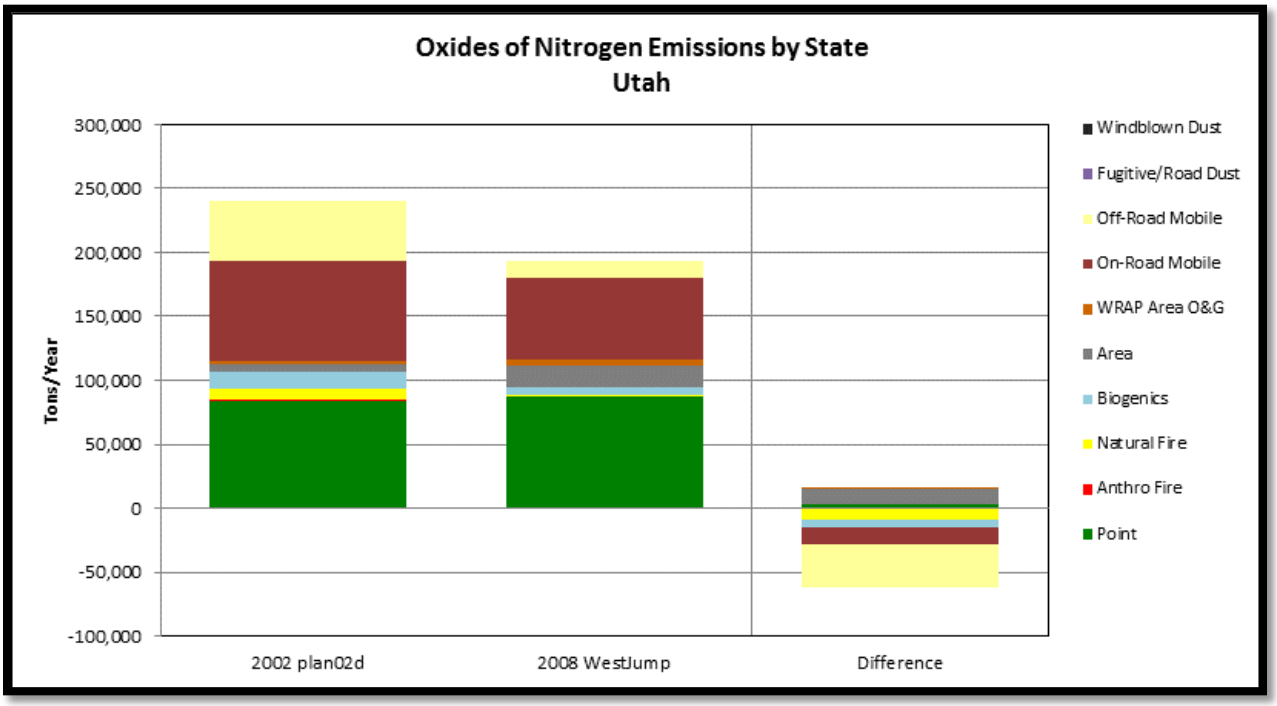

Figure 3.12. 2002 and 2008 Emissions and Difference between Emissions Inventory Totals, for Oxides of Nitrogen by Source Category for Utah

Table 3.9
Ammonia Emissions by Category

Source Category	Ammonia Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point	1,905	556	-1,349
Area	23,642	37,639	13,997
On-Road Mobile	2,453	1,048	-1,405
Off-Road Mobile	32	16	-16
Area Oil and Gas	0	0	0
Fugitive and Road Dust	0	0	0
Anthropogenic Fire	75	37	-38
Total Anthropogenic	**28,107**	**39,295**	**11,189 (40%)**
Natural Sources			
Natural Fire	1,893	449	-1,444
Biogenic	0	0	0
Wind Blown Dust	0	0	0
Total Natural	**1,893**	**449**	**-1,444 (-76%)**
All Sources			
Total Emissions	**29,999**	**39,744**	**9,744 (32%)**

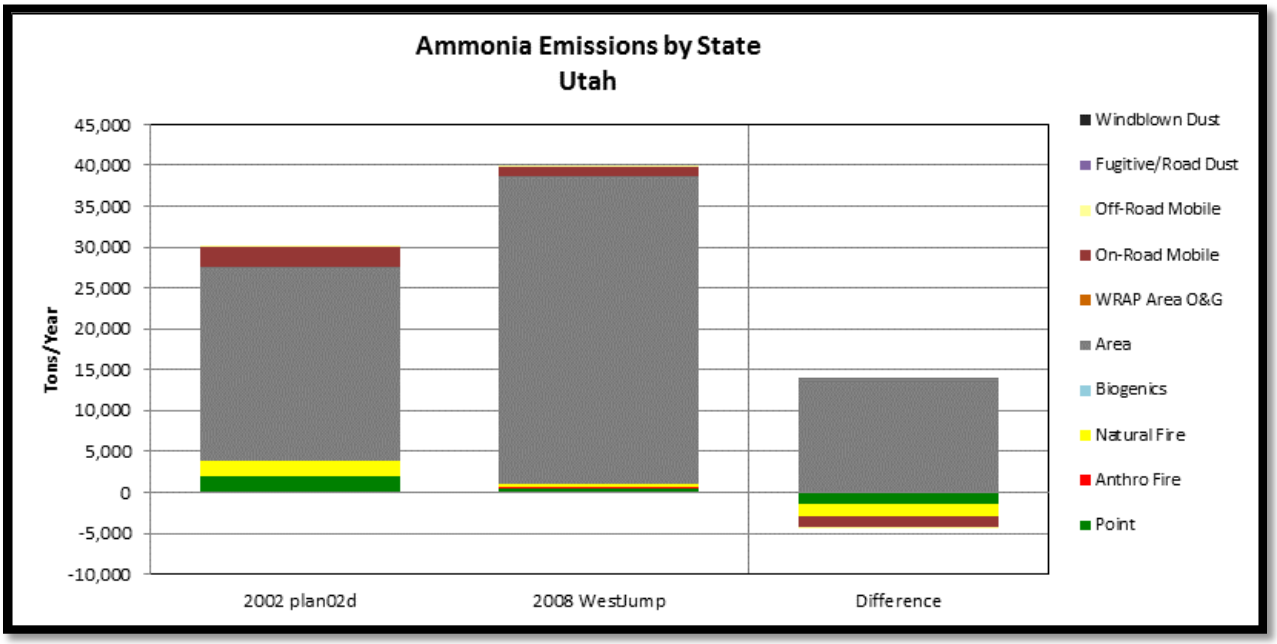

Figure 3.13. 2002-2008 Emission and Difference between Emission Inventory Totals, for Ammonia by Source Category for Utah

Table 3.10
Volatile Organic Compound Emissions by Category

Source Category	Volatile Organic Compound Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point	7,367	9,285	1,919
Area	46,679	72,811	26,132
On-Road Mobile	49,075	27,138	-21,937
Off-Road Mobile	26,933	23,213	-3,720
Area Oil and Gas	35,961	25,358	-10,603
Fugitive and Road Dust	0	0	0
Anthropogenic Fire	536	126	-410
Total Anthropogenic	**166,550**	**157,931**	**-8,619 (-5%)**
Natural Sources			
Natural Fire	19,484	720	-18,764
Biogenic	641,481	237,799	-403,682
Wind Blown Dust	0	0	0
Total Natural	**660,965**	**238,518**	**-422,446 (-64%)**
All Sources			
Total Emissions	**827,515**	**396,449**	**-431,065 (-52%)**

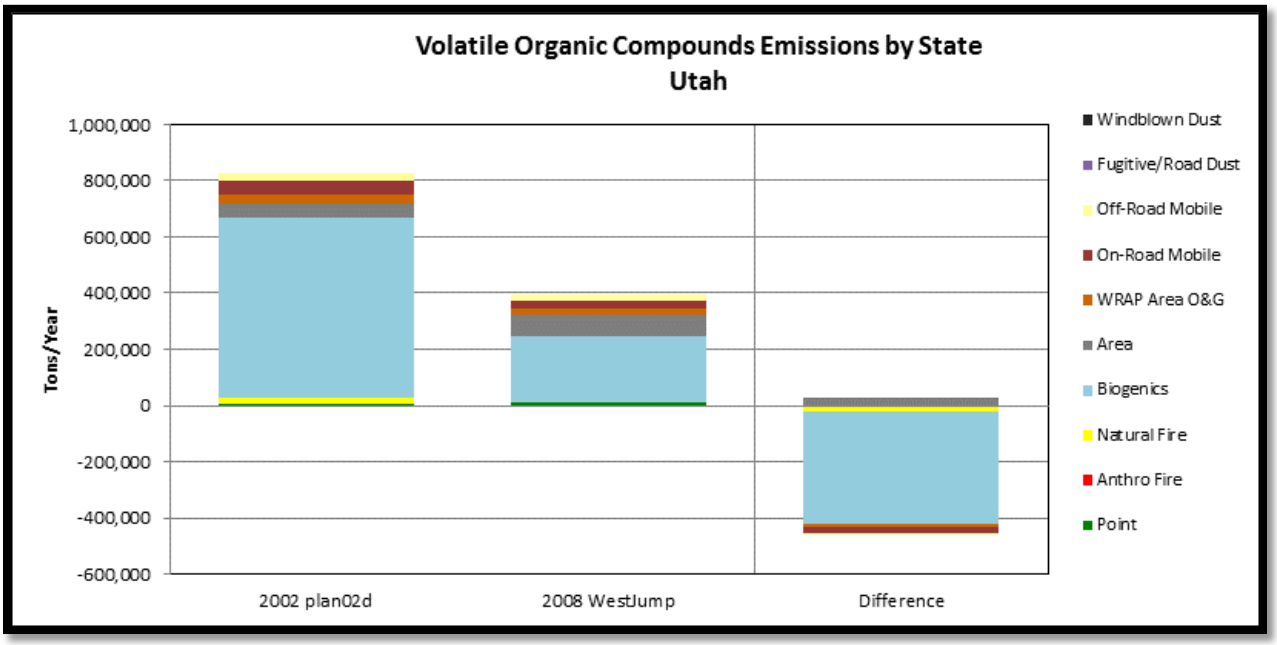

Figure 3.14. 2002-2008 Emission and Difference between Emission Inventory Totals, for Volatile Organic Compounds by Source Category for Utah

Table 3.11
Primary Organic Aerosol Emissions by Category

Source Category	Primary Organic Aerosol Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point*	392	75	-317
Area	578	3,045	2,468
On-Road Mobile	637	1,573	937
Off-Road Mobile	965	666	-299
Area Oil and Gas	0	28	28
Fugitive and Road Dust	141	886	745
Anthropogenic Fire	507	106	-401
Total Anthropogenic	**3,219**	**6,380**	**3,161 (98%)**
Natural Sources			
Natural Fire	26,187	1,167	-25,020
Biogenic	0	0	0
Wind Blown Dust	0	0	0
Total Natural	**26,187**	**1,167**	**-25,020 (-96%)**
All Sources			
Total Emissions	**29,407**	**7,547**	**-21,859 (-74%)**

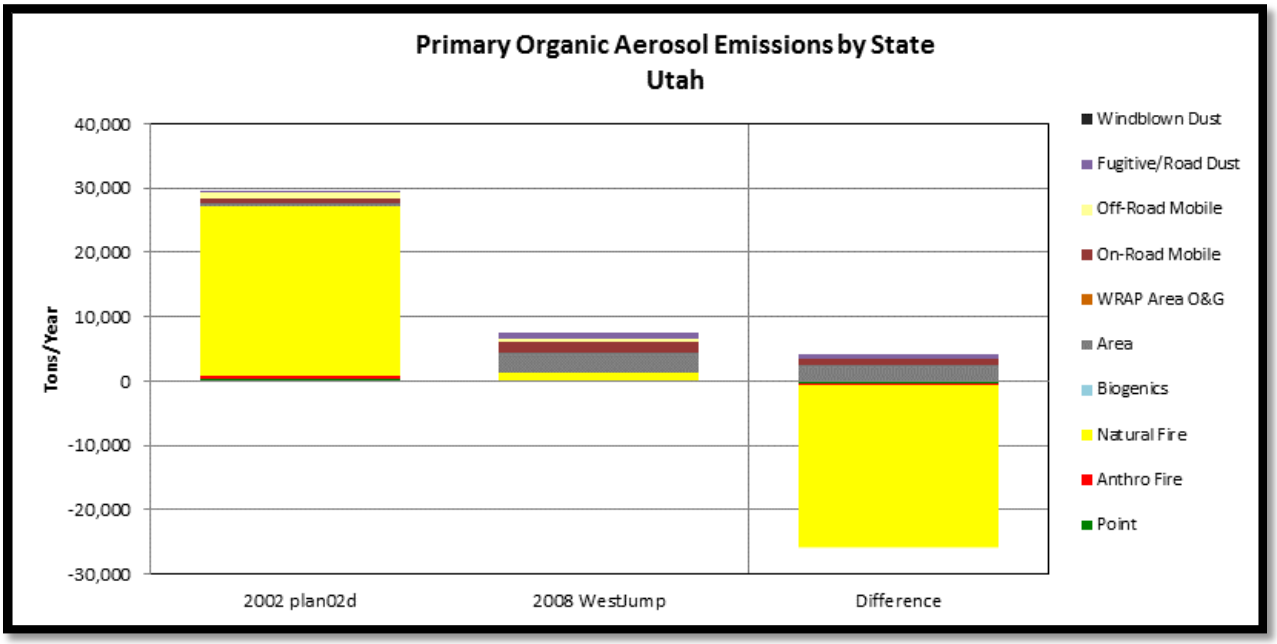

Figure 3.15. 2002-2008 Emission and Difference between Emission Inventory Totals, for Primary Organic Aerosol by Source Category for Utah

Table 3.12
Elemental Carbon Emissions by Category

Source Category	Elemental Carbon Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point*	102	24	-77
Area	12	513	500
On-Road Mobile	663	2,593	1,930
Off-Road Mobile	2,492	715	-1,777
Area Oil and Gas	0	0	0
Fugitive and Road Dust	11	21	11
Anthropogenic Fire	85	23	-62
Total Anthropogenic	**3,364**	**3,889**	**525 (16%)**
Natural Sources			
Natural Fire	5,405	209	-5,196
Biogenic	0	0	0
Wind Blown Dust	0	0	0
Total Natural	**5,405**	**209**	**-5,196 (-96%)**
All Sources			
Total Emissions	**8,769**	**4,098**	**-4,671 (-53%)**

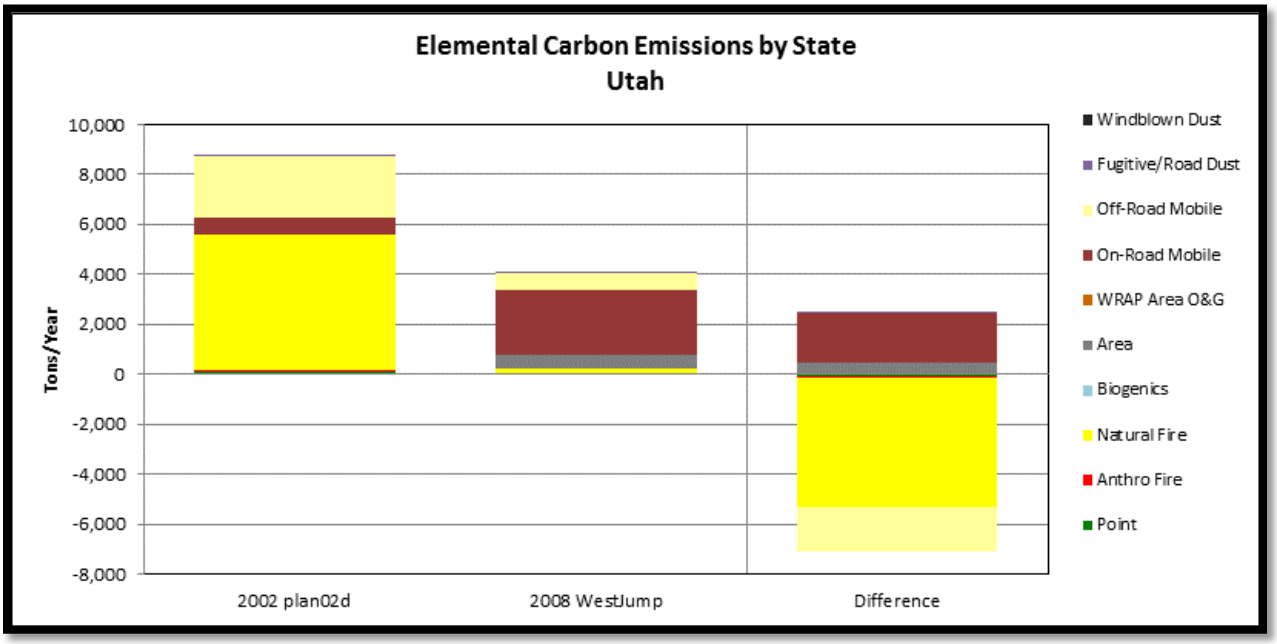

Figure 3.16. 2002-2008 Emission and Difference between Emission Inventory Totals, for Elemental Carbon by Source Category for Utah

Table 3.13
Fine Soil Emissions by Category

Source Category	Fine Soil Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point*	2,933	712	-2,222
Area	160	1,595	1,435
On-Road Mobile	426	257	-170
Off-Road Mobile	0	47	47
Area Oil and Gas	0	479	479
Fugitive and Road Dust	2,411	14,164	11,753
Anthropogenic Fire	81	43	-38
Total Anthropogenic	**6,011**	**17,296**	**11,285 (>100%)**
Natural Sources			
Natural Fire	1,719	429	-1,290
Biogenic	0	0	0
Wind Blown Dust	7,573	10,810	3,237
Total Natural	**9,292**	**11,239**	**1,948 (21%)**
All Sources			
Total Emissions	**15,302**	**28,535**	**13,232 (86%)**

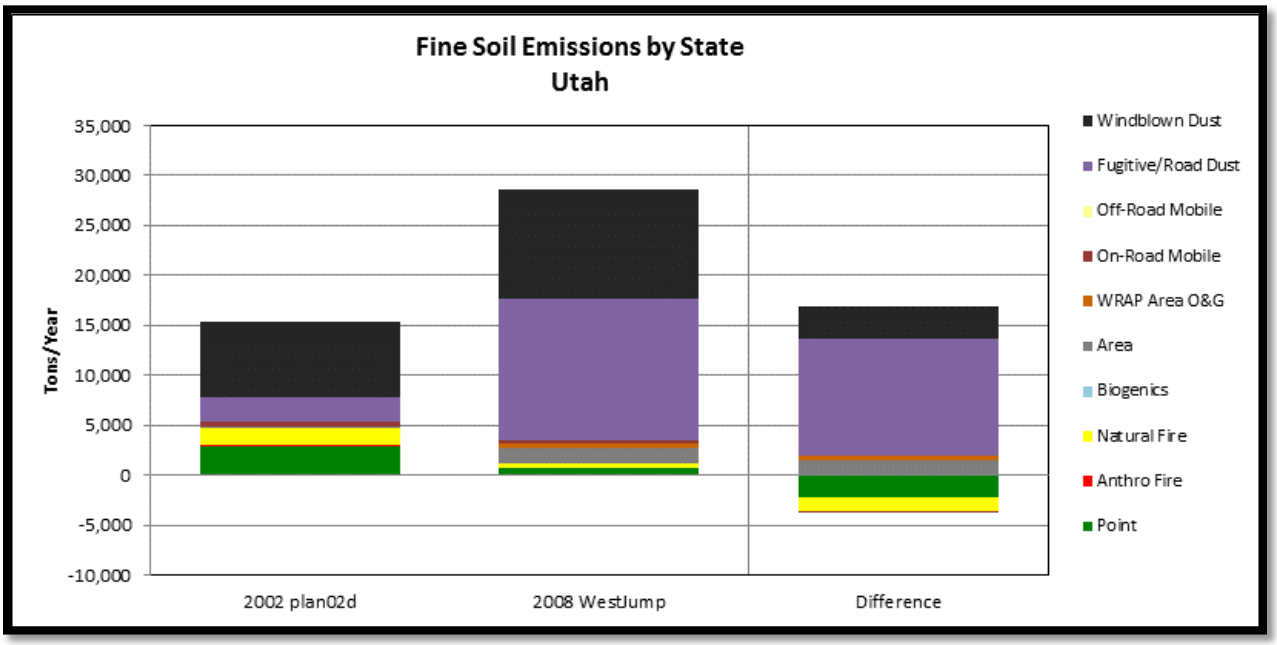

Figure 3.17. 2002-2008 Emission and Difference between Emission Inventory Totals, for Fine Soil by Source Category for Utah

Table 3.14
Coarse Mass Emissions by Category

Source Category	Coarse Mass Emissions (tons/year)		
	2002 (Plan02d)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point*	8,442	4,216	-4,226
Area	2,387	2,017	-371
On-Road Mobile	414	2,801	2,387
Off-Road Mobile	0	76	76
Area Oil and Gas	0	12	12
Fugitive and Road Dust	12,374	107,079	94,705
Anthropogenic Fire	59	20	-39
Total Anthropogenic	**23,677**	**116,221**	**92,544 (>100%)**
Natural Sources			
Natural Fire	5,671	224	-5,448
Biogenic	0	0	0
Wind Blown Dust	68,153	97,289	29,136
Total Natural	**73,824**	**97,513**	**23,689 (32%)**
All Sources			
Total Emissions	**97,501**	**213,733**	**116,233 (>100%)**

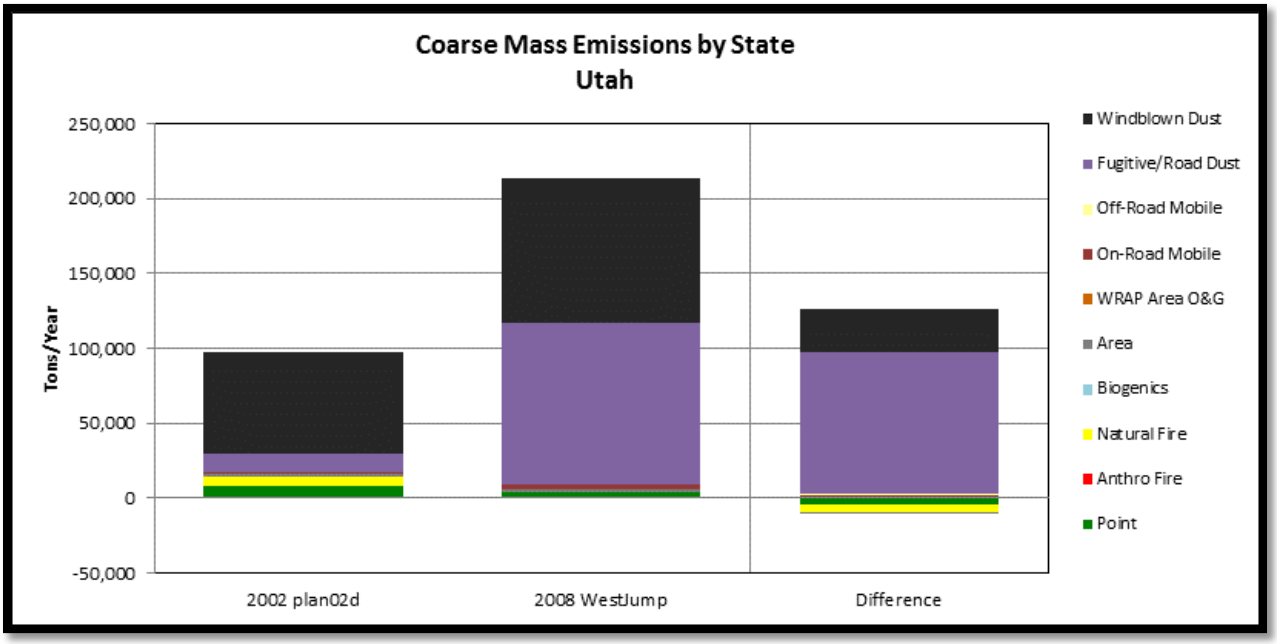

Figure 3.18. 2002-2008 Emission and Difference between Emission Inventory Totals, for Coarse Mass by Source Category for Utah

As described above, differences between the baseline and progress period inventories presented here do not necessarily represent changes in actual emissions because numerous updates in inventory methodologies have occurred between the development of the separate inventories. Also, the 2002 baseline and 2008 progress period inventories represent only annual snapshots of emissions estimates, which may not be representative of the entire 5-year monitoring periods compared. To better account for year-to-year changes in emissions, annual emissions totals for Utah electrical generating units (EGUs) are presented here. EGU emissions are some of the more consistently reported emissions, as tracked in EPA's Air Markets Program Database for permitted Title V facilities in the state (http://ampd.epa.gov/ampd). RHR implementation plans are required to pay specific attention to certain major stationary sources, including EGUs, built between 1962 and 1977.

Figure 3.19 presents a sum of annual NOx and SO_2 emissions as reported for Utah EGU sources between 1996 and 2010. While these types of facilities are targeted for controls in state regional haze SIPs, it should be noted that many of the controls planned for EGUs in the WRAP states had not taken place yet in 2010, while other controls separate from the RHR may have been implemented. The chart shows some periods of decline for both NOx and SO_2, with a sharp decline in SO_2 emissions between 2006 and 2007.

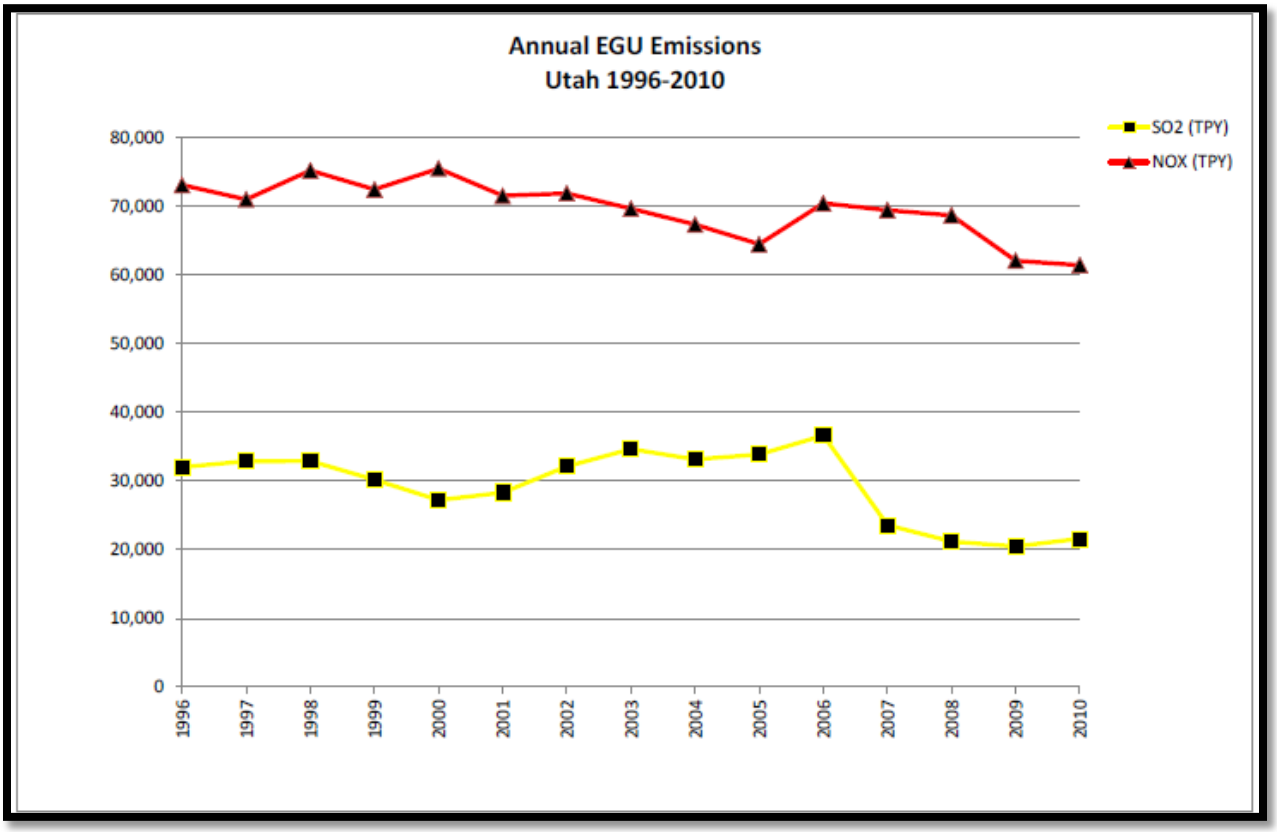

Figure 3.19. Sum of EGU Emissions of SO_2 and NOx Reported between 1996 and 2010

3.6 Changes to Anthropogenic Emissions: § 51.309(d)(10)(i)(E)

40 CFR §51.309(d)(10)(i)(E) requires *an assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility."*

Table 3.15 displays the average light extinction for the 20% worst days over the 5-year period 2005 through 2009 for all Class I areas in Utah. The table demonstrates that on the 20% worst days in the Class I areas in Utah, particulate organic mass and ammonium sulfate are the major concern for visibility impairment. Appendix M includes monitoring data summaries over the 5-year period 2005-2009 for the 20% worst and best days for each Class I area in Utah.

Table 3.15. Average extinction for 20% Worst Days for the Current Progress Period of 2005-2009

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	11.9	19% (2)	9% (5)	**45% (1)**	10% (4)	5% (6)	12% (3)	0% (7)
CANY1	11.0	23% (2)	14% (4)	**27% (1)**	7% (5)	7% (6)	20% (3)	0% (7)
CAPI1	11.3	24% (2)	12% (4)	**32% (1)**	8% (5)	7% (6)	17% (3)	0% (7)
ZICA1	12.3	21% (3)	7% (5)	**33% (1)**	9% (4)	7% (6)	22% (2)	0% (7)

The primary sources of anthropogenic particulate organic mass in Utah include prescribed burning, vehicle exhaust, vehicle refueling, solvent evaporation (e.g., paints), food cooking, and various commercial and industrial sources. Anthropogenic sources of SO_2 include coal-burning power plants and other industrial sources, such as boilers, oil refineries and copper smelters. Stationary point sources account for approximately 90% of SO_2 emissions in Utah.

There do not appear to be any anthropogenic emissions within Utah that would have limited or impeded progress in reducing pollutant emissions or improving visibility.

3.7 Assessment of Current SIP Strategy: § 51.309(d)(10)(i)(F)

40 CFR § 51.309(d)(10)(i)(F) requires "an assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals."

Figure 3.20 shows the annual and 5-year period averages for the 20% worst days at Canyonlands National Park and Arches National Park from 2000 to 2010. This figure demonstrates that on the 20% worst days, visibility continues to improve at these Class I areas from the baseline average through the first progress period. Similar results are seen for Zion National Park at the ZICA1 monitor (Appendix M). Figures 3.21 and 3.22 show the annual and 5-year period averages for the 20% worst days at Bryce Canyon

National Park (BRCA1 site) and Capitol Reef Nation Park (CANY1 Site). At both of these monitors, the 5-year period average from 2005 to 2009 is higher than the baseline. Note that the increase in deciviews in 2009 from these monitors is attributed to peak increases of particulate organic mass, which was a result of large fire events throughout the region in both July and August of that year. Utah should not be held accountable for visibility impairing emissions that are uncontrollable. However, even with wildfire emissions included in the assessment, monitoring data shows that visibility continues to improve for both the 20% best and worst days through 2010 at all IMPROVE sites (Appendix M).

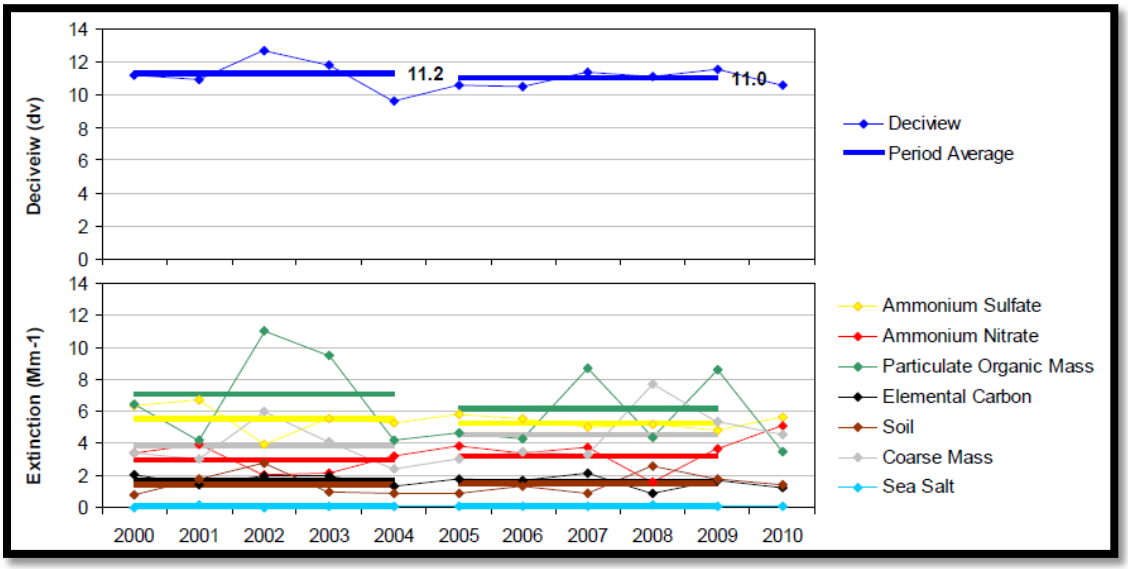

Figure 3.20. Annual and 5-Year Period Averages for the 20% Worst Days at Canyonlands and Arches National Parks (CANY1 IMPROVE Site)

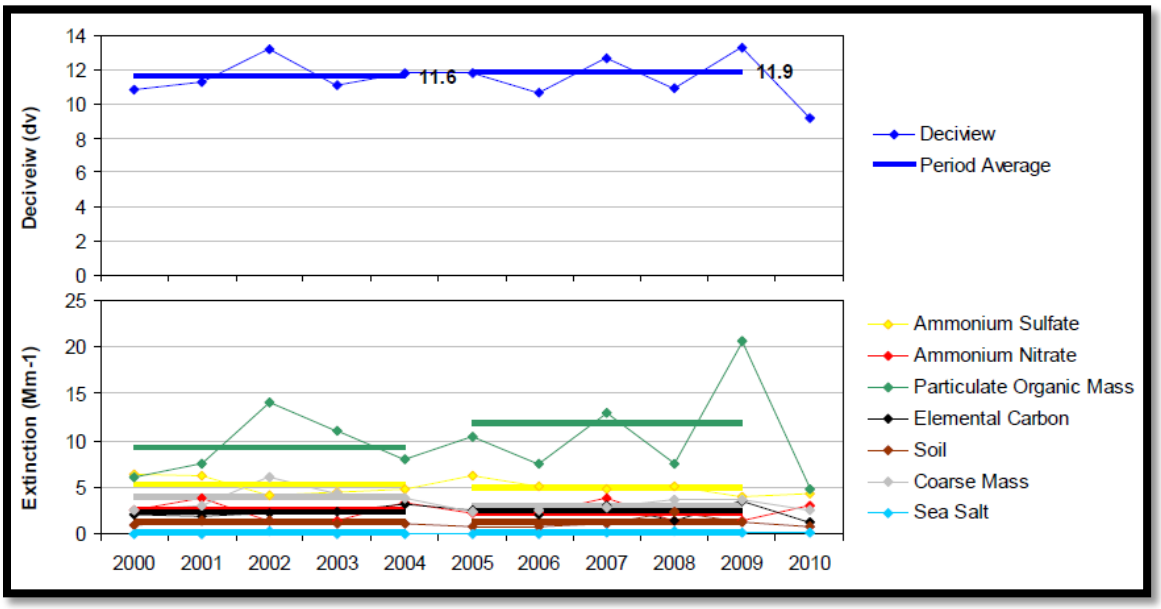

Figure 3.21. Annual and 5-Year Period Averages for the 20% Worst Days at Bryce Canyon National Park (BRCA1 IMPROVE Site)

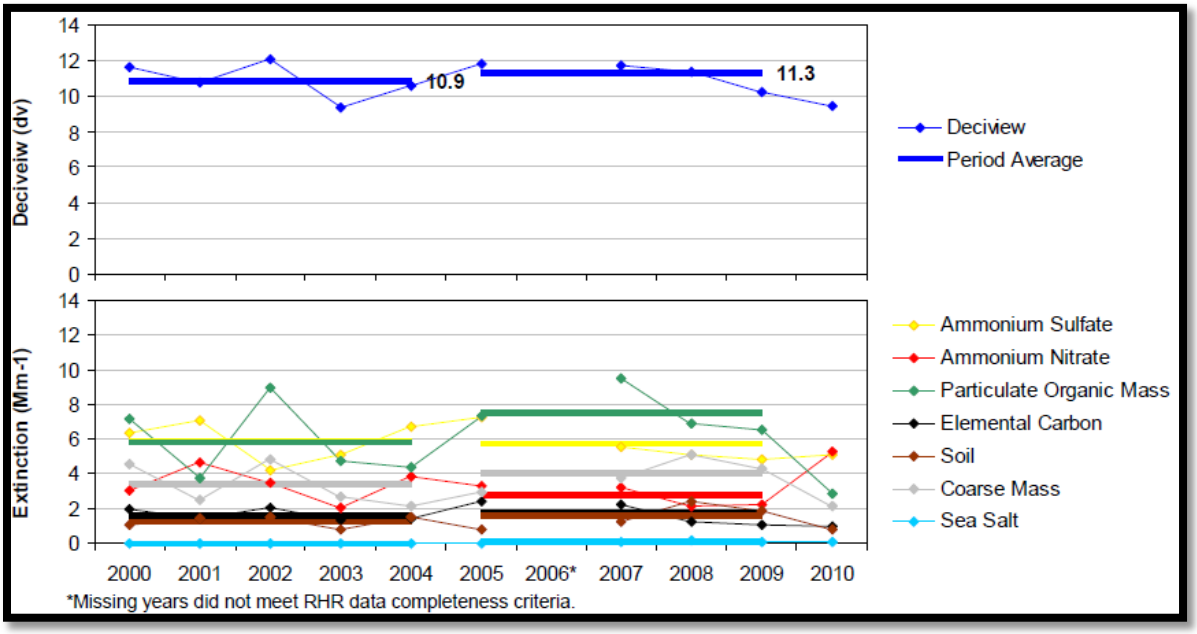

Figure 3.22. Annual and 5-Year Period Averages for the 20% Worst Days at Capitol Reef (CAPI1 IMPROVE Site)

As table 3.16 shows, Utah is showing improvement in visibility on the most impaired days and no degradation on the least impaired days between baseline and current monitoring data. The first 5-year progress period evaluated in this report covers the 2005-2009 timeframe, as it represents the most recent successive 5-year averaging period; however, the WRAP TSS has been updated to include data up through 2012. The average of the first three years of the next successive 5-year progress period (2010-2014) indicates that visibility at Utah's Class I areas is improving on both the 20% worst and 20% best days.

Table 3.16. Utah Class I Area IMPROVE Sites Visibility conditions – 20% Most and Least Impaired Days Including 2010 to 2012 data

Class I Area	Baseline (2000-2004) (dv)	Current (2005-2009) (dv)	(2010-2012) (dv)	2018 Preliminary Reasonable Progress Case (PRP18a) (dv)
20% Worst Days				
Arches NP (CANY1)	11.2	11.0	10.6	10.9
Bryce Canyon NP (BRCA1)	11.6	11.9	10.0	11.2
Canyonlands NP (CANY1)	11.2	11.0	10.6	10.9
Capitol Reef NP (CAPI1)	10.9	11.3	10.1	10.5
Zion NP (ZICA1)	12.5	12.3	*10.8*[8]	N/A[9]
20% Best Days				
Arches NP (CANY1)	3.7	2.8	2.8	3.5
Bryce Canyon NP (BRCA1)	2.8	2.1	1.7	2.6
Canyonlands NP (CANY1)	3.7	2.8	2.8	3.5
Capitol Reef NP (CAPI1)	4.1	2.7	2.4	3.9
Zion NP (ZICA1)	5.0	4.3	4.4 (see footnote 7)	N/A (see footnote 7)

Utah believes that the current control strategies in the state's Regional Haze SIP are sufficient to improve visibility at Federal Class I areas in the state and to benefit all Class I areas outside of Utah that might be impacted by emissions from Utah.

Northern Utah, which may impact Federal Class I areas in Idaho, Nevada, and Wyoming, is an urban area with emissions predominately coming from mobile sources. Mobile NO_x emissions in the four main urban counties (Weber, Salt Lake, and Utah) are projected to decrease 42,000 tons/yr or 61% between 2002 and 2018.

BART controls installed to plants in central Utah (as described in Section 3.2 of this report) are projected to decrease SO_2 emissions by 13,200 and NO_x emissions by 6,200 tons between 2002 and 2018. And as is the case with northern Utah, southern Utah has an emissions inventory dominated by mobile sources. In Washington County, NO_x emissions from mobile sources are projected to decrease 2,300 tons or 57% between 2002 and 2018. These emissions reductions benefit Federal Class I areas in Colorado, New Mexico and Arizona.

[8] Includes 2012 data only; there were no results available for 2010 and 2011.

[9] There is no PRP18a established for the new ZICA1 monitor. The PRP18a was originally established for the original ZIONI IMPROVE monitor, which was discontinued on July 29, 2004.

As stated in Section K of the SIP, oil and gas emissions in eastern Utah are increasing. Approximately 90% of current emissions from oil and gas development in Uintah and Duchesne Counties occur on land that is under the jurisdiction of the Ute Indian Tribe and EPA and is therefore not covered under Utah's SIP. For the areas under state jurisdiction, the WRAP Phase III inventory estimated that NOx emissions from oil and gas production would increase by about 1,000 tons/yr between 2006 and 2012. Figure 19 in Utah's SIP shows the expected impact from Utah sources on Class I areas in western Colorado. While NOx emissions from oil and gas production are increasing, mobile source NOx emissions are decreasing in the urban area along the Wasatch Front, and NOx emissions are decreasing due to BART in Central Utah, showing an overall decreased contribution to nitrate levels in western Colorado. In addition, new federal engine standards (NSPS IIII and JJJJ, NESHAP ZZZZ) are leading to additional reductions in NOx emissions that will be reflected in future inventories.

3.8 Assessment of Current Monitoring Strategy: § 51.309(d)(10)(i)(G)

40 CFR § 51.309(d)(10)(i)(G) requires *"a review of the State's visibility monitoring strategy and any modifications to the strategy as necessary."*

The primary monitoring network for regional haze, both nationwide and in Utah, is the IMPROVE monitoring network. Given that IMPROVE monitoring data from 2000 to 2004 serves as the baseline for the regional haze program, the future regional haze monitoring strategy must necessarily be based on, or directly comparable to the current IMPROVE network. The IMPROVE measurements provide the only long-term record available for tracking visibility improvement or degradation; therefore, Utah intends to continue reliance on the IMPROVE network for complying with the RH monitoring requirement in the RH rule.

There are currently four IMPROVE sites in Utah (Table 3.17), and no modifications to the existing visibility monitoring strategy are necessary at this time.

Table 3.17. Utah CIAs and Representative IMPROVE Monitors

Class I Area	Representative IMPROVE Site	Latitude	Longitude	Elevation (m)
Bryce Canyon NP	BRCA1	37.62	-112.17	2481
Canyonlands NP	CANY1	38.46	-109.82	1798
Arches NP				
Capitol Reef NP	CAPI1	38.30	-111.29	1896
Zion NP	ZICA1*	37.20	-113.15	1215

*Replaced the ZION1 monitoring site in 2003.

3.9 Determination of Adequacy: § 51.309(d)(10)(ii)

40 CFR § 51.309(d)(10)(ii)(d)(10)(ii) requires *"Determination of the adequacy of existing implementation plan. At the same time the State is required to submit any 5-year progress report to EPA in accordance with paragraph (d)(10)(i) of this section, the State must also take one of the following actions based upon the information presented in the progress report:*

(1) If the State determines that the existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions, the State must provide to the administrator a negative declaration that further revision of the existing implementation plan is not needed at this time.

(2) If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another State(s) which participated in a regional planning process, the State must provide notification to the administrator and to the other State(s) which participated in the regional planning process with the States. The State must also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies.

(3) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another country, the State shall provide notification, along with available information, to the Administrator.

(4) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall revise its implementation plan to address the plan's deficiencies within one year."

The State of Utah has provided the information required under 40 CFR § 51.309(d)(10)(ii)(d)(10)(i) in this 5-year progress report. Based on this information, the State believes that its current RH SIP is adequate to continue to improve visibility in all five Federal Class 1 areas; therefore, a revision to the RH SIP is not required.

4.0 REGIONAL SUMMARY FOR 309 GCVTC CLASS I AREAS

Section 309 rules were based on recommendations from the Grand Canyon Visibility Transport Commission (GCVTC) Recommendations report,[10] specific to visibility impacts at the 16 Class I areas on the Colorado Plateau. Of the nine western states originally eligible for Section 309 RH rule implementation, only the states of New Mexico, Utah, and Wyoming and the city of Albuquerque/Bernalillo County currently exercise this option.

The 16 Class I areas on the Colorado Plateau are depicted in Figure 4.1 and listed in Table 4.1. Note that the ZION1 site, which originally represented Zion Canyon National Park, has since been replaced with the ZICA1 site. This section presents regional progress summaries specific to monitoring and emissions data at these Colorado Plateau sites.

[10] The Grand Canyon Visibility Transport Commission Recommendations for Improving Western Vistas Report is archived on the WRAP website at www.wrapair.org/WRAP/reports/GCVTCFinal.PDF.

Table 4.1
Colorado Plateau Class I Areas and Representative IMPROVE Monitors

Class I Area	Representative IMPROVE Site	Latitude	Longitude	Elevation (m)
Arizona				
Grand Canyon NP	GRCA2	35.97	-111.98	2267
Mount Baldy WA	BALD1	34.06	-109.44	2508
Petrified Forest NP	PEFO1	35.08	-109.77	1766
Sycamore Canyon WA	SYCA1	35.14	-111.97	2046
Colorado				
Black Canyon of the Gunnison NP Weminuche WA	WEMI1	37.66	-107.80	2750
Flat Tops WA Maroon Bells-Snowmass WA West Elk WA	WHRI1	39.15	-106.82	3413
Mesa Verde NP	MEVE1	37.20	-108.49	2172
New Mexico				
San Pedro Parks WA	SAPE1	36.01	-106.84	2935
Utah				
Bryce Canyon NP	BRCA1	37.62	-112.17	2481
Canyonlands NP Arches NP	CANY1	38.46	-109.82	1798
Capitol Reef NP	CAPI1	38.30	-111.29	1896
Zion NP	ZICA1*	37.20	-113.15	1215

*Replaced the ZION1 monitoring site in 2003.

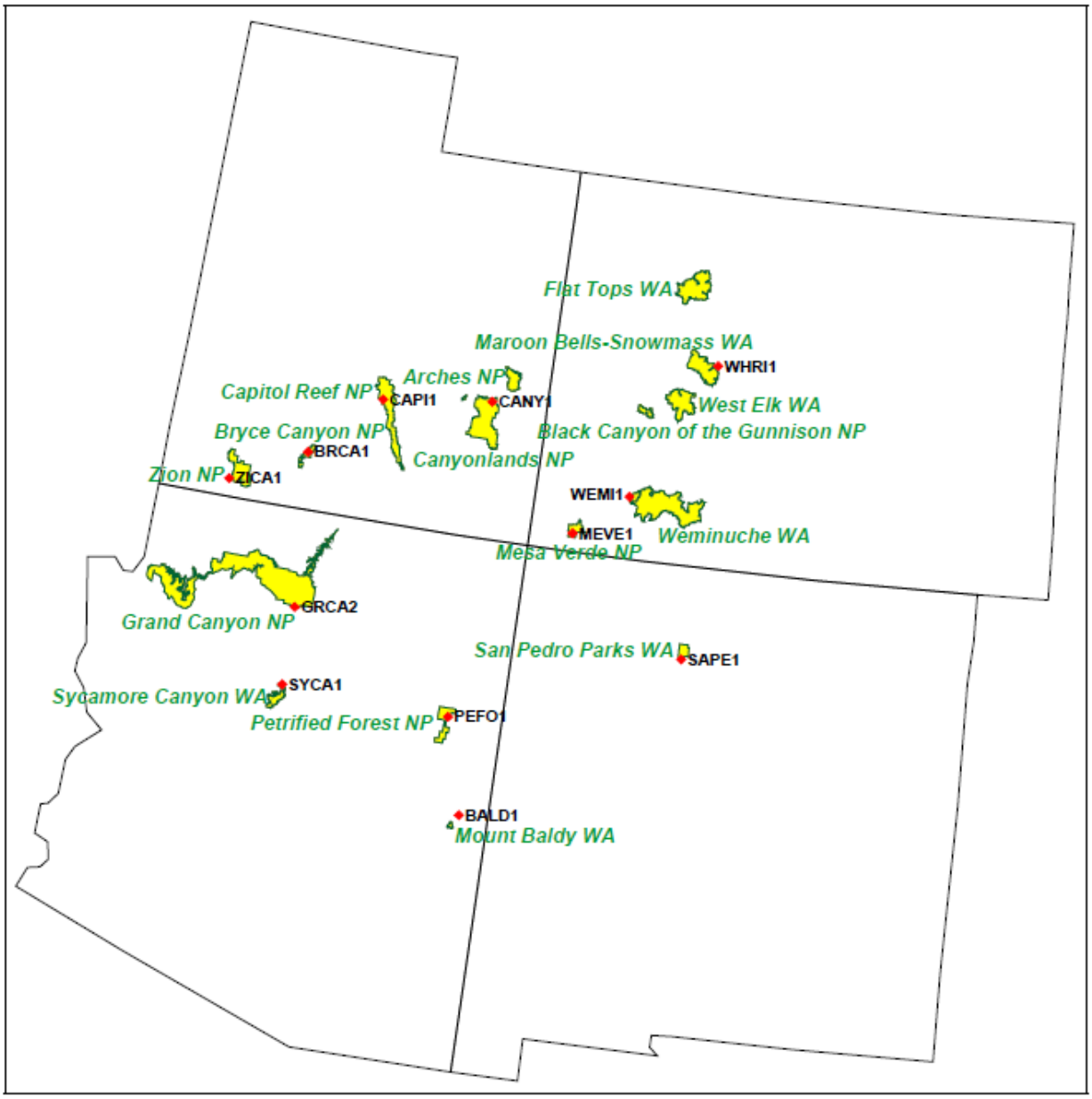

Figure 4.1. Map Depicting Colorado Plateau Class I Areas and Representative IMPROVE Monitors in Arizona, Colorado, New Mexico and Utah

Monitoring Data

Figures 4.2 and 4.3 present the 2005-2009 visibility averages for the 20% worst and best days for the IMPROVE sites representing Class I areas on the Colorado Plateau. The size of the pie chart is relative to the magnitude of visibility impairment, and colors represent the relative contribution of the pollutants which are measured by the IMPROVE network. Tables 4.2 and 4.3 present the difference between the 2000-2004 baseline period average and the 2005-2009 first progress period average for the 20% worst and best days, respectively, for the Class I area sites in the Colorado Plateau region.

Table 4.4 presents the differences between the 2000-2004 baseline period average extinction and the 2005-2009 progress period average for each Class I area site in the Colorado Plateau region for the 20% most impaired days, and Table 4.5 presents similar data for the least impaired days. Averages that increased are depicted in red text and averages that decreased in blue.

Trend statistics for the years 2000-2009 for each species at each Class I area site in the Colorado Plateau region are presented in Table 4.6. Only trends for aerosol species trends with p-value statistics less than 0.15 (85% confidence level) are presented in the table here, with increasing slopes in red and decreasing slopes in blue.

Some general observations for the current visibility conditions and the difference between current and baseline conditions are listed below:

- The largest contributors to aerosol extinction at the Colorado Plateau sites were particulate organic mass, ammonium sulfate, and coarse mass.

- For all sites, the 5-year average as measured in deciview metric decreased for the best days between the baseline and first progress period.

- For most sites, the 5-year average as measured in deciview metric decreased for the worst days between the baseline and first progress period. Exceptions included GRCA2 and BALD1 in Arizona and BRCA1 and CAPI1 in Utah. Some contributing factors for aerosol measurements that affected increased in 5-year average deciviews are listed below.

- The increase at GRCA2 was due to increases in ammonium sulfate, elemental carbon, particulate organic mass and soil, partially offset by decreases in ammonium nitrate and coarse mass. The particulate organic carbon increase was associated with high measurements due to fire events in June and August of 2009. No statistically significant increasing annual trends were measured for any of the species at the GRCA2 site.

- Extinction remained relatively unchanged in terms of deciviews for the worst days measured at the BALD1 site. Increases in coarse mass, soil, and ammonium sulfate were offset by decreases in particulate organic mass, elemental carbon, and ammonium nitrate. Trend statistics showed an increasing coarse mass trend at the BALD1 and PEFO1 sites in eastern Arizona.

- At the BRCA1 and CAPI1 sites, the largest contributor to increases was particulate organic mass which, similar to GRCA2, was associated with large fires events in July and August 2009. These increases were offset by decreases in ammonium nitrate and ammonium sulfate. An increasing soil trend was measured for the worst days at the CAPI1 site.

- Increases in 5-year average ammonium sulfate were measured at many regional sites, although most sites showed decreasing annual average ammonium sulfate trends. The 5-year average was influenced by relatively high regional measurements of ammonium sulfate in 2005. Figure 5.1.3 presents a plot of the annual averages for all Colorado Plateau sites, showing the high values measured in 2005, followed by generally decreasing trends.

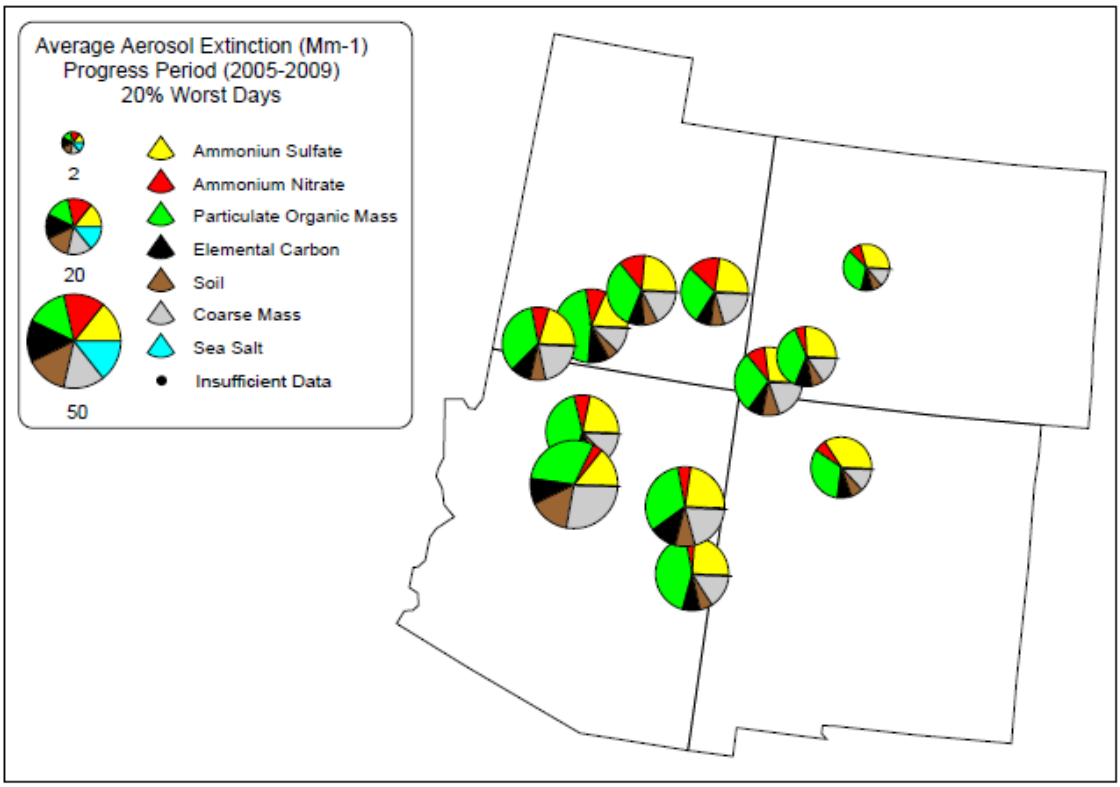

Figure 4.2. Regional Average of Aerosol Extinction by Pollutant for the First Progress Period Average (2005-2009) for 20% worst days

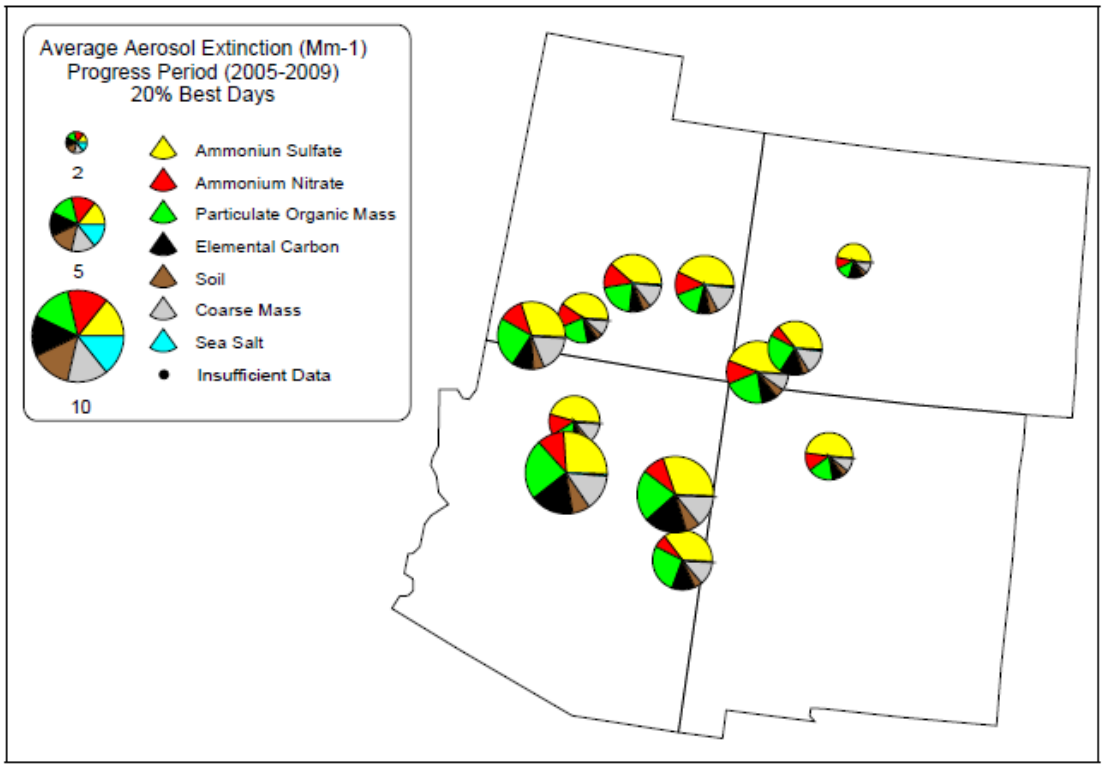

Figure 4.3. Regional Average of aerosol Extinction by Pollutant for First Progress Period Average (2005-2009) for 20% Best Days

Table 4.2
Colorado Plateau Class I Area IMPROVE Sites
Current Visibility Conditions
2005-2009 Progress Period, 20% Most Impaired Days

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
Arizona								
GRCA2	12.0	22% (2)	7% (5)	**41% (1)**	11% (4)	6% (6)	12% (3)	0% (7)
BALD1	11.8	25% (2)	4% (6)	**42% (1)**	8% (4)	6% (5)	16% (3)	0% (7)
PEFO1	13.0	23% (2)	5% (6)	**31% (1)**	11% (4)	8% (5)	21% (3)	1% (7)
SYCA1	15.2	15% (4)	4% (6)	**29% (1)**	9% (5)	15% (3)	28% (2)	0% (7)
Colorado								
WEMI1	10.0	27% (2)	5% (6)	**36% (1)**	10% (4)	7% (5)	15% (3)	0% (7)
WHRI1	8.9	30% (2)	8% (5)	**33% (1)**	8% (4)	7% (6)	13% (3)	0% (7)
MEVE1	11.3	27% (2)	9% (4)	**28% (1)**	7% (6)	9% (5)	20% (3)	0% (7)
New Mexico								
SAPE1	9.9	**34% (1)**	6% (6)	32% (2)	8% (4)	7% (5)	13% (3)	0% (7)
Utah								
BRCA1	11.9	19% (2)	9% (5)	**45% (1)**	10% (4)	5% (6)	12% (3)	0% (7)
CANY1	11.0	23% (2)	14% (4)	**27% (1)**	7% (5)	7% (6)	20% (3)	0% (7)
CAPI1	11.3	24% (2)	12% (4)	**32% (1)**	8% (5)	7% (6)	17% (3)	0% (7)
ZICA1	12.3	21% (3)	7% (5)	**33% (1)**	9% (4)	7% (6)	22% (2)	0% (7)

*Highest aerosol species contribution per site is highlighted in bold.

Table 4.3
Colorado Plateau Class I Area IMPROVE Sites
Current Visibility Conditions
2005-2009 Progress Period, 20% Least Impaired Days

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
Arizona								
GRCA2	2.2	**45% (1)**	13% (4)	15% (2)	9% (5)	4% (6)	14% (3)	1% (7)
BALD1	2.9	**35% (1)**	7% (5)	26% (2)	13% (4)	5% (6)	13% (3)	1% (7)
PEFO1	4.6	**31% (1)**	9% (5)	21% (2)	19% (3)	6% (6)	14% (4)	0% (7)
SYCA1	5.1	**27% (1)**	10% (5)	23% (2)	17% (3)	7% (6)	15% (4)	1% (7)
Colorado								
WEMI1	2.4	**36% (1)**	6% (5)	23% (2)	15% (4)	4% (6)	15% (3)	1% (7)
WHRI1	0.2	**46% (1)**	10% (5)	14% (3)	15% (2)	5% (6)	11% (4)	0% (7)
MEVE1	3.1	**44% (1)**	12% (3)	21% (2)	9% (5)	5% (6)	9% (4)	0% (7)
New Mexico								
SAPE1	1.0	**47% (1)**	12% (3)	18% (2)	8% (5)	5% (6)	10% (4)	1% (7)
Utah								
BRCA1	11.9	19% (2)	9% (5)	**45% (1)**	10% (4)	5% (6)	12% (3)	0% (7)
CANY1	11.0	23% (2)	14% (4)	**27% (1)**	7% (5)	7% (6)	20% (3)	0% (7)
CAPI1	11.3	24% (2)	12% (4)	**32% (1)**	8% (5)	7% (6)	17% (3)	0% (7)
ZICA1	12.3	21% (3)	7% (5)	**33% (1)**	9% (4)	7% (6)	22% (2)	0% (7)

*Highest aerosol species contribution per site is highlighted in bold.

Table 4.4
Colorado Plateau Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species
2000-2004 Baseline Period to 2005-2009 Progress Period
20% Most Impaired Days

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
Arizona										
GRCA2	11.7	12.0	+0.3	+0.5	-0.4	+0.1	+0.5	+0.1	-0.3	0.0
BALD1	11.8	11.8	0.0	+0.3	-0.1	-2.1	-0.7	+0.4	+1.3	+0.1
PEFO1	13.2	13.0	-0.2	+0.5	-0.3	-1.4	+0.5	+0.6	-1.0	+0.1
SYCA1	15.3	15.2	-0.1	+0.7	-0.7	-0.5	+0.4	-1.0	+1.4	0.0
Colorado										
WEMI1	10.3	10.0	-0.3	+0.1	-0.2	-1.4	-0.2	+0.1	0.0	-0.1
WHRI1	9.6	8.9	-0.7	+0.3	0.0	-2.3	-0.3	+0.1	-0.5	0.0
MEVE1	13.0	11.3	-1.7	-0.2	-0.3	-5.8	-0.7	-0.5	-2.0	0.0
New Mexico										
SAPE1	10.2	9.9	-0.3	+1.0	-0.4	-1.4	-0.1	-0.1	-0.2	0.0
Utah										
BRCA1	11.6	11.9	+0.3	-0.2	-0.3	+2.5	+0.2	+0.1	-0.9	0.0
CANY1	11.2	11.0	-0.2	-0.3	+0.3	-0.9	-0.1	+0.1	+0.8	0.0
CAPI1	10.9	11.3	+0.4	-0.2	-0.7	+1.8	+0.2	+0.3	+0.7	+0.1
ZICA1	12.5	12.3	-0.2	+0.2	-0.3	-0.8	-0.1	+0.1	0.0	+0.1

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

Table 4.5
Colorado Plateau Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species
2000-20004 Baseline Period to 2005-2009 Progress Period
20% Least Impaired Days

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
Arizona										
GRCA2	2.2	2.2	0.0	+0.1	0.0	-0.1	0.0	0.0	0.0	0.0
BALD1	3.0	2.9	-0.1	-0.1	-0.1	-0.1	0.0	0.0	+0.1	0.0
PEFO1	5.0	4.6	-0.4	-0.1	-0.2	-0.4	0.0	+0.1	0.0	0.0
SYCA1	5.6	5.1	-0.5	+0.1	-0.1	-0.6	-0.2	-0.1	+0.1	0.0
Colorado										
WEMI1	3.1	2.4	-0.7	-0.1	-0.1	-0.4	-0.2	0.0	-0.1	0.0
WHRI1	0.7	0.2	-0.5	0.0	-0.1	-0.3	-0.1	0.0	0.0	0.0
MEVE1	4.3	3.1	-1.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.3	0.0
New Mexico										
SAPE1	1.5	1.0	-0.5	-0.1	-0.1	-0.2	-0.1	0.0	0.0	0.0
Utah										
BRCA1	2.8	2.1	-0.7	-0.1	-0.2	-0.3	-0.2	0.0	-0.1	0.0
CANY1	3.7	2.8	-0.9	-0.3	-0.1	-0.5	-0.1	-0.1	-0.2	0.0
CAPI1	4.1	2.7	-1.4	-0.3	-0.4	-0.5	-0.2	-0.1	-0.4	0.0
ZICA1	5.0	4.3	-0.7	-0.1	-0.2	-0.5	-0.2	0.0	-0.1	0.0

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

Table 4.6
Colorado Plateau Class I Area IMPROVE Sites
Change in Aerosol Extinction by Species
2000-2009 Annual Average Trends

Site	Group	Annual Trend* (Mm^{-1}/year)						
		Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
Arizona								
GRCA2	20% Best	--	--	--	0.0	--	--	0.0
	20% Worst	--	-0.1	--	--	--	--	--
	All Days	--	0.0	--	--	--	--	--
BALD1	20% Best	--	0.0	--	0.0	--	0.0	0.0
	20% Worst	-0.2	--	--	--	0.1	0.3	0.0
	All Days	-0.1	0.0	--	--	--	0.1	0.0
PEFO1	20% Best	--	0.0	-0.1	--	--	--	0.0
	20% Worst	--	--	--	--	0.1	--	0.0
	All Days	--	0.0	--	--	0.0	0.1	0.0
SYCA1	20% Best	--	--	-0.1	--	--	--	0.0
	20% Worst	--	--	--	0.1	-0.3	--	--
	All Days	--	0.0	--	--	-0.1	--	--
Colorado								
WEMI1	20% Best	-0.1	0.0	-0.1	-0.1	--	--	--
	20% Worst	--	--	--	0.0	--	--	--
	All Days	--	0.0	--	-0.1	--	--	--
WHRI1	20% Best	--	0.0	-0.1	0.0	--	--	--
	20% Worst	--	--	--	-0.1	--	--	0.0
	All Days	--	--	-0.1	0.0	--	--	0.0
MEVE1	20% Best	-0.1	0.0	-0.1	0.0	0.0	0.0	--
	20% Worst	--	--	--	-0.2	--	--	0.0
	All Days	-0.1	--	-0.3	-0.1	--	--	0.0
New Mexico								
SAPE1	20% Best	--	0.0	0.0	0.0	--	--	--
	20% Worst	--	-0.1	--	--	--	--	--
	All Days	--	0.0	-0.1	0.0	--	0.0	0.0
Utah								
BRCA1	20% Best	--	0.0	-0.1	0.0	--	0.0	0.0
	20% Worst	-0.2	--	0.5	0.1	--	--	0.0
	All Days	-0.1	0.0	--	--	--	--	--
CANY1	20% Best	-0.1	--	-0.1	0.0	--	-0.1	0.0
	20% Worst	-0.1	--	--	--	--	--	0.0
	All Days	-0.1	0.0	--	0.0	0.0	--	0.0
CAPI1	20% Best	-0.1	-0.1	-0.1	0.0	--	-0.1	--
	20% Worst	--	-0.2	--	--	0.1	--	0.0
	All Days	-0.1	-0.1	--	0.0	--	--	0.0
ZICA1	20% Best	0.0	--	--	0.0	0.0	--	0.0
	20% Worst	-0.5	--	--	--	--	--	--
	All Days	-0.2	--	--	-0.1	0.1	--	--

*(--) Indicates statistically insignificant trend (<85% confidence level). Annual averages and complete trend statistics for all significance levels are included for each site in state specific appendices.

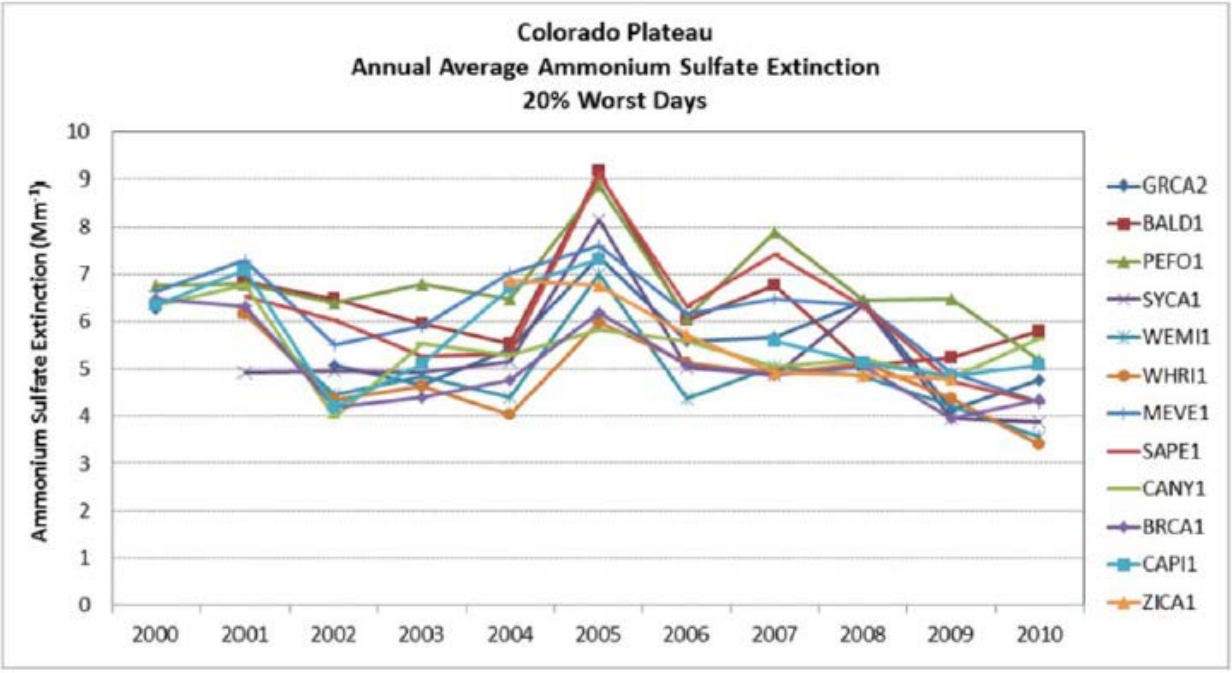

Figure 4.4 Chart Depicting Annual Average Ammonium Sulfate Concentrations for the 20% Worst Days as Measured at the Colorado Plateau CIA IMPROVE Sites

Similar to 308 requirements, Section 309 states are required to address how total state emissions have changed over the past five years (51.309(d)(10)(i)(D)). Emission inventory summaries using 2002 and 2008 inventories to represent changes between the baseline and progress periods are described in detail for the entire state in Section 3.5.

In addition to tracking these differences in inventories, for the initial SIPs, Section 309 states were required to identify "clean air corridors" and track emissions inside and outside of these corridors that may affect impairment on the cleanest days.[11] In these initial Section 309 SIPs, an area covering major portions of Nevada, southern Utah, eastern Oregon and southwestern Idaho was defined as a "clean air corridor," which was intended to represent a region from which clean air transport influences many of the clean air days at Grand Canyon National Park. Visibility has improved for the best days at all of the Class I area sites on the Colorado Plateau, so emissions specific to the "clean air corridor" counties are not presented separately here.

As part of the Western Backstop Sulfur Dioxide Trading Program, the participating states (and county) identified SO_2 emissions milestones, where a milestone is a maximum level of annual emissions for a given year. WRAP supports the Section 309 states with the submittal of annual regional SO_2 and emission milestone reports which compare actual emissions estimates to the pre-defined milestones.[12] Figure 4.5 presents a plot from the most recent SO_2 milestone report, showing the 3-year average of current emissions through 2012, which indicated that actual emissions were below the SO_2 milestone.

[11] Section 51.309(d)(3) states, for treatment of clean-air corridors, "the plan must describe and provide for implementation of comprehensive emission tracking strategies for clean-air corridors to ensure that the visibility does not degrade on the least-impaired days at any of the 16 Class I areas."

[12] Annual regional SO2 emissions and milestone reports are located on the WRAP website at http://www.wrapair2.org/reghaze.aspx.

Additionally, SO_2 emissions specific to EGU sources are presented in Figure 3.19 on an annual basis showing changes in these sources between 1996 and 2010 for Utah.

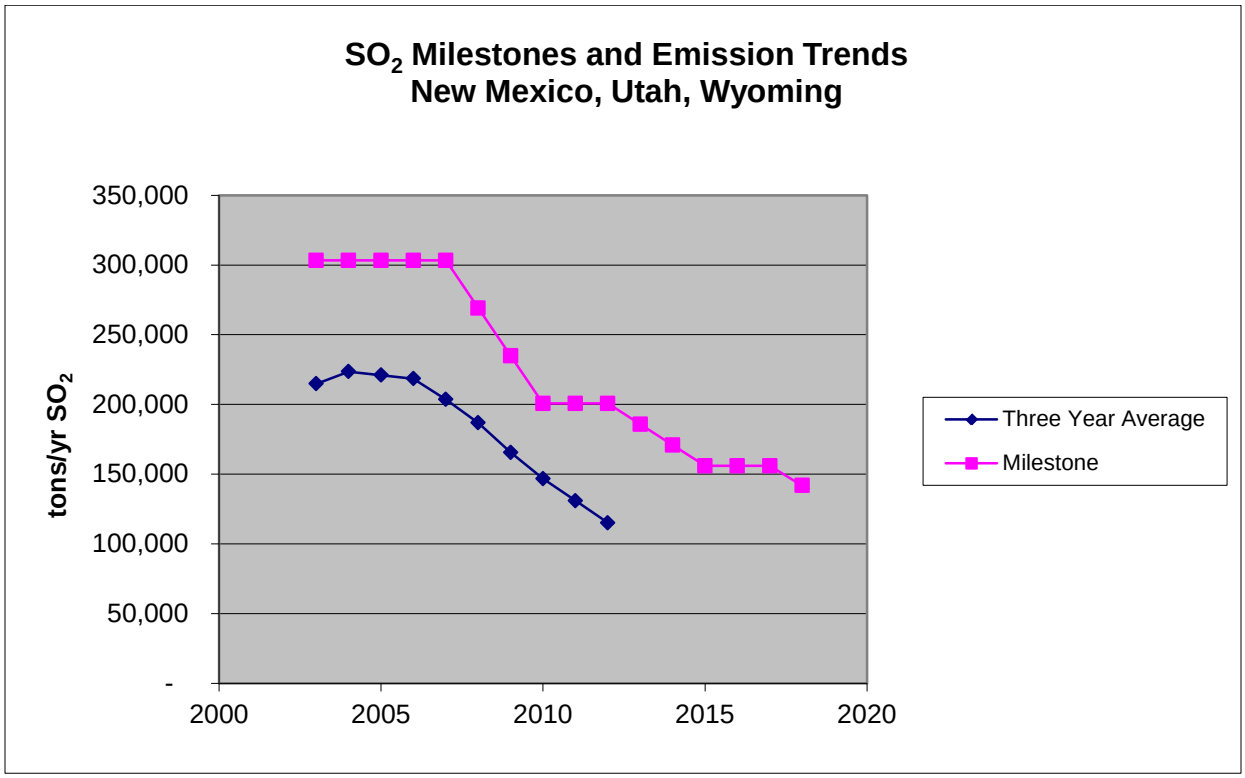

Figure 4.5. Chart Depicting 3-Year Average Sum of SO_2 Emissions for New Mexico, Utah and Wyoming and the City of Albuquerque/Bernalillo County as Compared to the Section 309 SIP SO_2 Milestones

Air Toxics Compliance Monitoring

ATLAS	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	SFY-14	Jul-14	Aug-14	Sep-14	FFY-14	Oct-14	Nov-14	Dec-14	CY-14
MACT Inspections	5	5	3	0	5	1	**22**	0	0		22				**19**
Asbestos Demolition/Renovations NESHAP Inspections	16	15	12	37	62	56	**341**	52	54		391				**304**
Asbestos AHERA Inspections	12	11	20	39	54	65	**300**	45	44		345				**290**
Asbestos State Rules Only Inspections	0	1	10	8	3	2	**50**	14	6		61				**44**
Asbestos Notifications	160	116	158	200	194	144	**1910**	187	155		1750				**1314**
Asbestos Phone Calls	316	383	382	504	512	427	**4732**	578	544		4552				**3646**
Asbestos Individual Certifications	155	23	100	70	135	67	**895**	87	86		913				**723**
Asbestos Company Certifications	29	6	10	6	7	8	**140**	5	1		140				**72**
Asbestos Alternate Work Practices	9	4	9	10	7	16	**107**	8	19		113				**82**
Lead Based Paint Inspections	4	5	10	10	3	1	**82**	2	8		86				**43**
Lead Based Paint Notifications	1	0	8	2	1	1	**13**	3	1		17				**17**
Lead Based Paint Letters Prepared & Mailed	100	40	122	82	62	27	**662**	62	73		689				**568**
Lead Based Paint Phone Calls	124	101	118	94	69	87	**896**	79	87		896				**759**
Lead Based Paint Courses Reviewed	0	0	1	O	1	0	**3**	0	0		2				**2**
Lead Based Paint Course Audit	5	3	0	0	0	0	**20**	1	1		22				**10**
Lead Based Paint Individual Certifications	56	10	42	44	25	7	**280**	13	11		250				**208**
Lead Based Paint Company Certifications	31	10	13	18	9	7	**168**	10	9		137				**107**
Notice of Violations (NOV's)	0	0	0	1	0	0	**1**	0	0		1				**1**
Compliance Advisories	5	17	10	2	11	6	**103**	15	12		108				**78**
Warning Letters	6	8	14	2	7	8	**99**	7	4		91				**56**
Settlement Agreements	3	1	2	2	1	1	**19**	1	1		16				**12**
Penalties collected	$1,393.75	$1,800.00	$5,800.00	$4,531.25	$4,800.00	$900.00	**$28,056.25**	$62.50	$450.00		$24,362.50				**$19,737.50**
Total Inspections	**37**	**37**	**55**	**94**	**127**	**125**	**795**	**113**	**112**	**0**	**905**	**0**	**0**	**0**	**700**

Major & Minor Compliance	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	SFY-14	Jul-14	Aug-14	Sep-14	FFY-14	Oct-14	Nov-14	Dec-14	CY-14
Source Inspections	33	19	23	29	43	43	**360**	49	40		318				**279**
On-Site Stack Test/CEM Audits	4	6	15	5	8	7	**89**	6	9		89				**60**
Stack Test/CEM Reviews	11	28	11	15	39	42	**471**	22	37		305				**205**
Emission Reports Reviewed	21	13	0	18	12	1	**65**	13	19		97				**97**
Temporary Relocations Accepted	6	7	8	15	5	12	**85**	6	7		77				**66**
Fugitive Dust Control Plans Accepted	77	55	90	111	111	96	**1024**	104	93		930				**737**
Soil Remediation Report Reviews	2	2	0	3	1	2	**10**	14	1		25				**25**
Open Burn Permit Application Completed Online	0	0	0	4030	2079	0	**6109**	0	0		6109				**6109**
Misc. Inspections	141	6	5	4	13	8	**339**	28	11		352				**216**
Complaints Received	194	19	21	24	44	44	**585**	25	11		565				**382**
Wood Burning Complaints	169	8	0		0	0	**177**	0	0		177				**177**
Breakdown Reports Received	0	1	1	1	1	2	**6**	0	1		7				**7**
Compliance Actions Resulting from a Breakdown	0	0	0	0	0	0	**0**	0	0		0				**0**
VOC inspections	0	0	0	0	0	0	**0**	0	0		0				**0**
SCAN/Warning Letters	1	1	2	0	0	2	**9**	1	1		8				**8**
NOV's	0	0	0	0	0	0	**0**	1	1		2				**2**
Compliance Advisories	34	12	4	0	5	11	**103**	3	3		92				**72**
Settlements	6	7	4	2	0	1	**28**	3	3		31				**26**
Penalties assessed	$7,056.00	$3,588.00	$10,524.00	$4,143.00	$0.00	$11,320.00	**$51,359.00**	$18,200.00	$52,951.00		$118,884.00				**$107,782.00**
Total Inspections	**178**	**31**	**43**	**38**	**64**	**58**	**788**	**83**	**60**	**0**	**759**	**0**	**0**	**0**	**555**

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQA-770-14

M E M O R A N D U M

TO: Air Quality Board

FROM: Bryce C. Bird, Executive Secretary

DATE: September 12, 2014

SUBJECT: Air Toxics, Lead-Based Paint, and Asbestos (ATLAS) Section Compliance Activities – August 2014

MACT Compliance Inspections	0
Asbestos Demolition/Renovation NESHAP Inspections	54
Asbestos AHERA Inspections	44
Asbestos State Rules Only Inspections	6
Asbestos Notifications Accepted	155
Asbestos Telephone Calls Answered	544
Asbestos Individuals Certifications Approved/Disapproved	83/3
Asbestos Company Certifications/Re-certifications	0/1
Asbestos Alternate Work Practices Approved/Disapproved	19/0
Lead-Based Paint (LBP) Inspections	8
LBP Notifications Approved	1
LBP Telephone Calls Answered	87
LBP Letters Prepared and Mailed	73
LBP Courses Reviewed/Approved	0/0
LBP Course Audits	1
LBP Individual Certifications Approved/Disapproved	11/0

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Telephone (801) 536-4000 • Fax (801) 536-4099 • T.D.D (801) 536-4414
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LBP Firm Certifications	9
Notices of Violation Issued	0
Compliance Advisories Issued	12
Warning Letters Issued	4
Settlement Agreements Finalized	1
Penalties Agreed to:	
Rocky Mountain Center of Occupational and Environmental Health	$450.00

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQC-1099-14

M E M O R A N D U M

TO: Air Quality Board

FROM: Bryce C. Bird, Executive Secretary

DATE: September 11, 2014

SUBJECT: Compliance Activities – August 2014

Annual Inspections Conducted:

Major..... 8
Synthetic Minor 6
Minor 26

On-Site Stack Test Audits Conducted: 9

Stack Test Report Reviews:..... 19

On-Site CEM Audits Conducted: 18

Emission Reports Reviewed: 19

Temporary Relocation Requests Reviewed & Approved:..... 7

Fugitive Dust Control Plans Reviewed & Accepted:..... 93

Soil Remediation Report Reviews:..... 1

[1]Miscellaneous Inspections Conducted:..... 11

Complaints Received: 11

Breakdown Reports Received:..... 1

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Compliance Actions Resulting From a Breakdown..... 0

Warning Letters Issued: 1

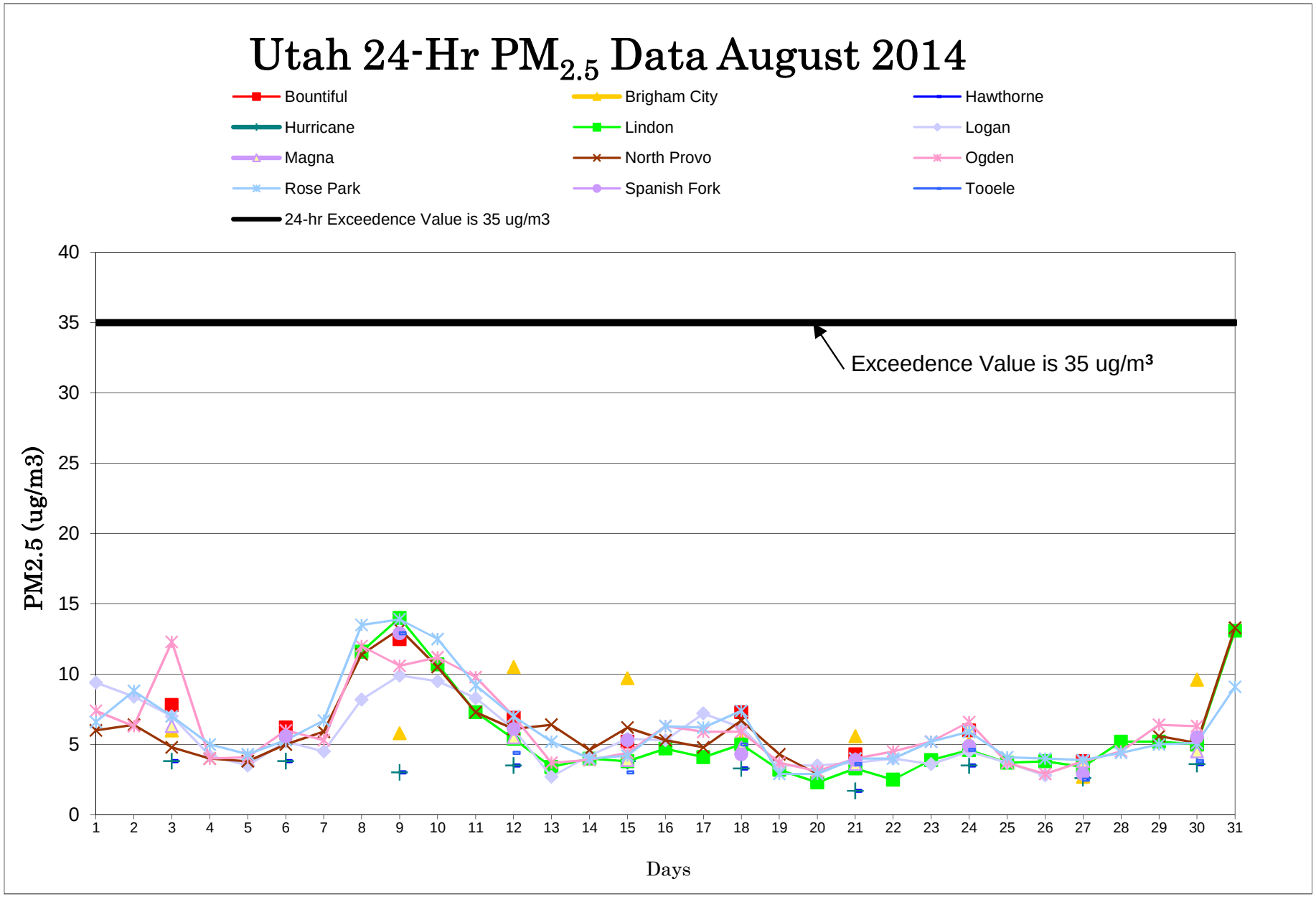
Notices of Violation Issued:..... 1

Compliance Advisories Issued:..... 3

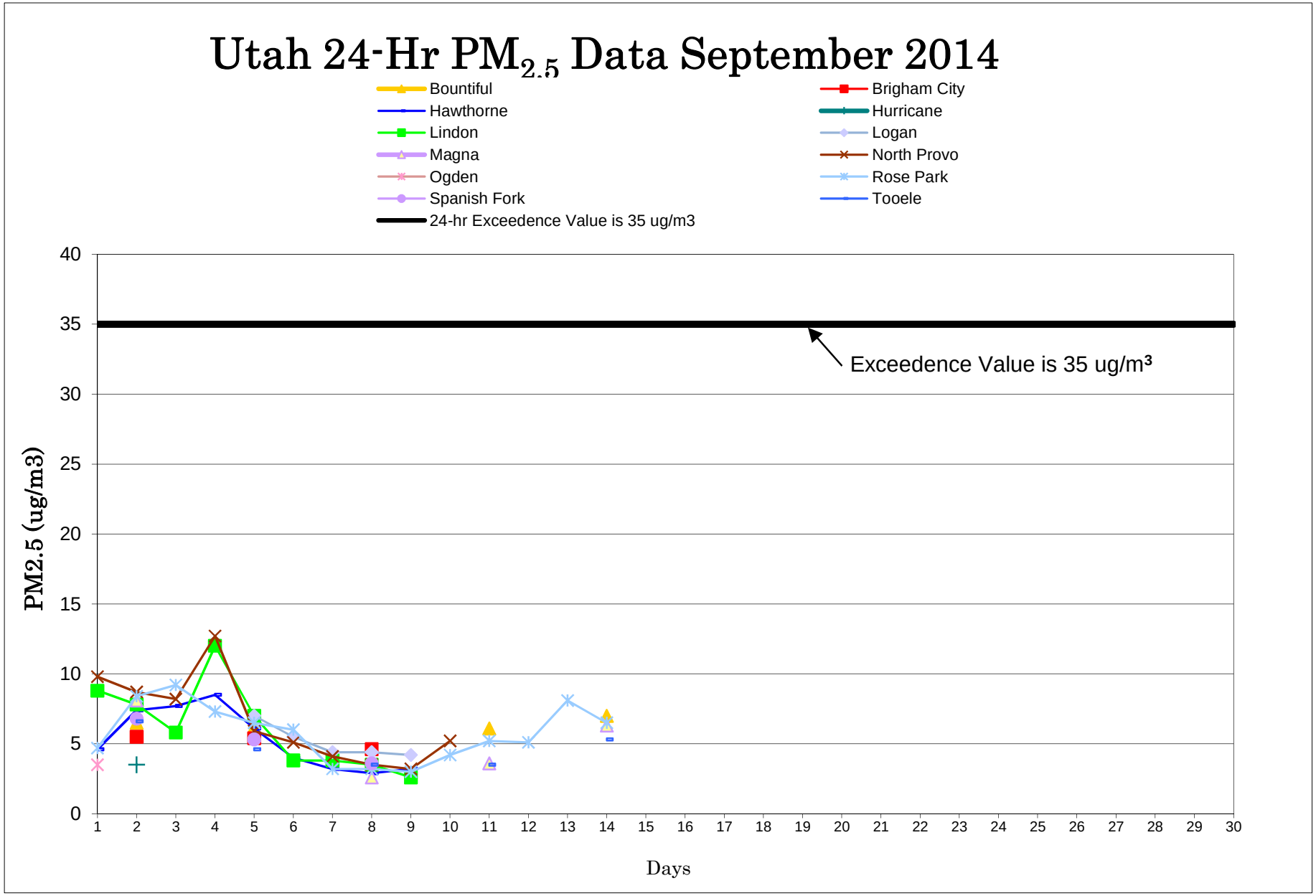
Settlement Agreements Reached: 3

Danish Flats $50,000
Crescent Point Energy $471
Ashgrove Packaging $2,480

[1]Miscellaneous inspections include, e.g., surveillance, level I inspections, VOC inspections, complaints, on-site training, dust patrol, smoke patrol, open burning, etc.



Utah Division of Air Quality



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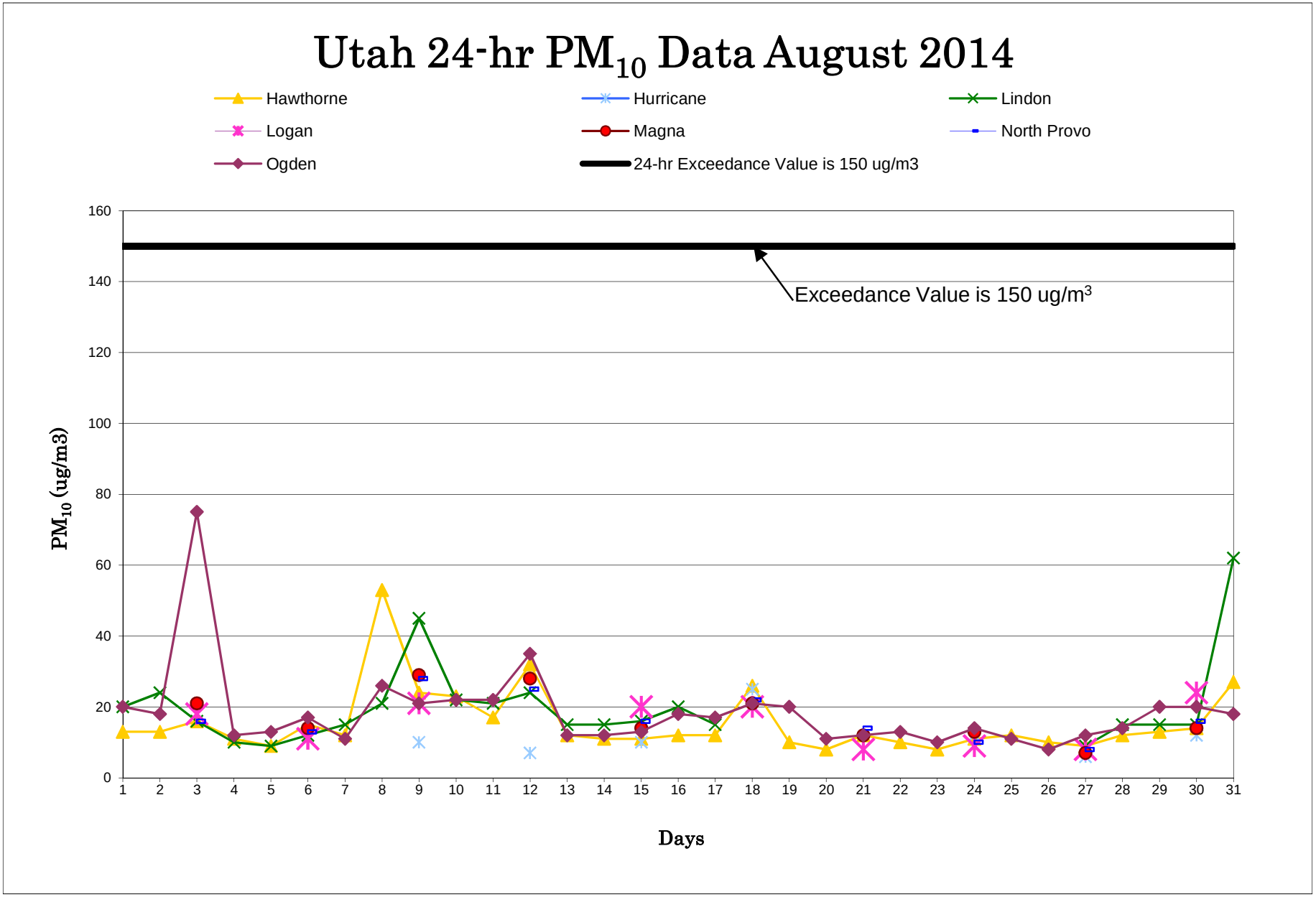
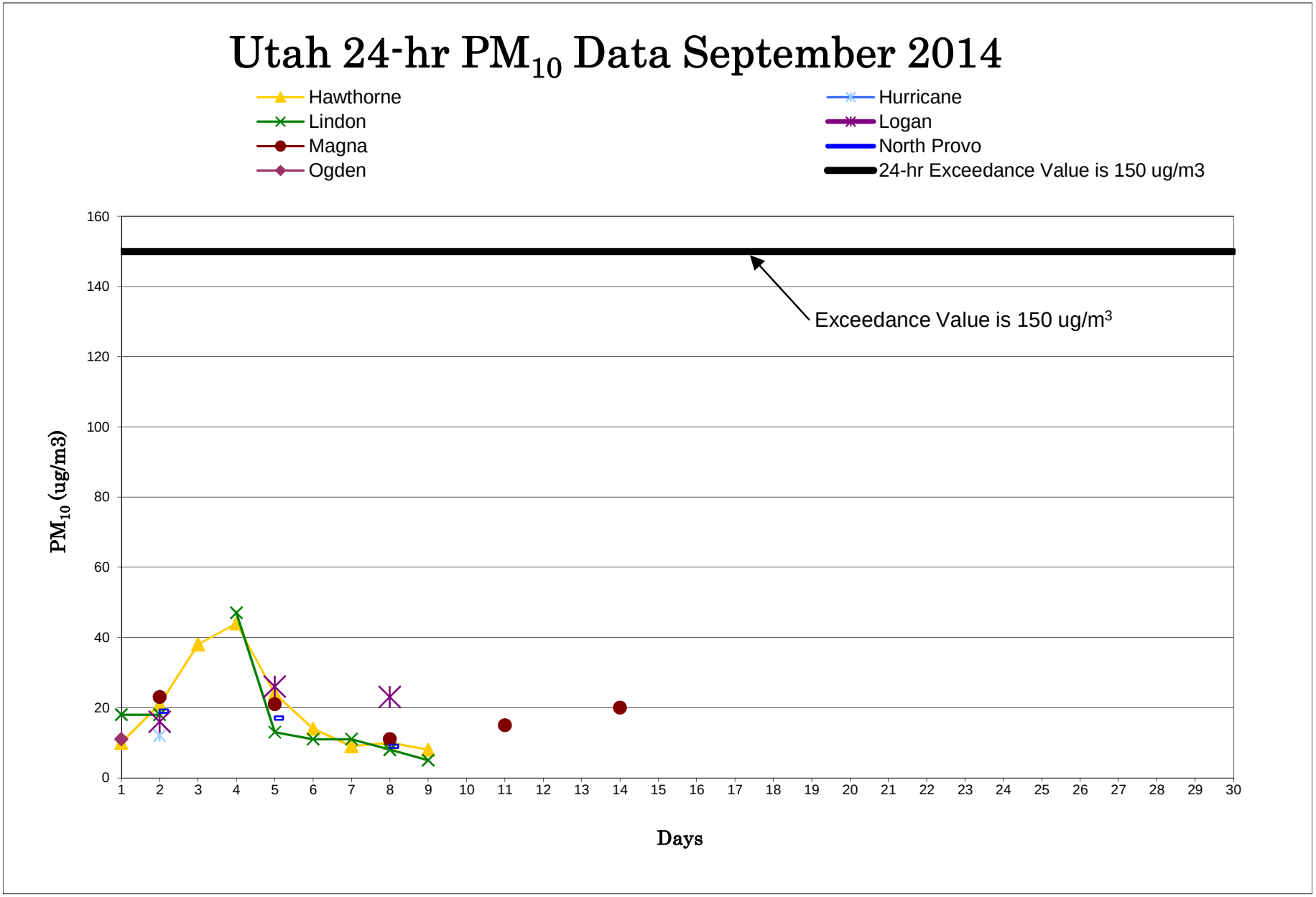
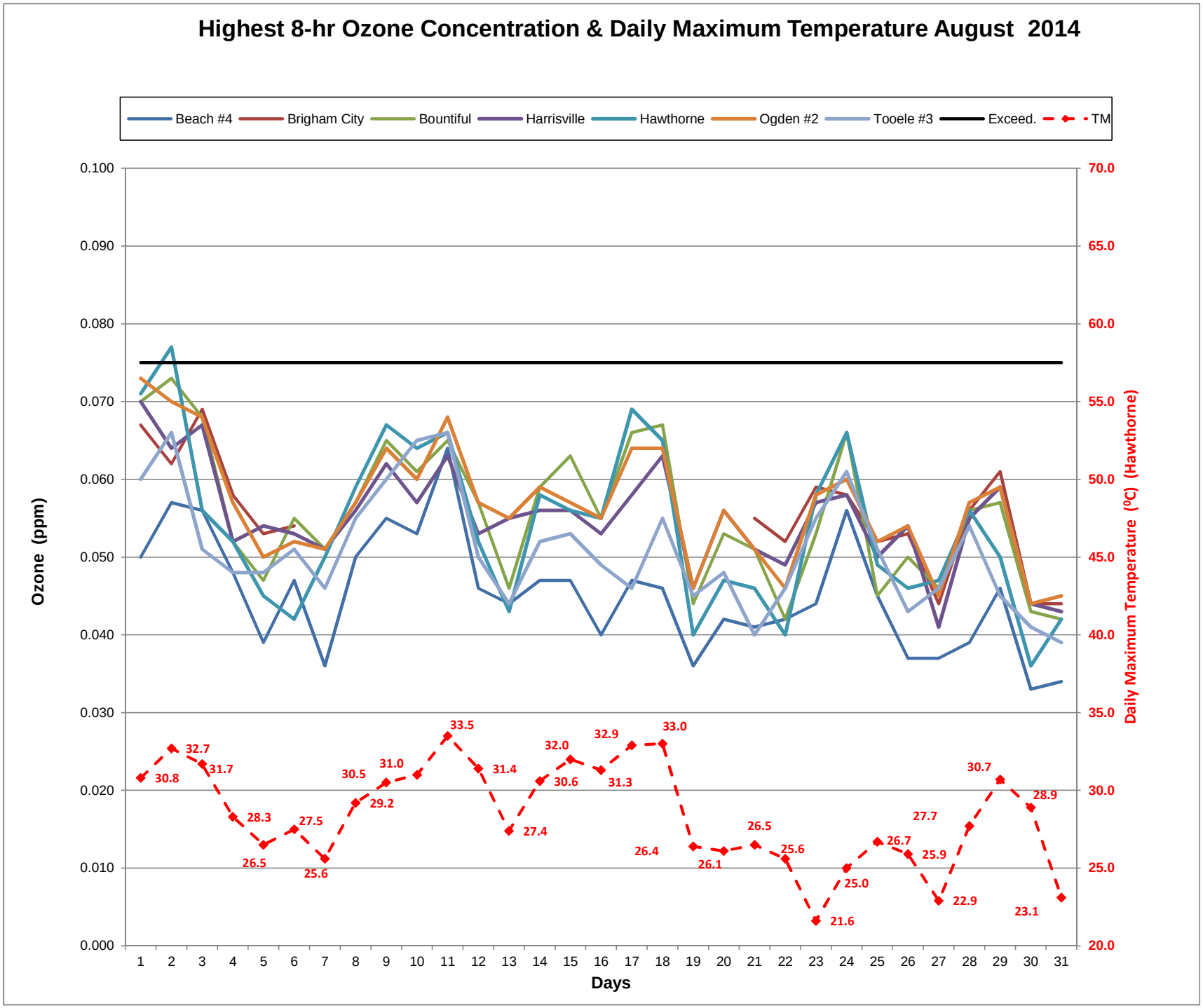
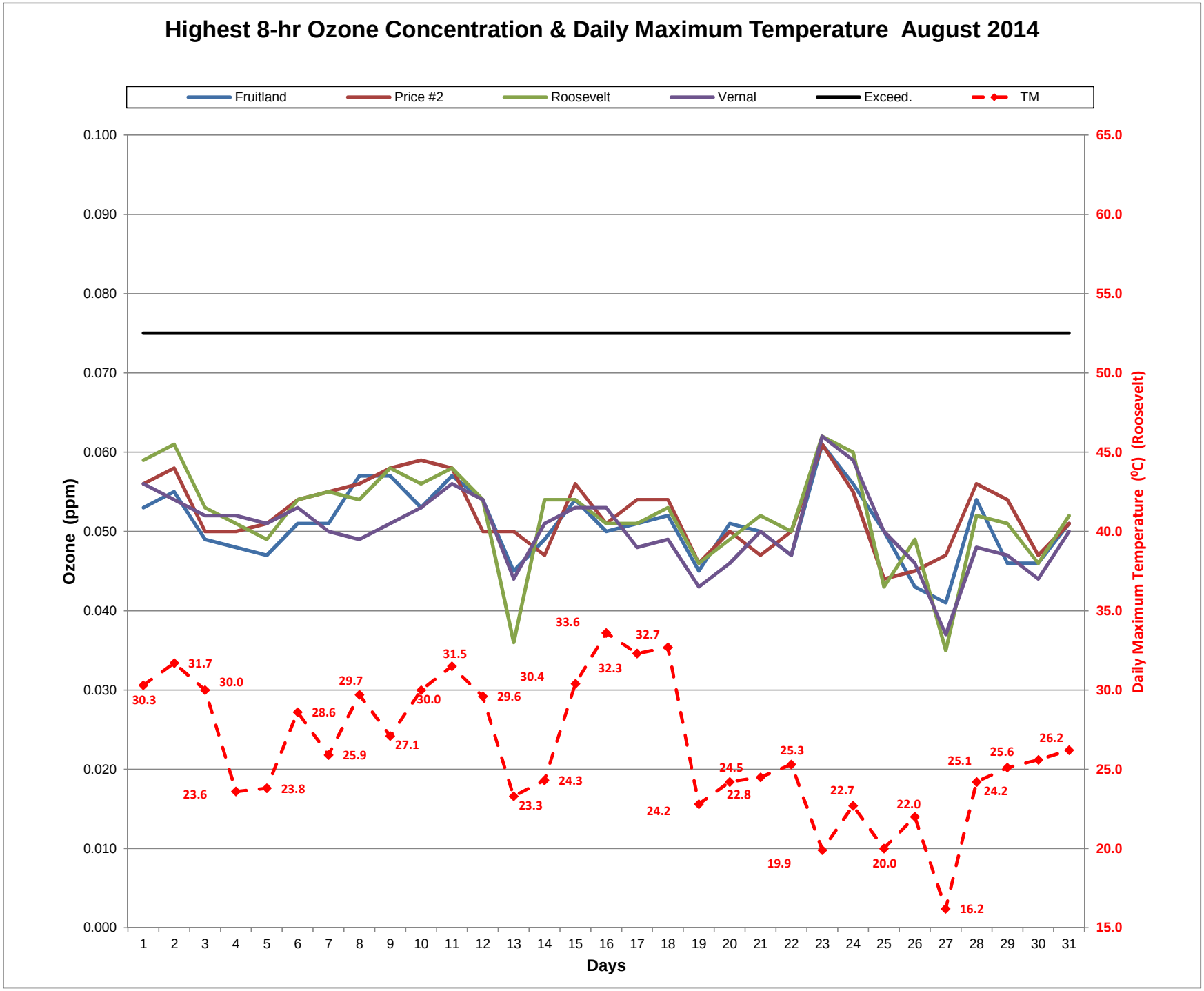


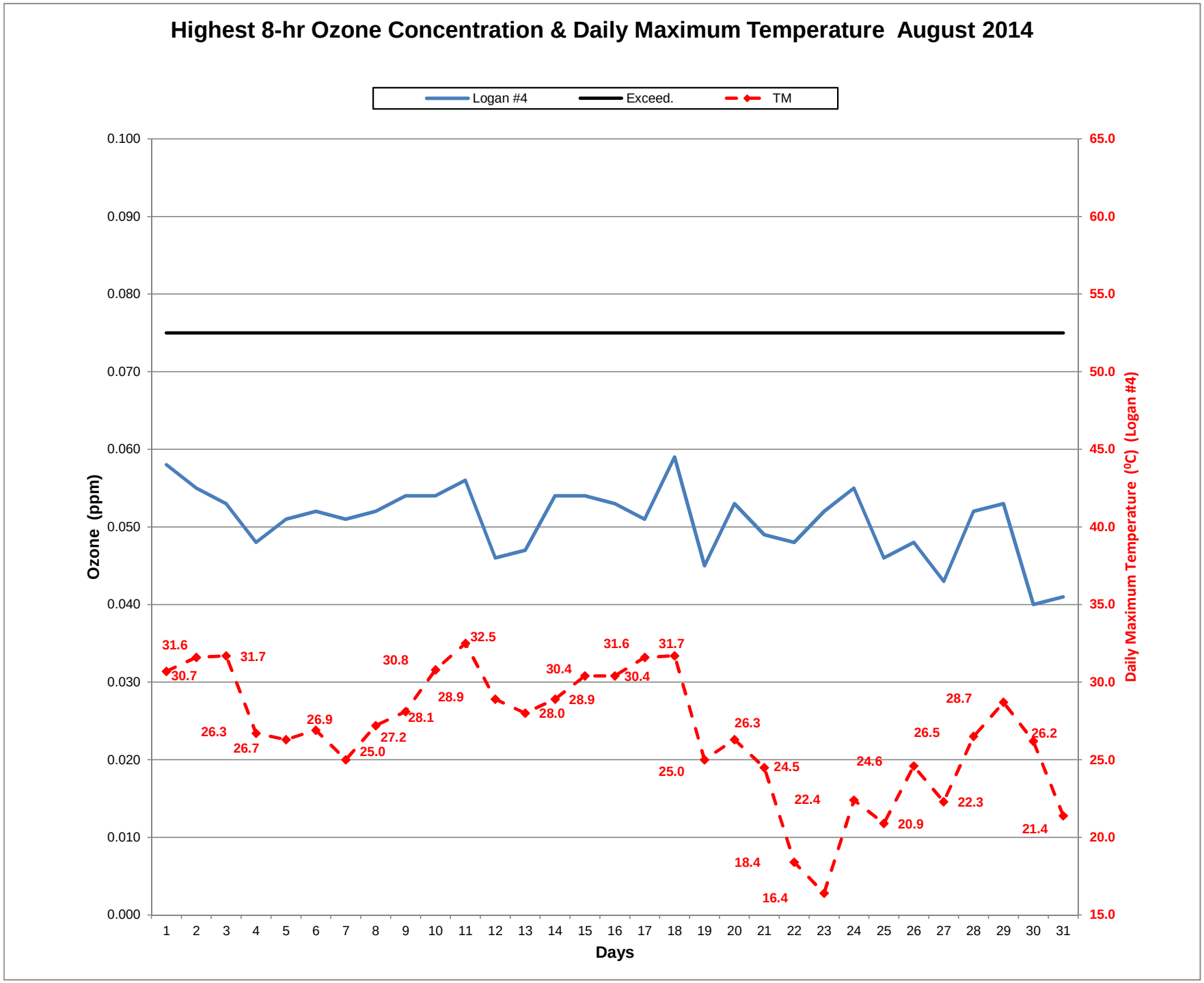
Utah Division of Air Quality

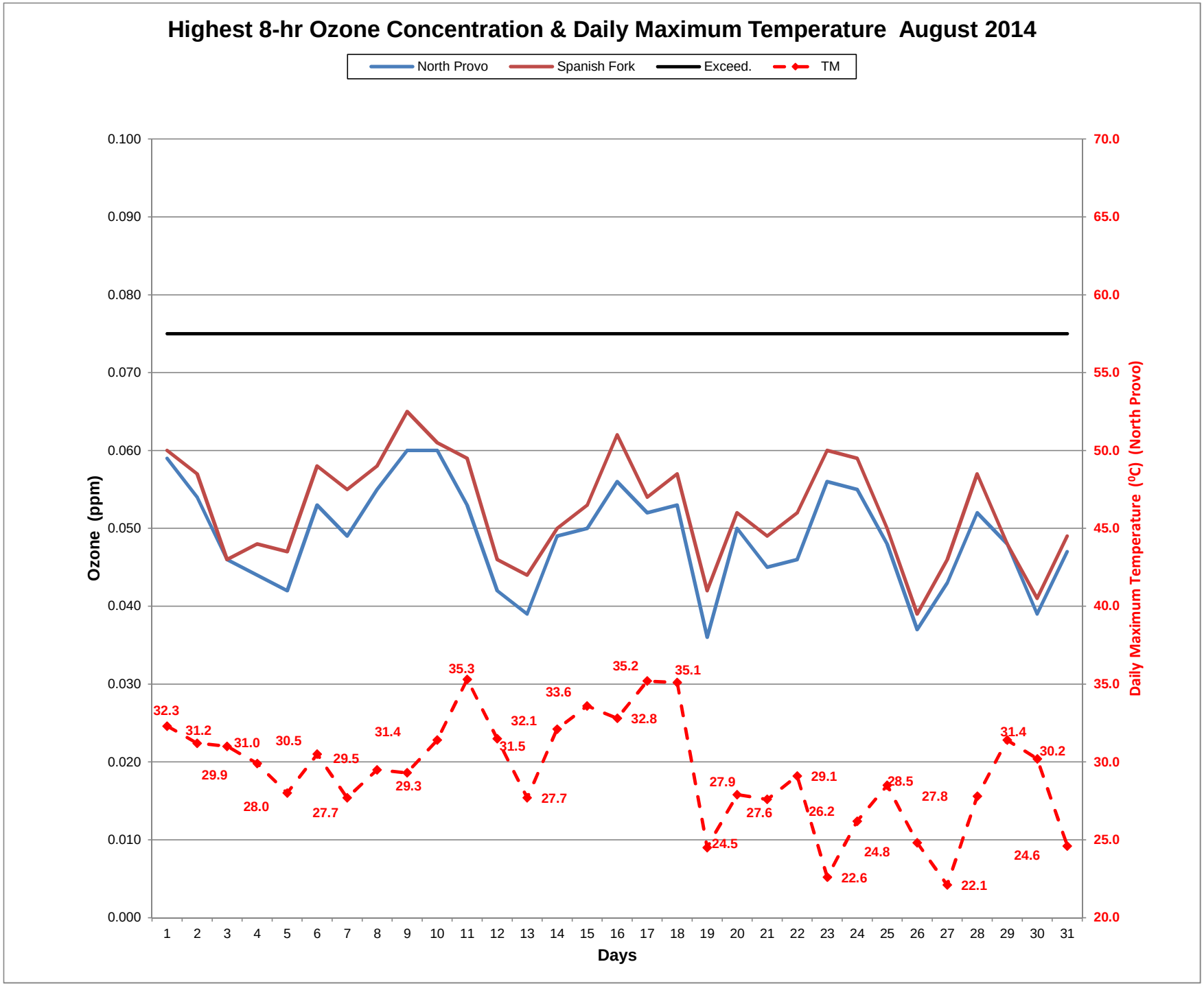


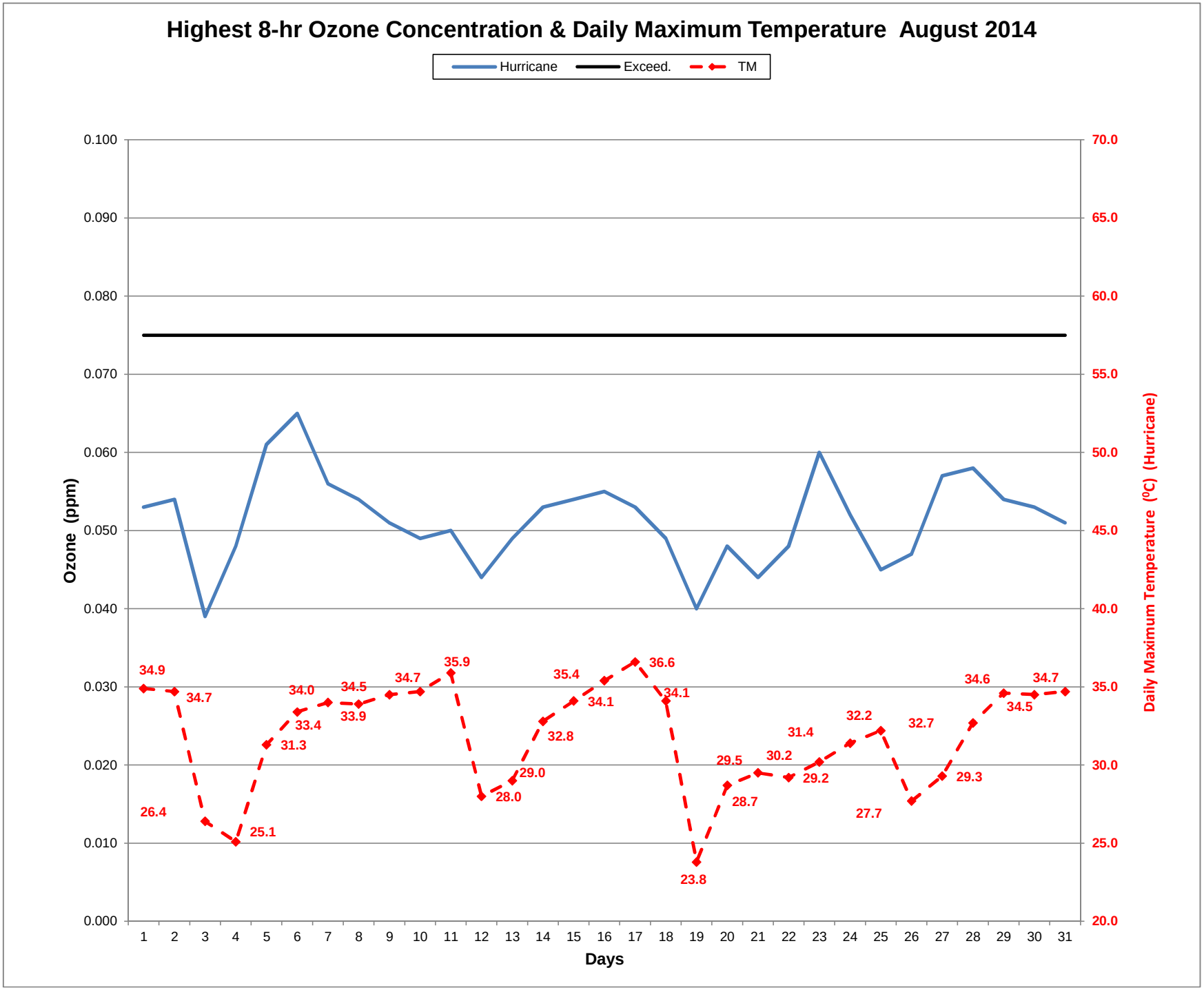
Utah Division of Air Quality

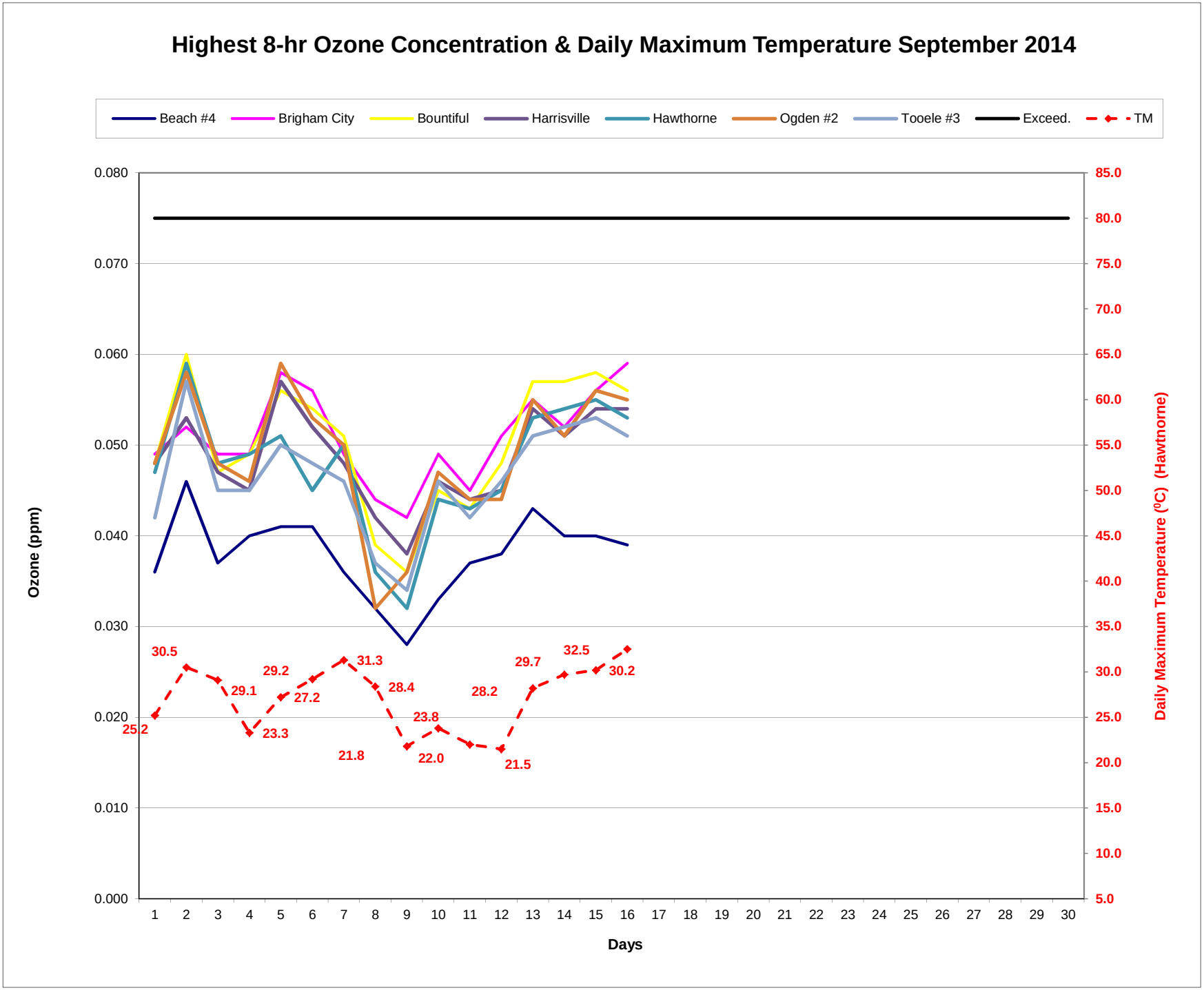

Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2014
Beach #4
Brigham City
Bountiful
Harrisville
Hawthorne
Ogden #2
Tooele #3
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (ºC) (Hawthorne)
Days
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
30.8
32.7
31.7
28.3
26.5
27.5
25.6
30.5
29.2
31.0
33.5
31.4
27.4
32.0
30.6
32.9
31.3
33.0
26.4
26.1
26.5
25.6
21.6
25.0
26.7
27.7
25.9
22.9
30.7
28.9
23.1

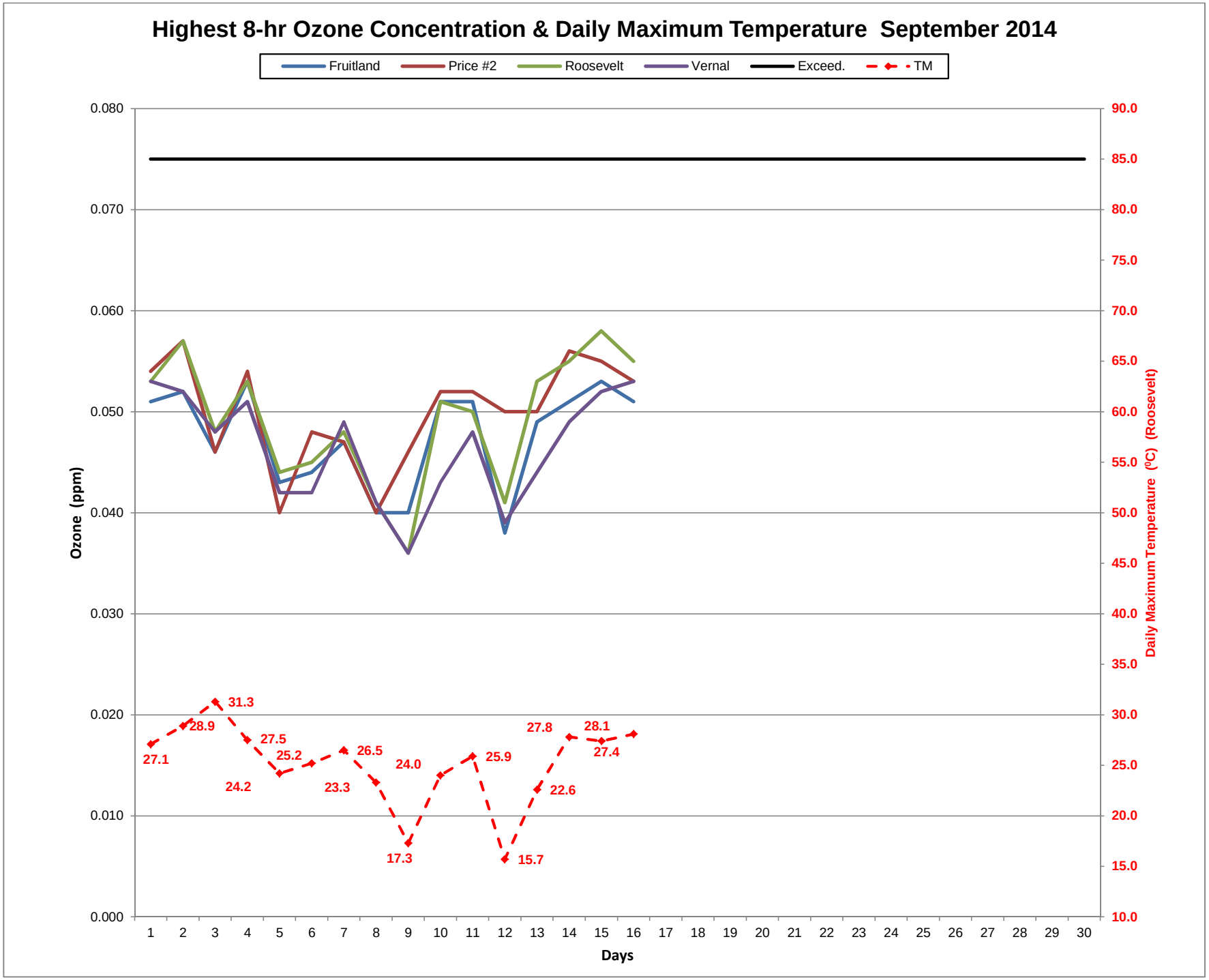

Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2014
Fruitland
Price #2
Roosevelt
Vernal
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (ºC) (Roosevelt)
Days
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
30.3
31.7
30.0
23.6
23.8
28.6
25.9
29.7
27.1
30.0
31.5
29.6
23.3
30.4
24.3
33.6
32.3
32.7
24.2
24.5
22.8
25.3
19.9
22.7
20.0
22.0
16.2
25.1
24.2
25.6
26.2

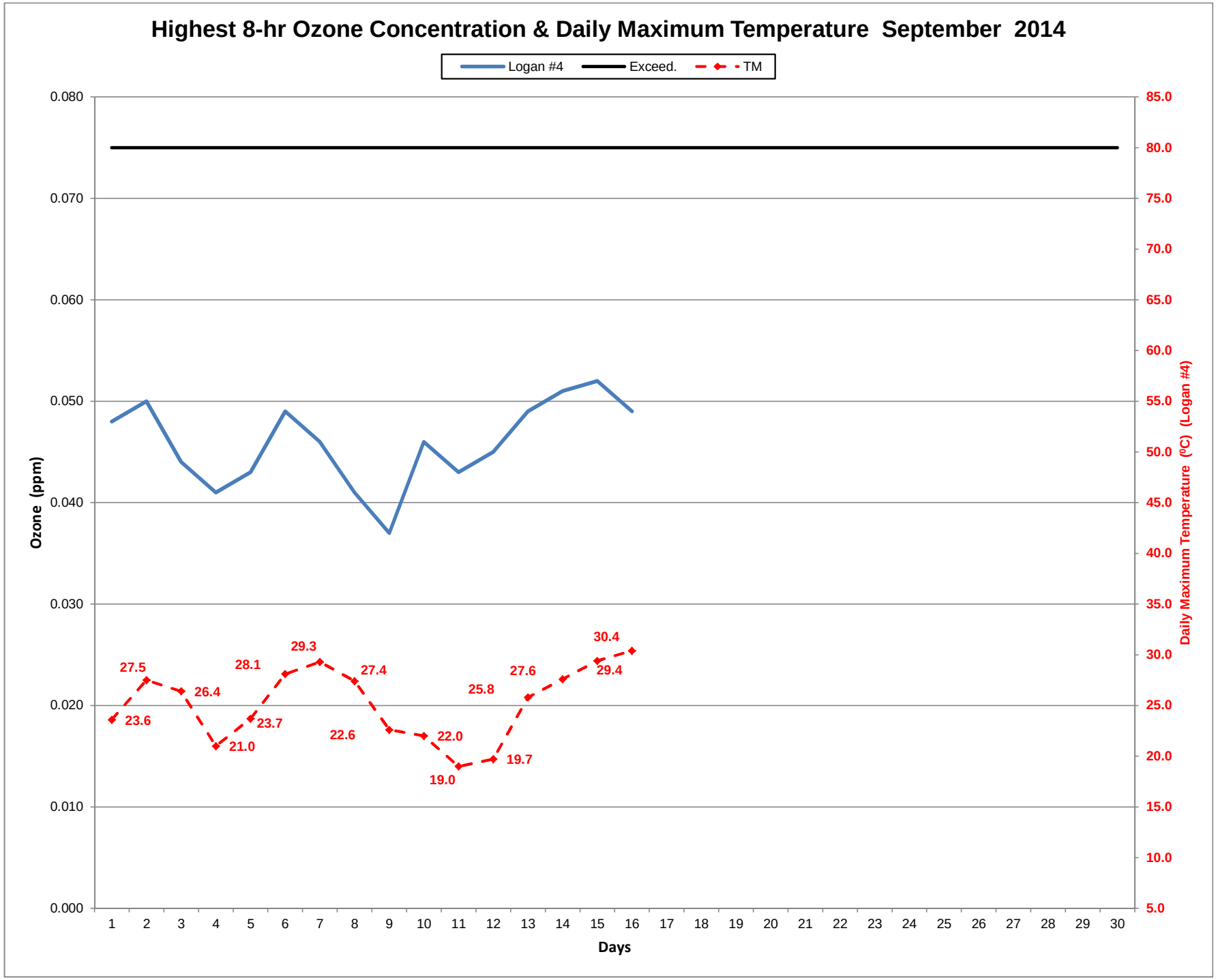

Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2014
Logan #4
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (⁰C) (Logan #4)
Days
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
31.6
30.7
31.7
26.3
26.7
26.9
25.0
27.2
28.1
30.8
28.9
32.5
28.0
30.4
28.9
31.6
30.4
31.7
25.0
26.3
24.5
22.4
18.4
16.4
24.6
20.9
26.5
22.3
28.7
26.2
21.4

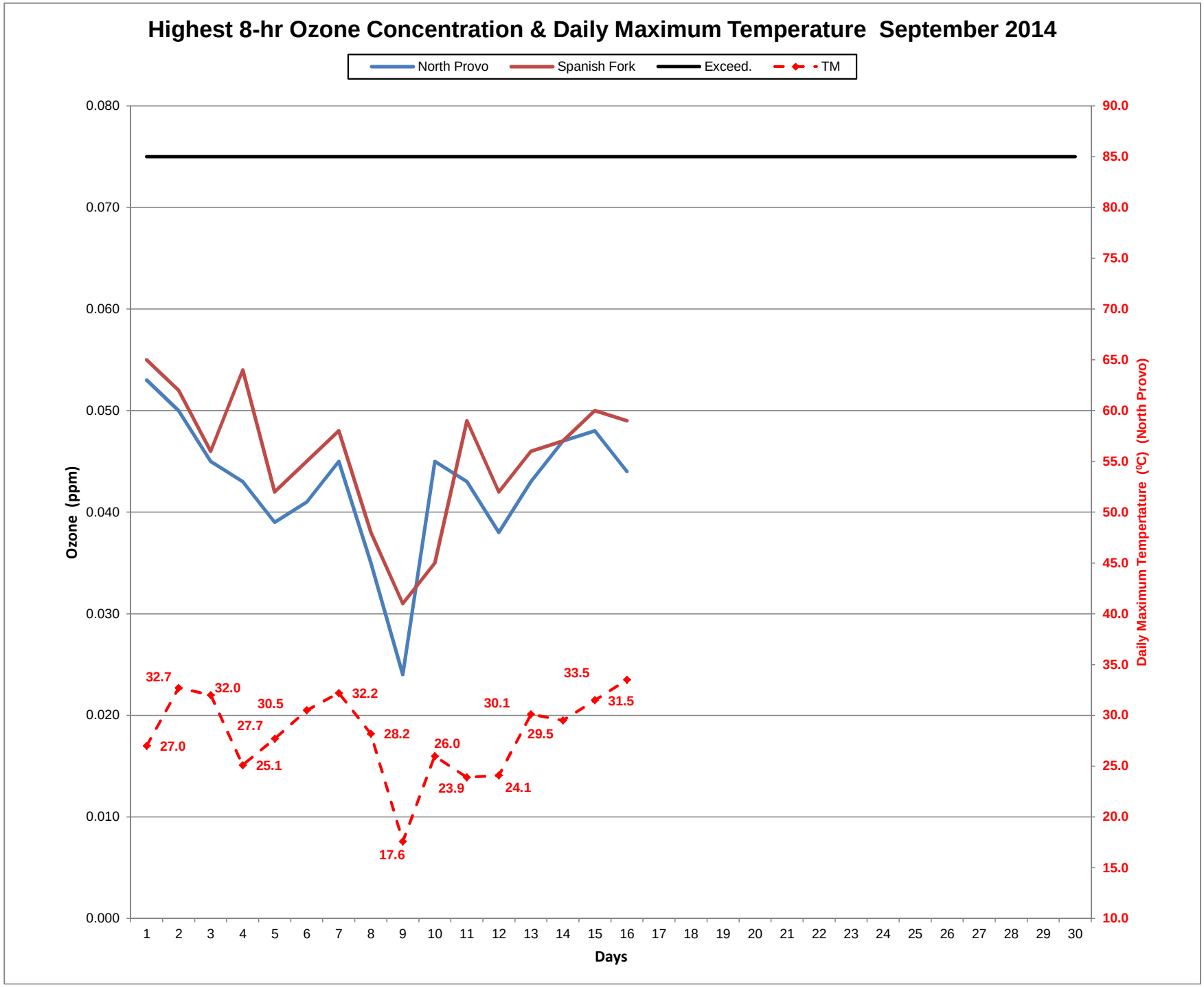

Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2014
North Provo
Spanish Fork
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (ºC) (North Provo)
Days
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
32.3
31.2
29.9
31.0
28.0
30.5
27.7
29.5
31.4
29.3
35.3
31.5
32.1
27.7
33.6
35.2
32.8
35.1
24.5
27.9
27.6
29.1
26.2
22.6
24.8
28.5
27.8
22.1
31.4
30.2
24.6

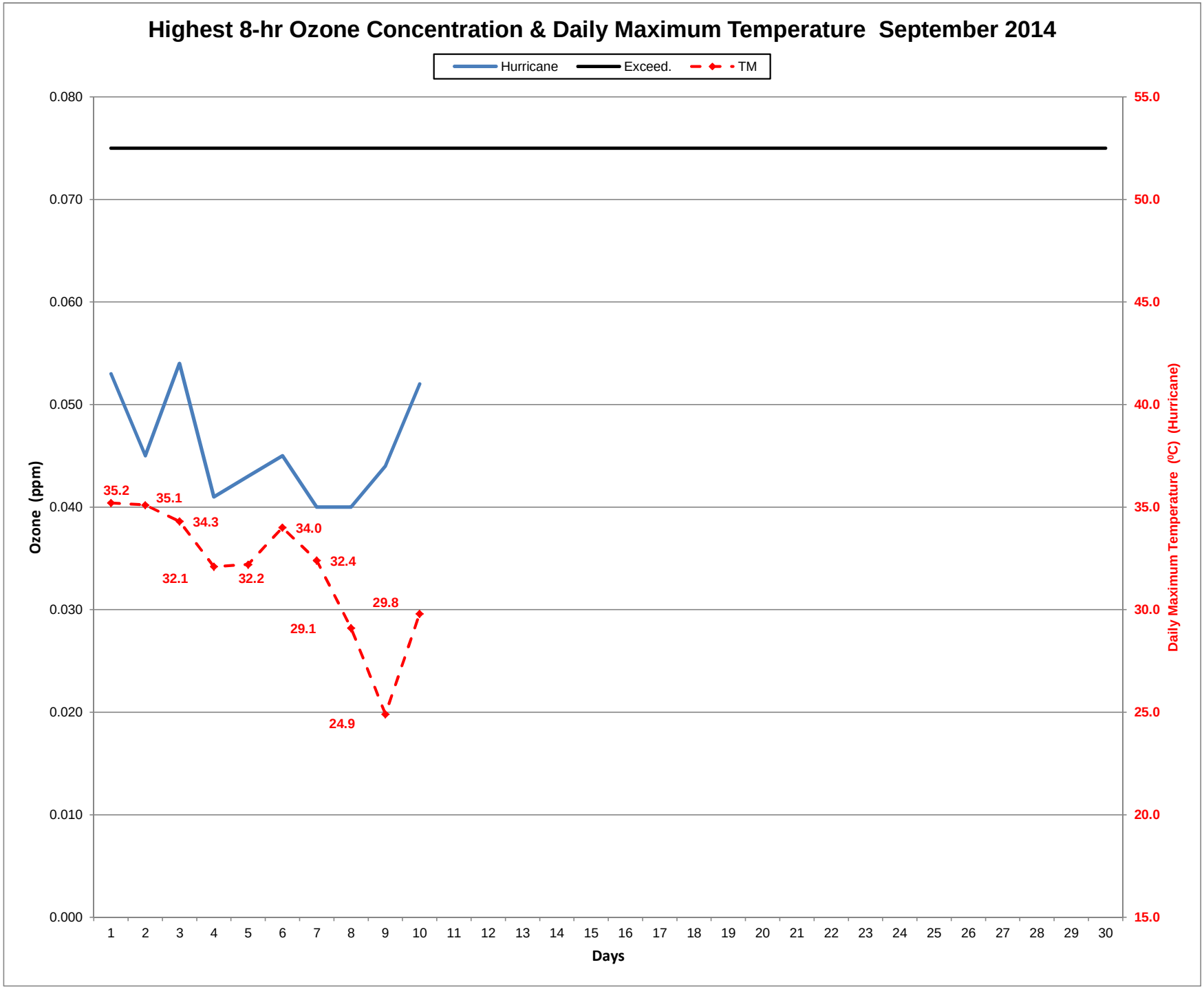

Highest 8-hr Ozone Concentration & Daily Maximum Temperature August 2014
Hurricane
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (ºC) (Hurricane)
Days
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
34.9
34.7
26.4
25.1
31.3
34.0
33.4
34.5
33.9
34.7
35.9
28.0
29.0
32.8
35.4
34.1
36.6
34.1
23.8
29.5
28.7
30.2
31.4
29.2
32.2
27.7
32.7
29.3
34.6
34.5
34.7


Highest 8-hr Ozone Concentration & Daily Maximum Temperature September 2014
Beach #4
Brigham City
Bountiful
Harrisville
Hawthorne
Ogden #2
Tooele #3
Exceed.
TM
Ozone (ppm)
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Daily Maximum Temperature (ºC) (Hawthorne)
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
30.5
29.1
23.3
29.2
27.2
31.3
21.8
28.4
22.0
23.8
28.2
21.5
29.7
32.5
30.2
25.2
Days
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30


Highest 8-hr Ozone Concentration & Daily Maximum Temperature September 2014
Fruitland
Price #2
Roosevelt
Vernal
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (°C) (Roosevelt)
Days
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
27.1
28.9
31.3
27.5
24.2
25.2
23.3
26.5
24.0
17.3
25.9
15.7
27.8
22.6
28.1
27.4


Highest 8-hr Ozone Concentration & Daily Maximum Temperature September 2014
Logan #4
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (ºC) (Logan #4)
Days
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
23.6
27.5
26.4
21.0
23.7
28.1
29.3
22.6
27.4
22.0
19.0
25.8
19.7
27.6
29.4
30.4


Highest 8-hr Ozone Concentration & Daily Maximum Temperature September 2014
North Provo
Spanish Fork
Exceed.
TM
Ozone (ppm)
Daily Maximum Tempertature (ºC) (North Provo)
Days
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
27.0
32.7
25.1
27.7
32.0
30.5
32.2
28.2
17.6
26.0
23.9
24.1
30.1
29.5
33.5
31.5


Highest 8-hr Ozone Concentration & Daily Maximum Temperature September 2014
Hurricane
Exceed.
TM
Ozone (ppm)
Daily Maximum Temperature (ºC) (Hurricane)
Days
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
35.2
35.1
34.3
32.1
32.2
34.0
32.4
29.1
24.9
29.8