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

DAQP-075-14

June 30, 2014

Ozone Advance
c/o Laura Bunte, Mail Code C304-01
109 TW Alexander Drive
Research Triangle Park, North Carolina 27711

Dear Ms. Bunte:

The State of Utah joined the Environmental Protection Agency's (EPA) Ozone Advance Program in June 2012 for Duchesne and Uintah Counties. Elevated ozone levels have been measured in the Uinta Basin during winter temperature inversions and Ozone Advance has provided an opportunity for the State of Utah to work collaboratively with the EPA and the Ute Tribe to develop a proactive emission reduction strategy for the area. The attached Path Forward Letter describes the activities that have been undertaken over the last two years to improve ozone levels in the area and outlines continued areas of focus. We look forward to working with both EPA and the Ute Tribe to further improve ozone levels in the area.

If you have any questions about Utah's Ozone Advance Program please contact me at (801) 536-4064 or Colleen Delaney at (801) 536-4248.

Sincerely,

Bryce C. Bird
Director

cc: Carl Daly, EPA Region 8
Jody Ostendorf, EPA Region 8
Minnie Grant, Ute Tribe
Uintah County Commissioners
Duchesne County Commissioners

June 11, 2014

Utah Ozone Advance Path Forward

I. Introduction

On May 21, 2012 Governor Gary Herbert requested that the Environmental Protection Agency (EPA) enroll Duchesne and Uintah Counties in the Ozone Advance Program. On June 4, 2012 EPA formally accepted Utah into the program. On July 2, 2013 the Ute Indian Tribe of the Uintah and Ouray Reservation also requested to enroll in the Ozone Advance Program. The State of Utah is coordinating emission reduction activities with the Ute Tribe and appreciates the opportunity to work in partnership with the Tribe to improve air quality in the common airshed of the Uinta Basin. The Ute Tribe is developing a separate Path Forward letter.

EPA's guidelines for Ozone Advance require the State to submit a Path Forward Letter to describe the measures and/or programs the area will implement and provide a schedule for the implementation of each one. While the Ozone Advance Program officially began in 2012, the proactive measures in the area were already well underway and this program formalizes those efforts providing greater opportunities for the State of Utah to work with EPA to achieve early reductions in the area. Utah's Path Forward is summarized in this document, but it is important to recognize that this is an ongoing program, not a final strategy. The Ozone Advance Program will provide a framework to continue the development of emission reduction strategies in the Uinta Basin.

II. Background

Unexpectedly high ozone levels were measured in the Uinta Basin in 2010 during the middle of the winter when ozone levels are typically low. Similar wintertime ozone formation is occurring in the Upper Green River Basin in Wyoming. Both areas are rural and the primary source of emissions is the oil and gas extraction industry.

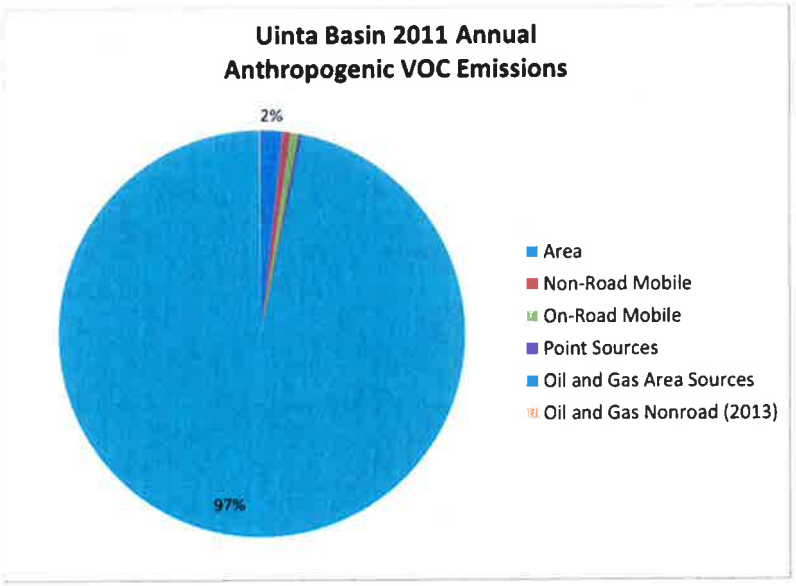

Figure 1.

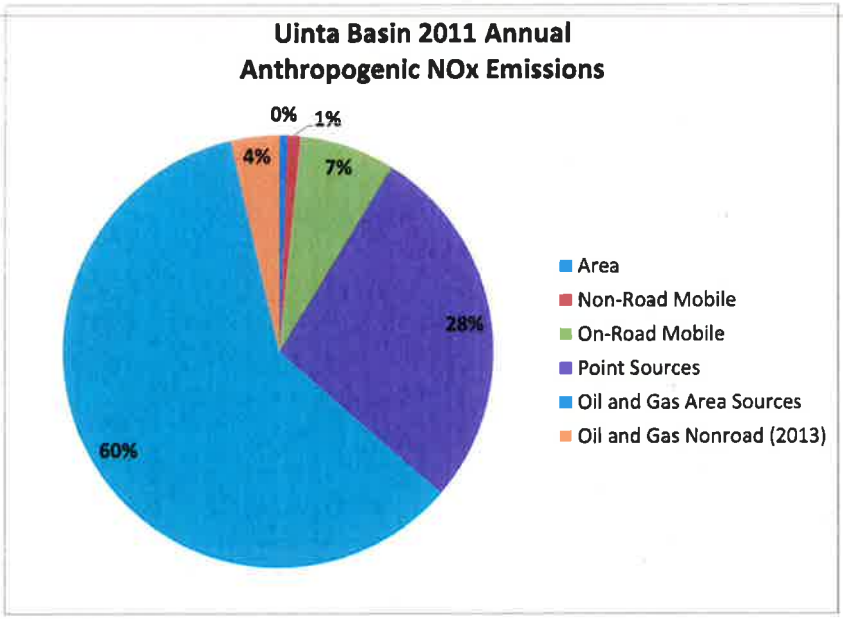

Figure 2.

Approximately 85% [1] of VOC and NOx emissions from oil and gas production in the Uinta Basin is occurring within the exterior boundaries of the Uintah Ouray Reservation of the Ute Indian Tribe and is under the jurisdiction of the Ute Tribe and EPA. Because the emission reduction strategies identified in this Path Forward Letter apply to only 15% of the emissions, the State of Utah is working collaboratively with the Ute Tribe and EPA to proactively reduce ozone levels in the Uinta Basin.

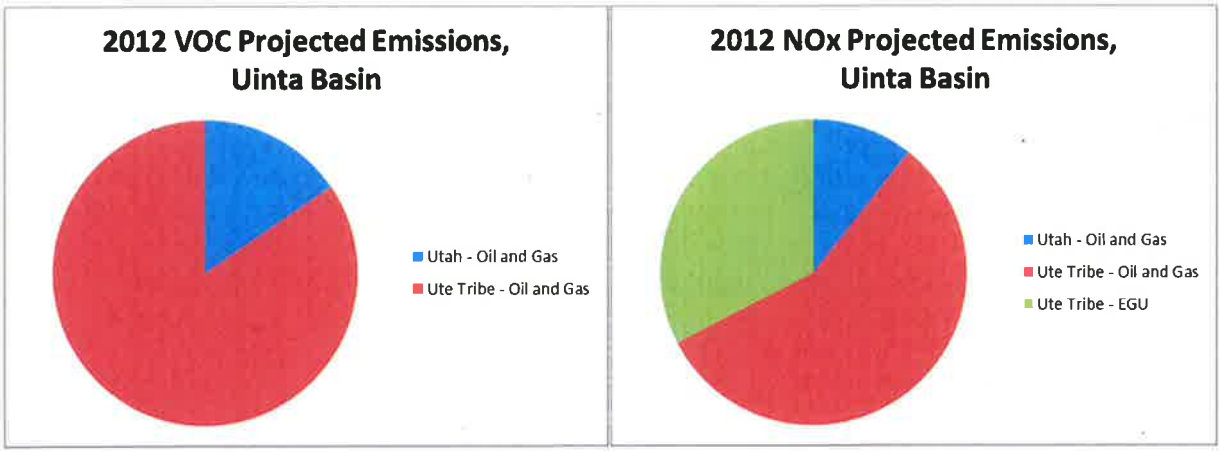

Figure 3. Projected 2012 Emissions WRAP Phase III inventory, EGU data EPA Clean Air Markets Division.

[1] Final Report: Development of 2012 Oil and Gas Emissions Projections for the Uinta Basin, Environ, March 25, 2009 (WRAP Phase III Emission Inventory Projection)

III. Technical Studies

Ozone is typically a summertime pollutant because the chemical reactions that create ozone are fueled by sunlight. Wintertime ozone is less common and the mechanisms that form ozone are not well understood. When wintertime ozone was first measured in the Uinta Basin, the State of Utah began working with researchers and other government agencies to determine the extent of the ozone problem, the chemistry that leads to wintertime ozone, and the ozone precursors that are contributing to the problem. This ongoing technical work has been the primary focus of Utah's Ozone Advance Program because a good understanding of how ozone is being formed is necessary to identify the best strategies to solve the problem.

- Significant research has occurred over the last four winters and has laid the technical groundwork for Utah's ozone strategy. The research has improved the understanding of meteorological conditions in the Uinta Basin, the effect of local emissions versus transported emissions, and cold-pool chemistry. The research has indicated that volatile organic compounds (VOC) are the most significant precursor in the Uinta Basin; therefore, the emission reduction strategies are currently focused on VOCs.
- In February 2014, the Division of Air Quality (DAQ) developed an emission projection methodology that can be used to evaluate the impact of recent regulations on oil and gas sources in the Uinta Basin[2]. This methodology has been used to evaluate the effect of the new federal New Source Performance Standards (NSPS) OOOO on VOC emissions from oil and condensate tanks, the largest VOC emission source category in the Uinta Basin. Despite projected growth in production between 2012 and 2018, overall VOC emissions are projected to decrease as production from older wells declines over time. DAQ is currently updating this analysis to include additional VOC-emitting equipment.
- Over the next year, DAQ intends to focus on updating the emission inventory in the Uinta Basin and developing a photochemical model that can simulate the formation of ozone during wintertime cold-pool conditions.

IV. Permitting

Utah's general permitting rule, R307-401, establishes permitting requirements for new and modified emission sources. All new and modified sources above the small source exemption level are required to apply best available control technology (BACT) and must meet all applicable requirements in state and federal rules. Larger sources in attainment areas are required to demonstrate compliance with the NAAQS either through the modeling requirements in the Prevention of Significant Deterioration (PSD) program in R307-405-12, or through the modeling requirements in R307-410-4. The impact of smaller sources is currently evaluated on a case-by-case basis using any technically-justifiable method. On June 4, 2014 DAQ issued a general approval order for a typical oil well or gas well. The general approval order provides a streamlined application process that will increase efficiency for both the State and the producers, while also reducing emissions through improved compliance with Utah's existing minor source permitting requirements.

[2] White Paper: VOC Emissions Projection Methodology for the Uinta Basin, Utah Division of Air Quality, February 2014

V. New Federal and State Control Measures

New federal measures will provide significant air quality benefits in the Uinta Basin because these measures apply throughout the Basin.

- On August 16, 2012 the Environmental Protection Agency adopted New Source Performance Standards (NSPS) and modifications to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Oil and Gas Sector. These standards will provide a 95% reduction in VOC emissions from hydraulically fractured natural gas wells, a significant source of VOC emissions in the Uinta Basin. This significant reduction would be accomplished primarily through the use of a proven process – known as a "reduced emissions completion" or "green completion" – to capture natural gas that currently escapes to the air. The NSPS and NESHAP also reduce emissions from storage tanks, pneumatic controllers, glycol dehydrators, and other related equipment.
- Other recent NSPS and MACT standards apply to equipment within the oil and gas sector and will achieve significant emission reductions in the Uinta Basin. The most significant standards are NESHAP ZZZZ that establishes standards for new and modified reciprocal internal combustion engines, and NSPS IIII and JJJJ that establish standards for compression ignition and spark ignition engines.
- On July 1, 2011, EPA adopted a Federal Implementation Plan (FIP) for the Review of New Sources and Modifications in Indian Country. This regulation will require minor source permitting in Indian Country, including significant portions of the oil and gas fields in the Uinta Basin, beginning in September 2014. This regulation is anticipated to achieve emission reductions from new and modified sources in Indian Country. On December 12, 2013 EPA proposed extending the deadline for oil and gas sources in Indian Country for an additional 1 -1 ½ years to provide additional time to develop general permits for this category of sources.

New State measures provide significant benefit in the Uinta Basin.

- The Utah Clean Air Partnership (UCAIR) is Governor Herbert's statewide initiative to improve air quality in Utah, including the Uinta Basin. UCAIR emphasizes collaboration, education, and motivation to meet this objective. By building clean air partnerships with businesses, organizations and governments, educating Utahns on air quality challenges and solutions, and providing resources and tools to reduce emissions, UCAIR is leading the charge to improve air quality throughout the state. This initiative provides information on ways to voluntarily reduce emissions and presents participants with a tiered list of actions they can implement that benefit Utah's public health, quality of life, and economy. UCAIR also offers incentives and recognition programs that inspire employers, employees, and individuals to become clean air leaders.

- Effective July 1, 2013 the Utah Division of Oil Gas and Mining adopted changes to R649-9, *Rules for Waste Management and Disposal* to establish new application and design criteria for produced water ponds, providing air quality and water quality benefits.

- In November 2013 DAQ requested oil and gas producers operating in the Uinta Basin to implement voluntary seasonal emission reduction strategies during the winter of 2013/14. Each

producer that participated in this voluntary program will report back to DAQ regarding the effectiveness of the strategies. The emission reductions achieved will be documented, where possible. If this voluntary program is effective, DAQ will continue the approach during future ozone seasons.

VI. Air Monitoring and Public Notification

DAQ operates several monitors in the Uinta Basin, and real time data are available to the public. The following graphic shows the air pollution trends data that are available through the winter season to help the public plan their daily activities to minimize the impact of air pollution. DAQ has also developed a smartphone app to provide real-time monitoring information to the public. Currently, information is available for air quality monitors in Vernal and Roosevelt. DAQ is interested in working with the Ute Tribe to expand this capability to include tribal monitors.

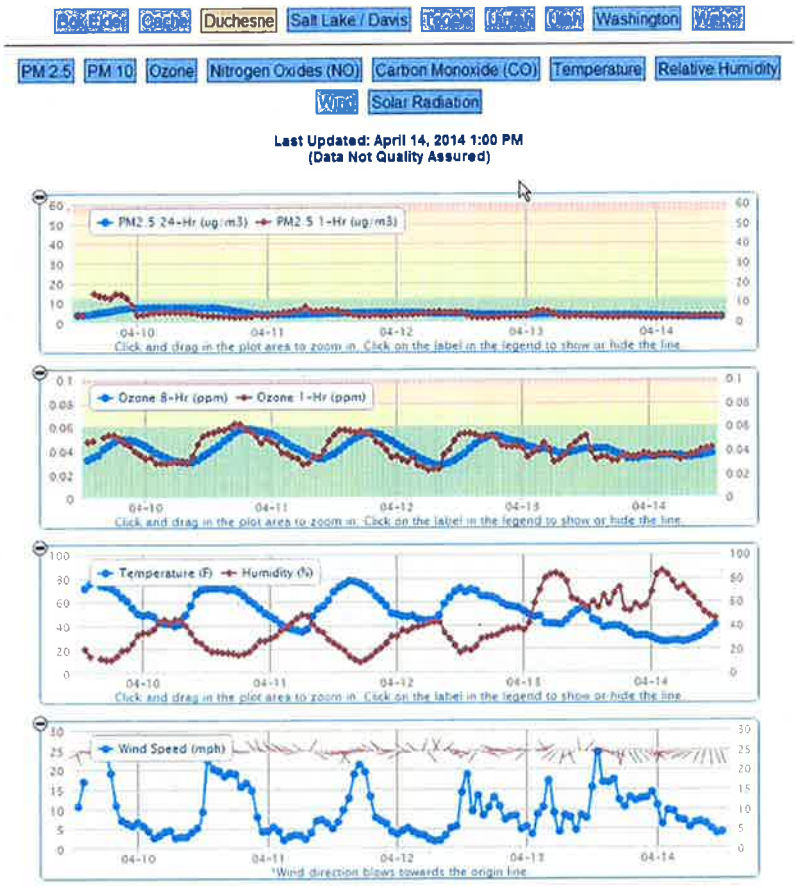

Figure 4.

In addition, DAQ forecasts expected pollution levels in the Uinta Basin and issues health advisories when values are expected to be over the standard.

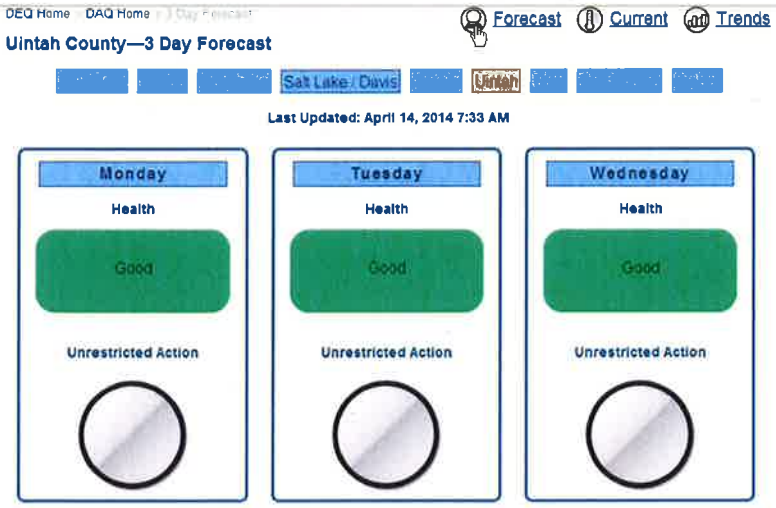

Figure 5.

VII. Future Emission Reduction Strategies

One of the challenges in the Uinta Basin is that wintertime ozone formation is not yet well understood. During the first phase of Ozone Advance, DAQ's efforts have been focused on research studies, emission inventory improvements, and data collection so that air quality models can be developed to guide future emission reduction efforts. DAQ's goal is to follow the science when designing emission reduction strategies. Current information indicates that VOC is an important precursor; therefore, our strategy is focused on VOC. This overall approach may change over time as more information is available regarding the important ozone precursors.

A. Four new rules were proposed by the Air Quality Board on June 4, 2014 to achieve VOC reductions from existing sources. DAQ initially released the draft rules for stakeholder review in the summer of 2013 and the proposal reflects comments received through that process. DAQ anticipates final adoption of these rules in the fall of 2014. The rules include:

- general provisions to ensure that equipment is operated properly, adequately maintained, and good air pollution control practices are used to minimize VOC emissions,
- a requirement to replace existing high-bleed pneumatic controllers with low-bleed controllers,
- a requirement to install self-igniters on flares to ensure that the control device is operating continuously, and
- a requirement to use of bottom filling or submerged filling when loading petroleum liquids into tank trucks.

B. Additional rules are under development to achieve further emission reductions from older equipment that does not meet current control technology standards.

- Oil tanks and condensate tanks are the largest VOC emission category in the Uinta Basin. Emissions from these tanks are largely controlled through air quality permits because all sources with emissions greater than the small source exemption level (5 tons/yr VOC or 500 lbs/yr of

HAPs) are required to have an approval order under R307-401. DAQ has initiated a 2-prong approach for tanks. First, DAQ is working to ensure that all sources over the small source exemption level are properly permitted and controlled. Second, DAQ is evaluating the cost effectiveness of retrofitting tanks that are currently operating without VOC capture and control systems.

- Fugitive emission leaks are common in the oil and gas industry due to the number of valves, joints, and the changing pressure in the system. One effective strategy to minimize fugitive emissions is to regularly inspect and repair equipment. The proposed GAO requires implementation of a leak detection and repair (LDAR) program. DAQ is evaluating the need to expand the LDAR program to existing equipment in the Uinta Basin.

C. DAQ has purchased an infrared camera to better identify VOC fugitive emissions. This camera will increase the effectiveness of DAQ's compliance program to identify VOC leaks and require repairs. The proposed GAO also requires implementation of a leak detection and repair (LDAR) program for affected sources.

D. The Department of Environmental Quality's (DEQ) Pollution Prevention team has developed a web site and publications that will identify best management practices (BMPs) for the oil and gas industry. The BMPs are focused on strategies that can achieve cost-savings for the producers and provide cost-effective emission reductions. DEQ will continue efforts to encourage the adoption of BMPs throughout the industry.

VIII. Stakeholder Involvement

EPA's Ozone Advance Guidance highlights the importance of stakeholder involvement in the development of emission reduction strategies. This is consistent with Utah's long-standing process to encourage stakeholder input when developing rules and state implementation plans.

- During the first phase of Ozone Advance, DAQ's efforts were focused on improving the technical understanding of ozone formation in the Uinta Basin. An Oversight Team was created with members from the Utah Department of Environmental Quality, Bureau of Land Management, the Environmental Protection Agency, and oil and gas producers to review the study plans for the Uinta Basin.
- DAQ meets individually with a wide variety of interested parties including local government, oil and gas producers, state agencies, federal agencies, environmental groups, and the local health department to discuss the goals of Ozone Advance and to identify concerns and potential solutions.
- During the summer of 2013 DAQ expanded stakeholder involvement through public meetings focused on specific issues and potential emission reduction strategies. These meetings will continue to ensure broad input into strategies to reduce ozone levels into the Uinta Basin.
    - July 30, 2013
    - August 12, 2013
    - December 3 and 5, 2013
    - January 30, 2014