



Our Home for 20 Years

UTAH Division of Air Quality

ANNUAL REPORT

For The Year
2010



Our New Home

January 2011

Division of Air Quality – 2010 Annual Report

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Acronyms

AO	Approval Order
AHERA	Asbestos Hazard Emergency Response Act
ATLAS	Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance Section
AMC	Air Monitoring Center
BACT	Best Available Control Technology
CAA	Clean Air Act
CAP	Compliance Advisory Panel
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CNG	Compressed Natural Gas
DAQ	Division of Air Quality
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
GHG	Green House Gas
HAPs	Hazardous Air Pollutants
MACT	Maximum Available Control Technology
$\mu\text{g}/\text{m}^3$	Micrograms Per Cubic Meter
Micron	One Millionth of a Meter
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO ₂	Nitrogen Dioxide
NOV	Notice of Violation
NO _x	Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O ₃	Ozone
PM	Particulate Matter
PM10	Particulate Matter Smaller Than 10 Microns in Diameter
PM2.5	Particulate Matter Smaller Than 2.5 Microns in Diameter
PPB	Parts Per Billion
PPM	Parts Per Million
SBEAP	Small Business Environmental Assistance Program
SCAN	Source Compliance Action Notice
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
TSCA	Toxic Substances Control Act
TSP	Total Suspended Particles
VOC	Volatile Organic Compounds
UAC	Utah Administrative Code

Introduction

The mission of the Utah Division of Air Quality (DAQ) is to protect public health and the environment from the harmful effects of air pollution. It is the responsibility of DAQ to ensure that the air in Utah meets health and visibility standards established under the federal Clean Air Act (CAA). To fulfill this responsibility, DAQ is required by the federal government to ensure compliance with the U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS) statewide and visibility standards at national parks. DAQ enacts rules pertaining to air quality standards, develops plans to meet the federal standards when necessary, issues preconstruction and operating permits to stationary sources, and ensures compliance with state and federal air quality rules.

The DAQ allocates a large portion of its resources to implementing the CAA. The Utah Air Conservation Act empowers the Utah Air Quality Board to enact rules pertaining to air quality issues. The DAQ staff supports the Board in its policy-making role. Board membership provides representation from industry, local government, environmental groups, and the public, and includes the Executive Director of the Department of Environmental Quality. The eleven board members have diverse interests, are knowledgeable in air pollution matters, and are appointed by the Governor with consent of the Senate. The Director of DAQ is the Board's Executive Secretary.

The Utah Air Quality Rules define the Utah air quality program. Implementation of the rules requires DAQ interaction with industry, other government agencies and the public. The state air quality program is responsible for the implementation of the federal standards under the CAA as well as state rules for pollution sources not regulated by the CAA.

2010 Synopsis

Despite an ever-increasing population and industrial base, Utah's monitored concentrations of all federal health standards for criteria air pollutants have either stayed the same or continued their decreasing trends, with the exception of particulates due solely to natural wind storms.

On November 17, 2009, EPA proposed a new 1-hour standard for SO₂ and to eliminate the 24-hour and annual primary SO₂ standards. The SO₂ standard had not changed since 1971. EPA finalized the standard on June 2, 2010 by establishing a 3-year average of the 99th percentile of the daily maximum 1-hour at a level of 75 parts per billion (ppb). The standard became effective on August 2, 2010 and states were given until January 1, 2013 to make adjustments to monitoring networks necessary to meet operational requirements. Historical ambient monitoring shows that Utah's air has been well within the old federal health standard and below the new value.

On January 22, 2010, a revision to the nitrogen dioxide (NO₂) standard became effective. EPA set a new 1-hour NO₂ standard at the level of 100 ppb measured as the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations. EPA retained the current annual average NO₂ standard of 53 ppb. To determine compliance with the new standard, EPA established new ambient air monitoring requirements for NO₂. In urban areas, monitors are required near major roads as well as in other locations where

maximum concentrations are expected. Additional monitors are required in large urban areas to measure the highest concentrations of NO₂ that occur more broadly across communities. DAQ and EPA will evaluate the current Utah monitoring network for compliance with the new monitoring standard and will have two years to make necessary monitoring station location adjustments.

On May 13, 2010, EPA issued a final rule that addresses greenhouse gas emissions from stationary sources under the CAA permitting programs. This final rule sets thresholds for greenhouse gas (GHG) emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. The implementation date for the rule is January 2, 2011. DAQ has adopted the rule to allow DAQ to issue PSD and Title V permits for GHG.

With approval from EPA Region 8, the State halted monitoring for lead in the ambient air in September 2005 because measured levels of lead were extremely low relative to the former primary and secondary lead standards (1.5 µg/m³ quarterly average). Subsequently, in 2008, EPA revised the lead standard to 0.15 µg/m³ as total suspended particles (TSP) and set a monitoring requirement that caused DAQ to initiate lead monitoring near a lead specific emission source. On October 12, 2009, the State made a recommendation to EPA that all 29 counties in Utah be designated unclassifiable for the primary and secondary lead standards. EPA concurred with the State attainment recommendation on July 15, 2010. On December 27, 2010, EPA revised the lead monitoring requirements such that additional monitoring for lead will have to take place at one additional point source site and one urban non-source monitoring location.

During wintertime episodes of air stagnation and temperature inversion, low-lying valleys routinely experience elevated concentrations of both particulate matter smaller than 10 microns in diameter (PM₁₀) and particulate matter smaller than 2.5 microns in diameter (PM_{2.5}). Although PM₁₀ concentrations no longer exceed the standard under these conditions, the lower PM_{2.5} standard is low enough that it is violated in several areas along the Wasatch Front as well as in the Cache Valley.

Air Quality Standards

The Clean Air Act as last amended in 1990 requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The CAA established two types of air quality standards: primary and secondary standards. Primary standards are set to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare, including protection including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

Standards are composed of a numerical value and a form. The form may be a statistical value, such as the 98th percentile calculation or a rolling average over a designated period of time that is then compared against the numerical value.

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The EPA has established health-based NAAQS for six pollutants known as criteria pollutants. These are carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide and lead. Each of these pollutants is addressed in greater detail later in this chapter, while Table 1 provides a brief description of each. The primary health standards are established by EPA after considering both the concentration level and the duration of exposure that can cause adverse health effects. Pollutant concentrations that exceed the NAAQS are considered unhealthy. The DAQ monitors each of these criteria pollutants, as well as several non-criteria pollutants for special studies.

Table 1. EPA Designated Criteria Pollutants

Name	Sources	Health Effects	Welfare Effects
Carbon Monoxide (CO) ; a clear, colorless, odorless gas	Burning of gasoline, wood, natural gas, coal, oil, etc.	Reduces the ability of blood to transport oxygen to body cells and tissues. May be particularly hazardous to people who have heart or circulatory (blood vessel) problems and people who have damaged lungs or breathing passages.	
Nitrogen Dioxide (NO₂) (one component of NO _x); smog-forming chemical	Burning of gasoline, natural gas, coal, oil, and other fuels; Cars are also an important source of NO ₂ .	Can cause lung damage, illnesses of breathing passages and lungs (respiratory system).	Ingredient of acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility.
Ozone (O₃) (ground-level ozone is the principal component of smog)	Chemical reaction of pollutants; VOCs and NO _x .	Can cause breathing problems, reduced lung function, asthma, irritated eyes, stuffy noses, and reduced resistance to colds and other infections. It may also speed up aging of lung tissue.	Can damage plants and trees; smog can cause reduced visibility.
Particulate Matter (PM₁₀, PM_{2.5}) ; dust, smoke, soot	Burning of gasoline, natural gas, coal, oil and other fuels; industrial plants; agriculture (plowing or burning fields); unpaved roads, mining, construction activities. Particles are also formed from the reaction of VOCs, NO _x , SO _x and other pollutants in the air.	Can cause nose and throat irritation, lung damage, bronchitis, and early death.	Main source of haze that reduces visibility.
Sulfur Dioxide (SO₂)	Burning of coal and oil (including diesel and gasoline); industrial processes.	Can cause breathing problems and may cause permanent damage to lungs.	Ingredient in acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility.
Lead (Pb)	Paint (houses, cars), smelters (metal refineries); manufacture of lead storage batteries; note: burning leaded gasoline was the primary source of lead pollution in the US until unleaded gasoline was mandated by the federal government.	Damages nervous systems, including brains, and causes digestive system damage. Children are at special risk. Some lead-containing chemicals cause cancer in animals.	Can harm wildlife.

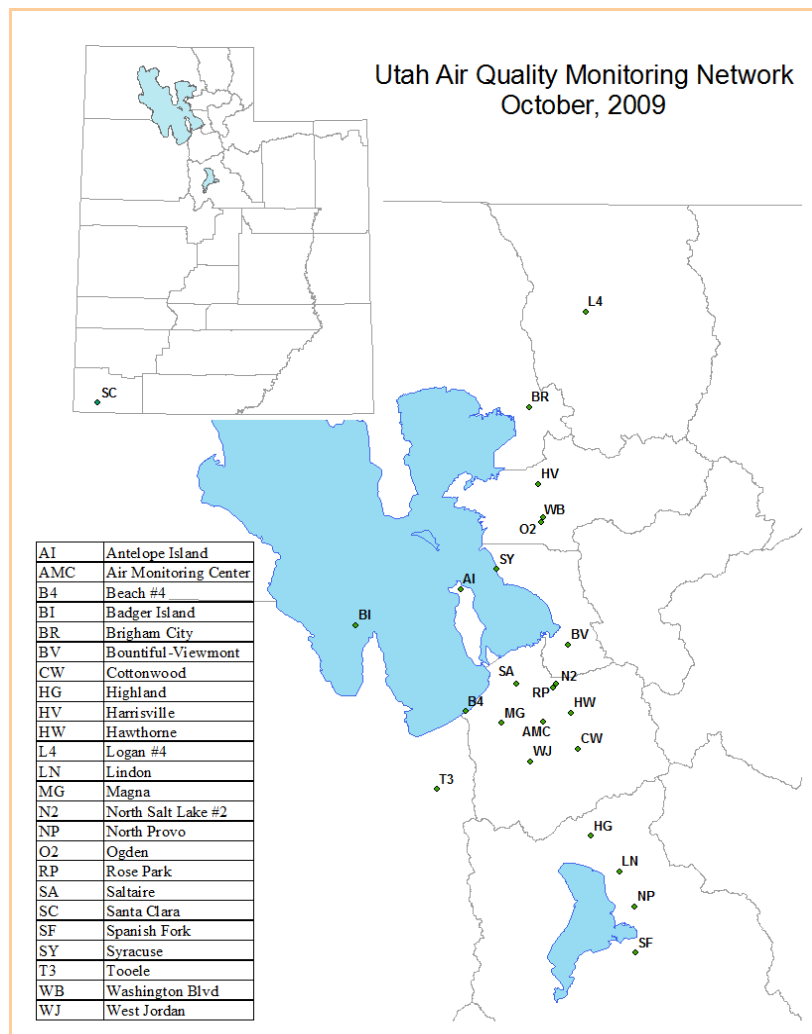
Ambient Air Quality in Utah

Utah's Air Monitoring Network

The Air Monitoring Center operates a network of monitoring stations along the Wasatch Front from Logan to Spanish Fork and in Santa Clara, Utah. The monitors are situated to measure air quality in both neighborhoods and industrial areas. Figure 1 shows the general location of the active monitoring sites in Utah as of October 2009. Table 2 presents the monitoring station locations and monitored constituents. Meteorological data are collected at many locations to provide localized data for air quality modeling that is used to evaluate the impacts of new sources and to assess the effectiveness of regional mitigation strategies.



Figure 1. Utah Air Monitoring Network



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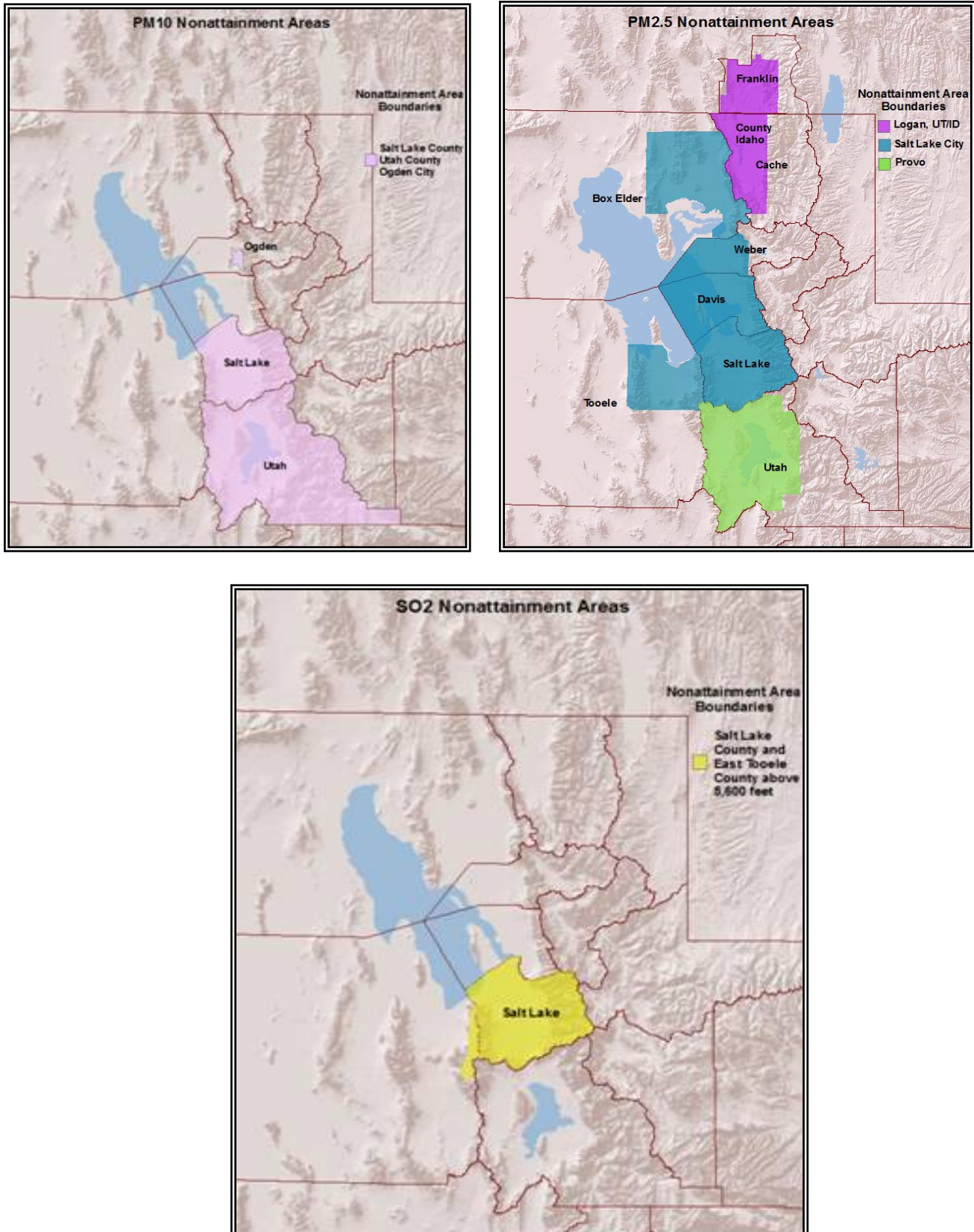
Table 2. Utah Monitoring Network Stations

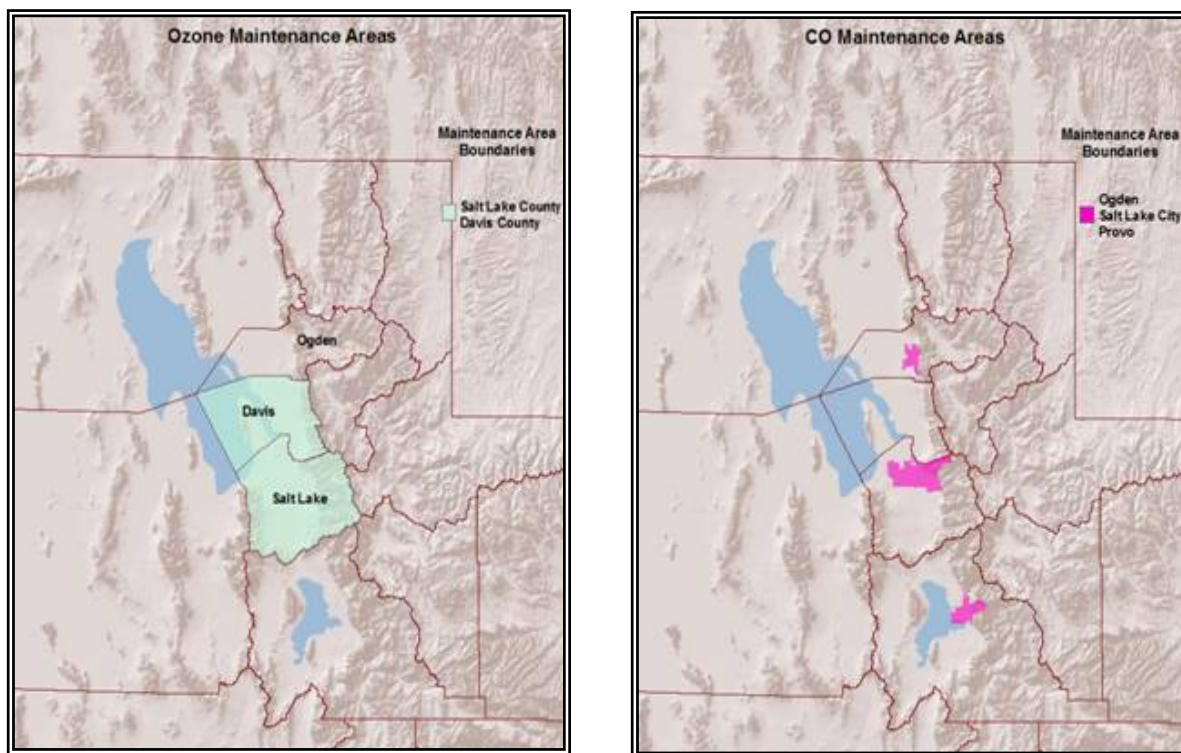
Station	City	Address	CO	NO ₂	Hg	O ₃	PM10	PM2.5	SO ₂	Pb	Met.
Antelope Island	None	North end of island									X
Badger Island	None	On Island									X
Beach	Lakepoint	12100 W. 1200 S.				X			X		X
Bountiful	Bountiful	200 W. 1380 N.		X		X		X	X		X
Brigham City	Brigham City	140 W. Fishburn Dr.				X		X			X
Cottonwood	SLC	5717 S. 1300 E.	X	X		X	X	X			X
Harrisville	Harrisville	425 W. 2250 N.				X		X			X
Hawthorne	SLC	1675 S. 600 E.	X	X		X	X	X			X
Highland	Highland	10865 N. 6000 W.				X		X			X
Lindon	Lindon	30 N. Main St.					X	X			X
Logan	Logan	125 W. Center St.		X		X	X	X			X
Magna	Magna	2935 S. 8560 W.					X	X	X	X	X
North Provo	Provo	1355 N. 200 W.	X	X		X	X	X			X
N. Salt Lake	SLC	1795 N. Warm Springs Rd.					X		X		X
Air Monitoring center	SLC	2861 W. Parkway Blvd.			X						
Ogden #2	Ogden	228 32nd St.	X	X		X	X	X			X
Rose Park	SLC	1354 W. Gooswin Ave.						X			
Saltaire	None	6640 W. 1680 N.									X
Spanish Fork	Spanish Fork	312 W. 2050 N.				X		X			X
Syracuse	Syracuse	4700 W. 1700 S.									X
Tooele	Tooele	434 N. 50 W.				X		X			X
Washington Blvd.	Ogden	2540 S. Washington Blvd.	X								
West Jordan	West Jordan	4540 W. 8700 S.									X
Santa Clara	Santa Clara	1215 N Lava Flow Dr (Snow Canyon Middle School)		X		X					X

NAAQS Nonattainment & Maintenance Areas

Areas that are not in compliance with the NAAQS are referred to as nonattainment areas. Figure 2 contains maps of the current nonattainment areas within the state. A maintenance area (also shown in Figure 2) is an area that was once designated as nonattainment, and which subsequently demonstrated to EPA statistically that it will attain and maintain a particular standard for a period of 10 years. EPA must approve the demonstration.

Figure 2. Utah Nonattainment Areas





Criteria Air Pollutants

Carbon Monoxide (CO)

Carbon monoxide is a colorless and odorless gas, formed by the incomplete combustion of carbon-based fuel. Carbon monoxide is primarily produced from on-road motor vehicle emissions. Other significant sources of CO emissions are wood burning stoves and fireplaces. The remaining emissions come from industrial facilities, construction equipment, miscellaneous mobile sources and other types of space heating.

Because motor vehicle emissions are the major source of CO, the highest concentrations occur during morning and evening rush hours near high traffic areas. The worst problems occur when there are large numbers of slow-moving vehicles in large parking lots, busy intersections, and traffic jams. Carbon monoxide problems are greater in winter due to several factors: cold weather makes motor vehicles run less efficiently, wood burning and other space heating takes place in the winter, and cold weather temperature inversions trap CO near the ground.

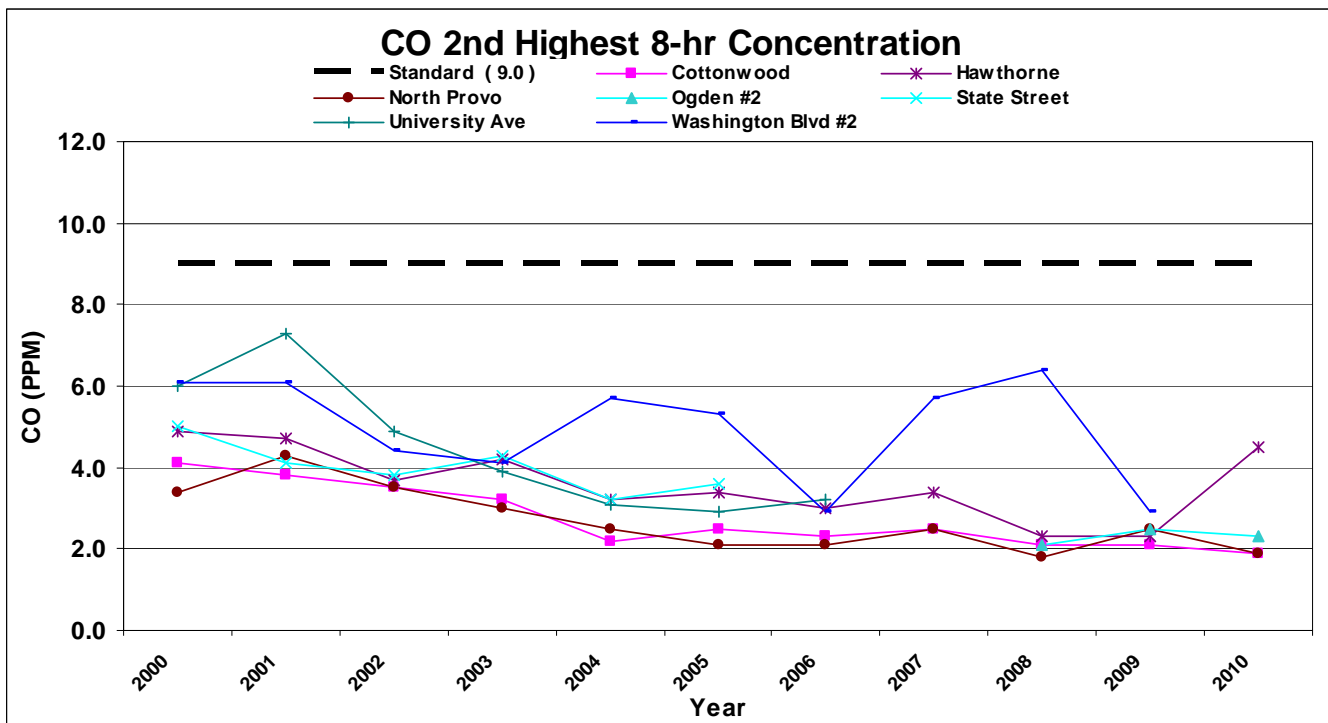
Standards

The EPA has developed two national standards for CO. They are 35 ppm of CO averaged over a 1-hour period and 9 ppm of CO averaged over an 8-hour period. A violation of the NAAQS occurs with the second exceedance of either standard at a single location in a calendar year. Once a location measures a second exceedance of either standard, it is considered to be in

violation and becomes designated as a “nonattainment area.” Three cities in Utah (Salt Lake City, Ogden, and Provo) were at one time designated nonattainment areas for CO. Due primarily to improvements in motor vehicle technology, Utah has been in compliance with the CO standards since 1994. Salt Lake City, Ogden, and Provo were successfully re-designated to attainment status in 1999, 2001, and 2006 respectively.

EPA is due to revise the CO standard in 2011.

Figure 3. Carbon Monoxide Second Highest 8-hr. Concentration



Nitrogen Dioxide (NO₂)

During high temperature combustion, nitrogen in the air reacts with oxygen to produce various oxides of nitrogen, or NO_x, a reddish-brown gas. One of the oxides of nitrogen, NO₂, is considered a criteria pollutant.

Oxides of nitrogen react with other air contaminants to form other criteria pollutants. In the summer, photochemical reactions between NO₂ and volatile organic compounds lead to the formation of ground-level ozone. In the winter, NO₂ reacts with ammonia to form fine particulate matter (PM_{2.5}). Both of these seasonal scenarios can result in increased pollution. Utah continues to struggle with both the ozone and particulate matter standards, and because of this, DAQ is mindful of the trend in NO₂ emissions illustrated in Figure 4.

Standard

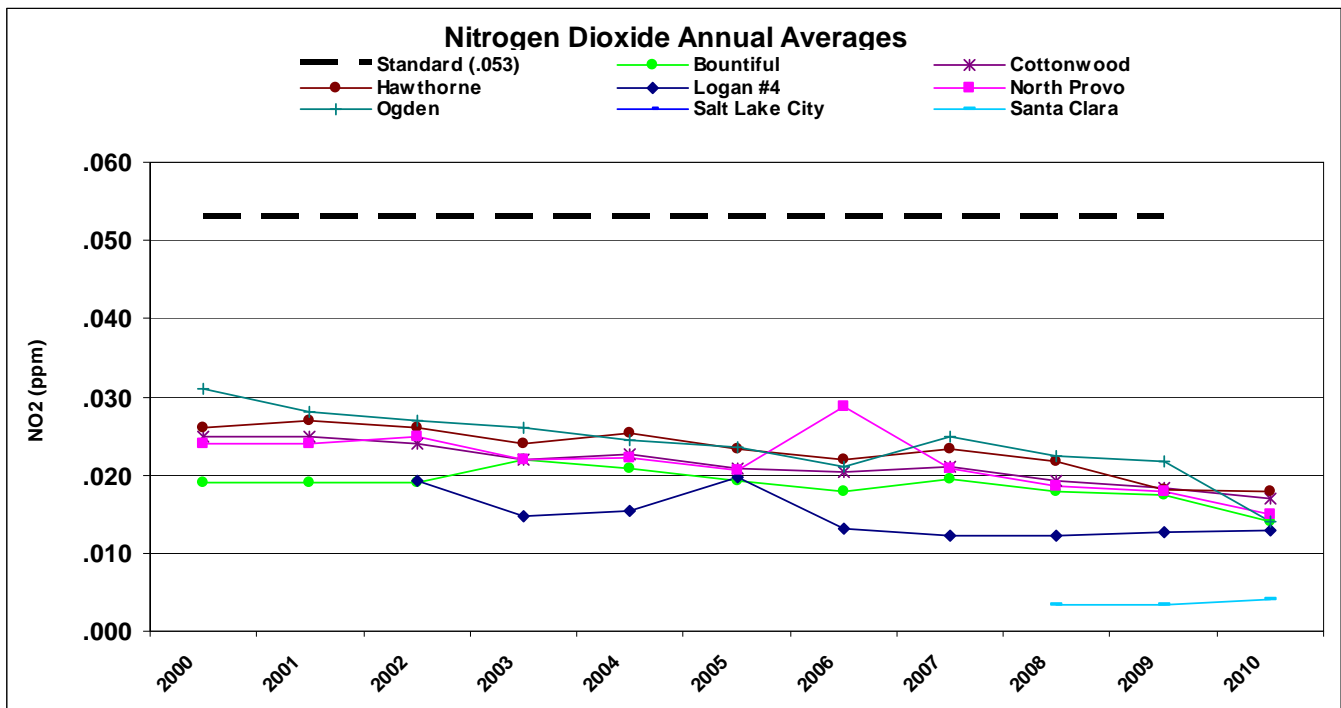
EPA set a new 1-hour NO₂ standard at the level of 100 ppb measured as the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations. Table 3 presents this assessment for years 2008-2010.

Table 3. Nitrogen Dioxide New Standard

Monitoring Station	2008 -2010 99 th Percentile of Daily Max. 1-hr Averages (PPB)	New 2010 Standard (PPB)
Bountiful	58	100
Cottonwood	60	
Hawthorne	59	
Logan	47	
North Provo	54	
Ogden	63	

EPA retained the current annual average NO₂ standard of 0.053 ppm (or 53 ppb) expressed as an annual arithmetic mean (average). DAQ monitors the concentrations of NO₂ at various locations throughout the state, and has never observed a violation of the annual standard.

Figure 4. Nitrogen Dioxide Annual Averages



Ozone (O₃)

Ozone is a clear, colorless, gas composed of molecules of three oxygen atoms. Ground level ozone can be inhaled and is considered a pollutant. Ground-level ozone should not be confused with the stratospheric ozone layer that is located approximately 15 miles above the earth's surface. It is this layer that shields the earth from cancer-causing ultraviolet radiation. Ground level ozone is formed by a complex chemical reaction involving volatile organic carbon compounds (VOCs) and oxides of nitrogen in the presence of sunlight.



Ozone production is a year-round phenomenon. However, the highest ozone levels generally occur during the summer when strong sunlight, high temperatures, and stagnant meteorological conditions combine to drive chemical reactions and trap the air within a region for several days. Some major sources for these pollutants are vehicle engine exhaust, emissions from industrial facilities, gasoline vapors, chemical solvents, and biogenic emissions from natural sources, like vegetative growth.

Standard

On March 12, 2008, the EPA revised the NAAQS for ozone to 0.075 ppm. The standard is based on a 3-year average of the annual 4th highest daily 8-hour average concentration. Several areas along the Wasatch Front have current ambient monitoring data that met the standard prior to the 2008 revision, but did not meet this new standard. In March 2009, the State of Utah submitted a recommendation to EPA that Salt Lake County, Davis County, and the western portion of Weber County be designated nonattainment, and the rest of the state being designated as attainment/unclassifiable for the new standard. EPA has not accepted Utah's designation recommendation and is due to issue a revised standard in 2011 which may alter Utah's designation.

Figure 5 shows the 8-hour ozone concentrations by looking at the 4th highest annual concentration while Figure 6 presents the NAAQS threshold which is the 3-year average of the 4th highest 8-hour ozone concentration. The heavy black dashed lines indicate the current standard of 0.075 ppm while the heavy red dashed lines represents the former standard.

Figure 5. Ozone 4th Highest 8-hr Concentration

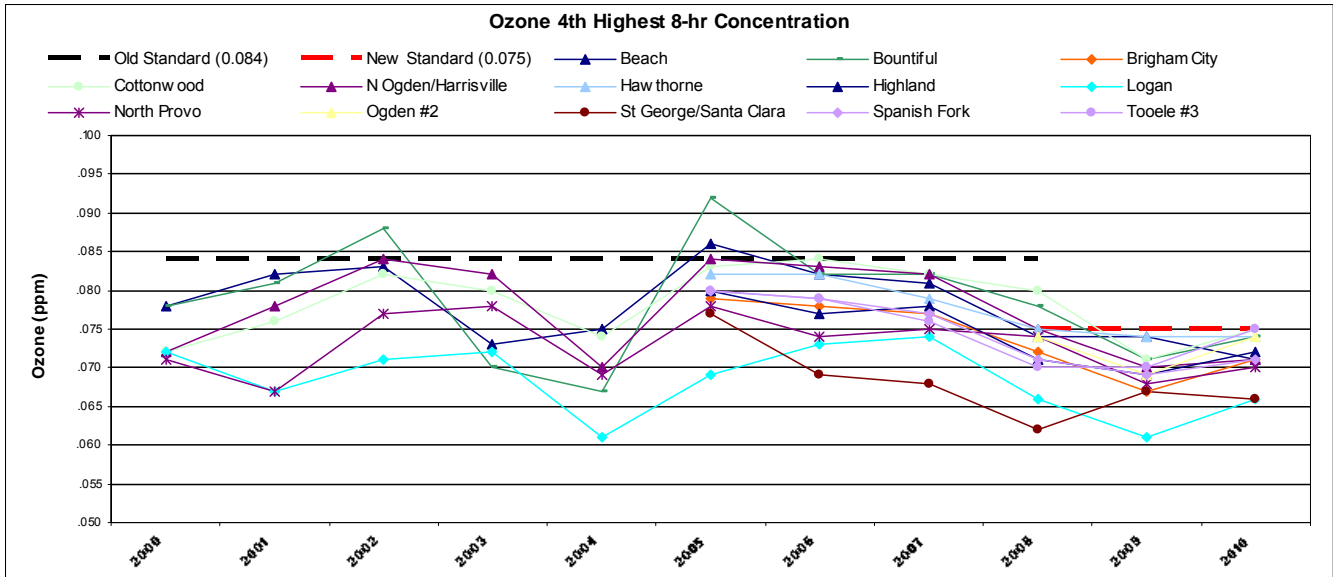
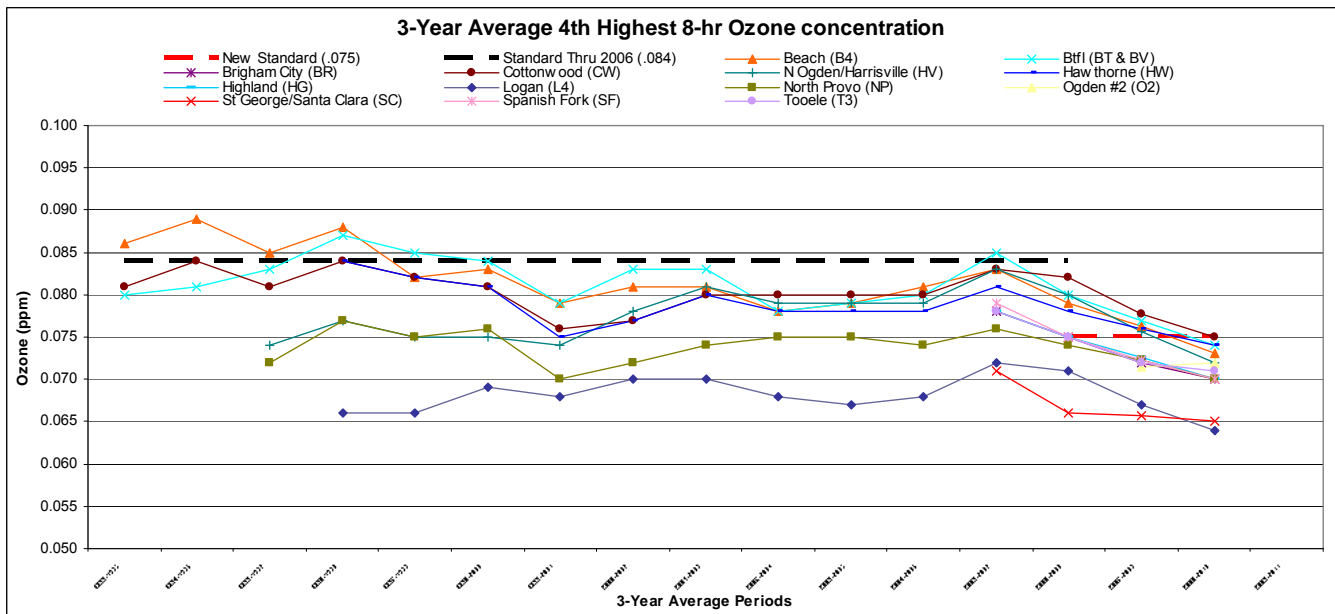


Figure 6. Ozone 3-year Average 4th Highest 8-hr Concentration



Particulate Matter

Regulated particulate matter is a complex mixture of extremely tiny particles of solid or semi-solid material suspended in the atmosphere and is divided into two categories: PM10 and PM2.5. PM10 is particulate less than 10 micrometers in diameter, which is about one-seventh the width of a strand of human hair. PM10 can lodge deep in the lungs and cause respiratory problems. The coarse fraction of PM10, that which is larger than 2.5 microns, is typically made

up of “fugitive dust” (sand and dirt blown by winds from roadways, fields, and construction sites) and contains large amounts of silicate (sand-like) material.

PM2.5, or fine particulate, is 2.5 micrometers in diameter or less. Primary PM2.5 is directly emitted into the atmosphere from combustion sources and includes fly ash from power plants, carbon black from cars and trucks, and soot from fireplaces and woodstoves.

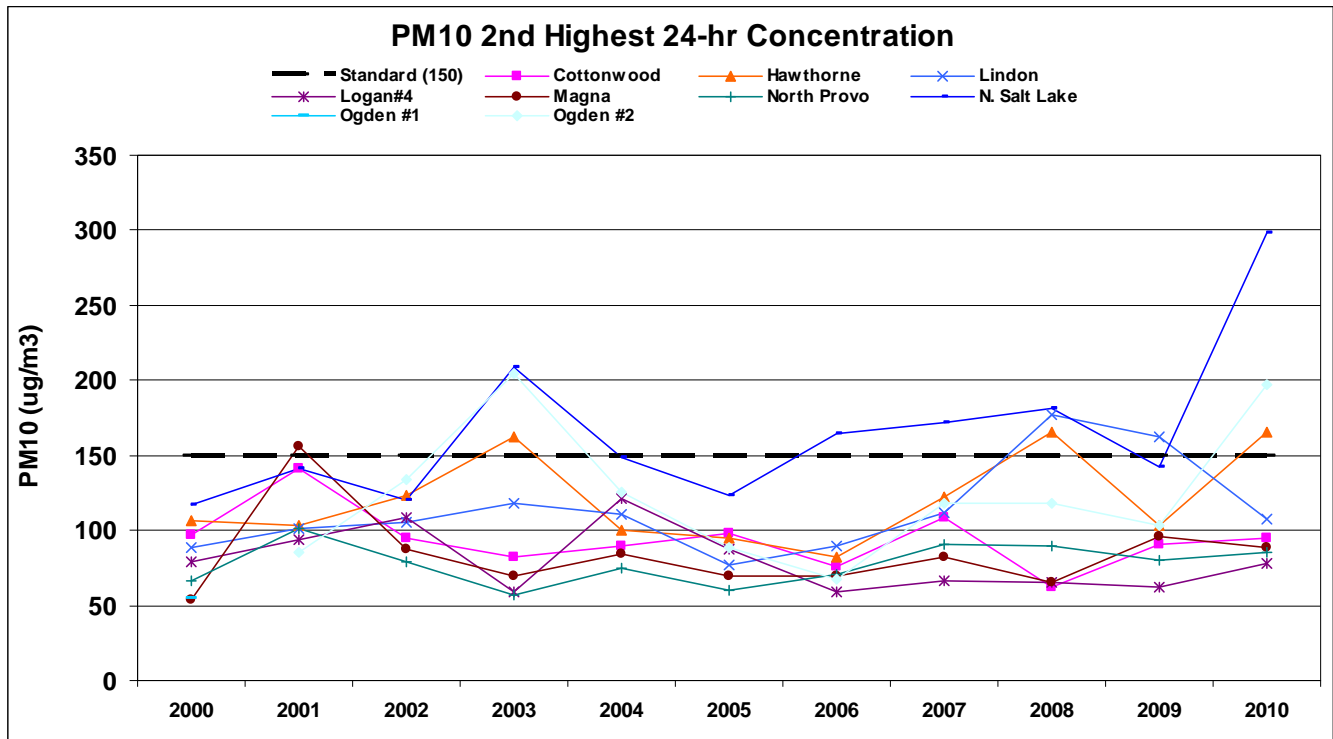
Much of Utah’s PM2.5 is called secondary aerosol, meaning that it was not emitted directly as a particle, but was produced when gasses such as SO₂ and/or NO_x react with other gasses in the atmosphere, such as ammonia to become tiny particles. SO₂ and NO_x are also products of combustion. Wintertime temperature inversions not only provide ideal conditions for the creation of secondary aerosols, but at the same time act to trap air in valleys long enough for concentrations of PM2.5 to build up to levels that can be unhealthy. The smallest of particles that make up PM2.5 are major contributors to visibility impairment in both urban and rural areas. Along the Wasatch Front, the effects can be seen as the thick brownish haze that lingers in our northern valleys, particularly in the winter. These particles are so small that they can become imbedded in human lung tissue, exacerbating respiratory diseases and cardiovascular problems. Other negative effects are reduced visibility and accelerated deterioration of buildings. DAQ currently operates PM10 and PM2.5 monitors throughout the state to assess the ambient air quality with respect to the standards for both PM10 and PM2.5.

Standards – PM10

The 24-hour air quality standard for PM10 was established by the EPA in July 1987 and was set at 150 µg/m³. It is met when the probability of exceeding the standard is no greater than once per year for a 3-year averaging period. In other words, four exceedances within a 3-year period would constitute a violation. Utah County, Salt Lake County, and Ogden City are officially designated as PM10 nonattainment areas because of past difficulty with the 24-hour standard. Control strategies contained in the State Implementation Plan promulgated in 1991 are responsible for the marked decrease in concentrations observed in the early 1990s. The associated control strategies were phased in through 1995.

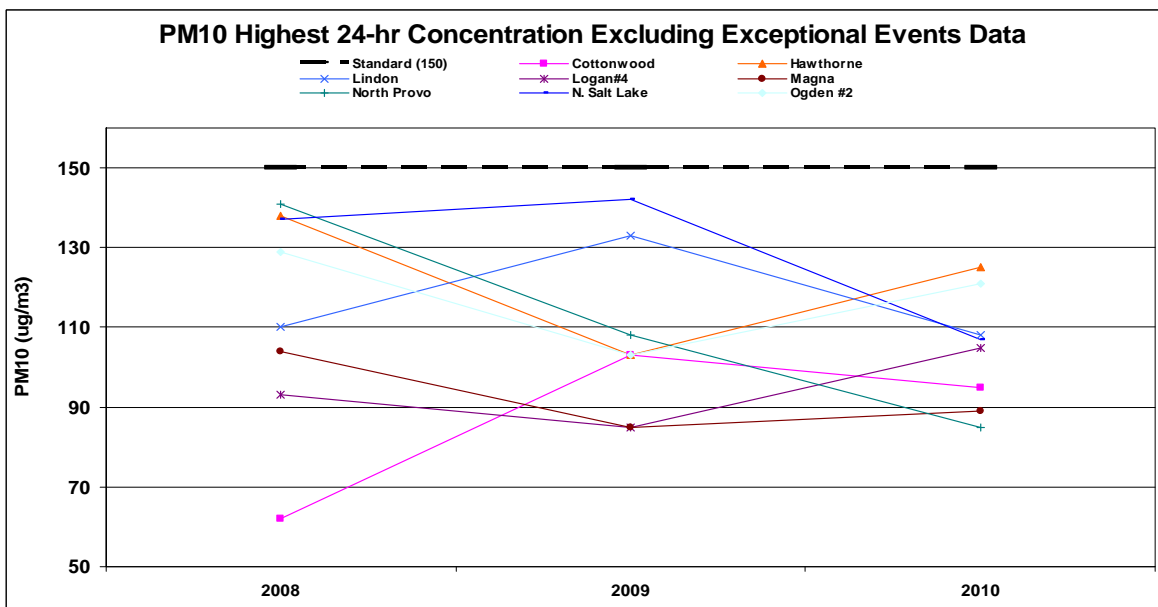
Figure 7 presents the second highest 24-hour PM10 concentrations recorded at each station since 2000. The heavy dashed line indicates the national ambient air quality standard. High monitoring values sometimes result from exceptional events, such as high winds from dust storms and wildfires, as is the case for 2010, when Utah experienced an exceptional dust storm on March 30, resulting in very high PM10 values across the network. Data collected during exceptional events in 2008 through 2010 have been flagged by the State and are currently under review for exclusion per the EPA Exceptional Event Rule. The following graph includes the values influenced by exceptional events.

Figure 7. PM10 Second Highest 24-hr Concentration



By excluding data impacted by exceptional events, Utah would be in compliance with the PM10 NAAQS as demonstrated in Figure 8.

Figure 8. PM10 Highest 24-hr Excluding Exceptional Events Data



Standards – PM2.5

EPA first established standards for PM2.5 in 1997, and then revised those standards in December of 2006. It lowered the 24-hour PM2.5 standard from 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$, and retained the current annual PM2.5 standard at 15 $\mu\text{g}/\text{m}^3$. Both standards are evaluated by considering monitored data collected during a 3-year period. In this way, the effects of meteorological variability are minimized.

The 24-hour standard is met when the average of 98th percentile values collected for each of the three years is less than or equal to 35 $\mu\text{g}/\text{m}^3$. The 98th percentile concentration for each year is selected from all of the data recorded at a given monitor, such that the values of at least 98 percent of all that data are of a lower concentration. Figure 9 presents the 3-year averages of the 98th percentile concentrations at Wasatch Front monitors. The following graph shows that Utah was in compliance with the 1997 standard but is not in compliance under the revised standard.

Figure 9. PM2.5 3-year Average 98th Percentile 24-hr Concentration

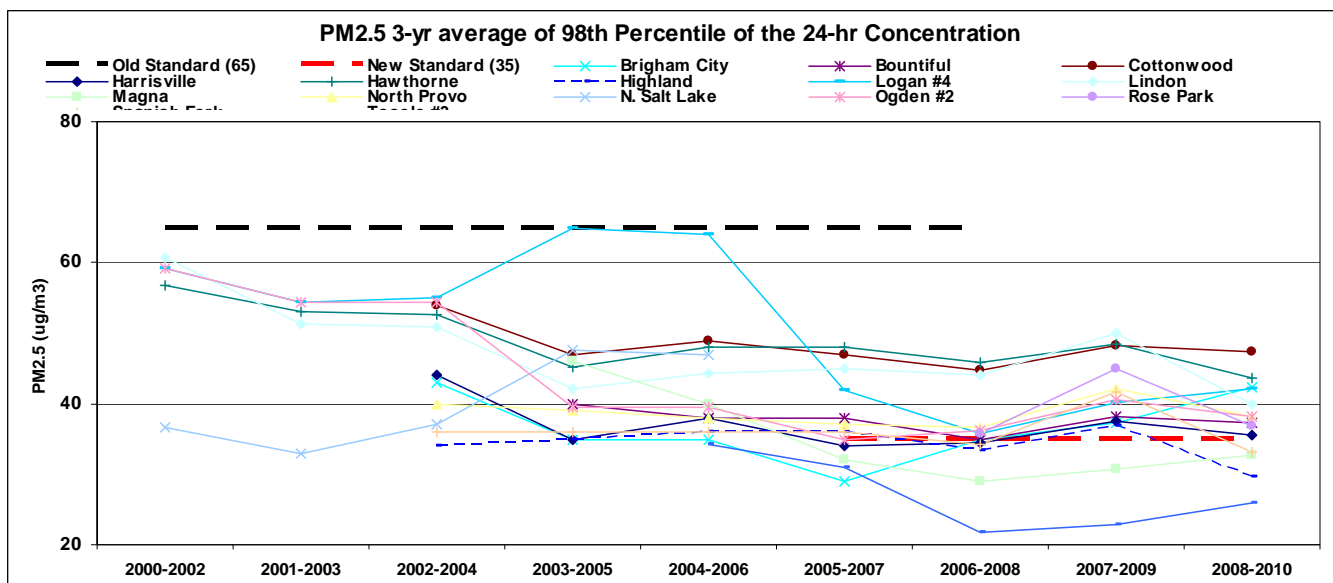
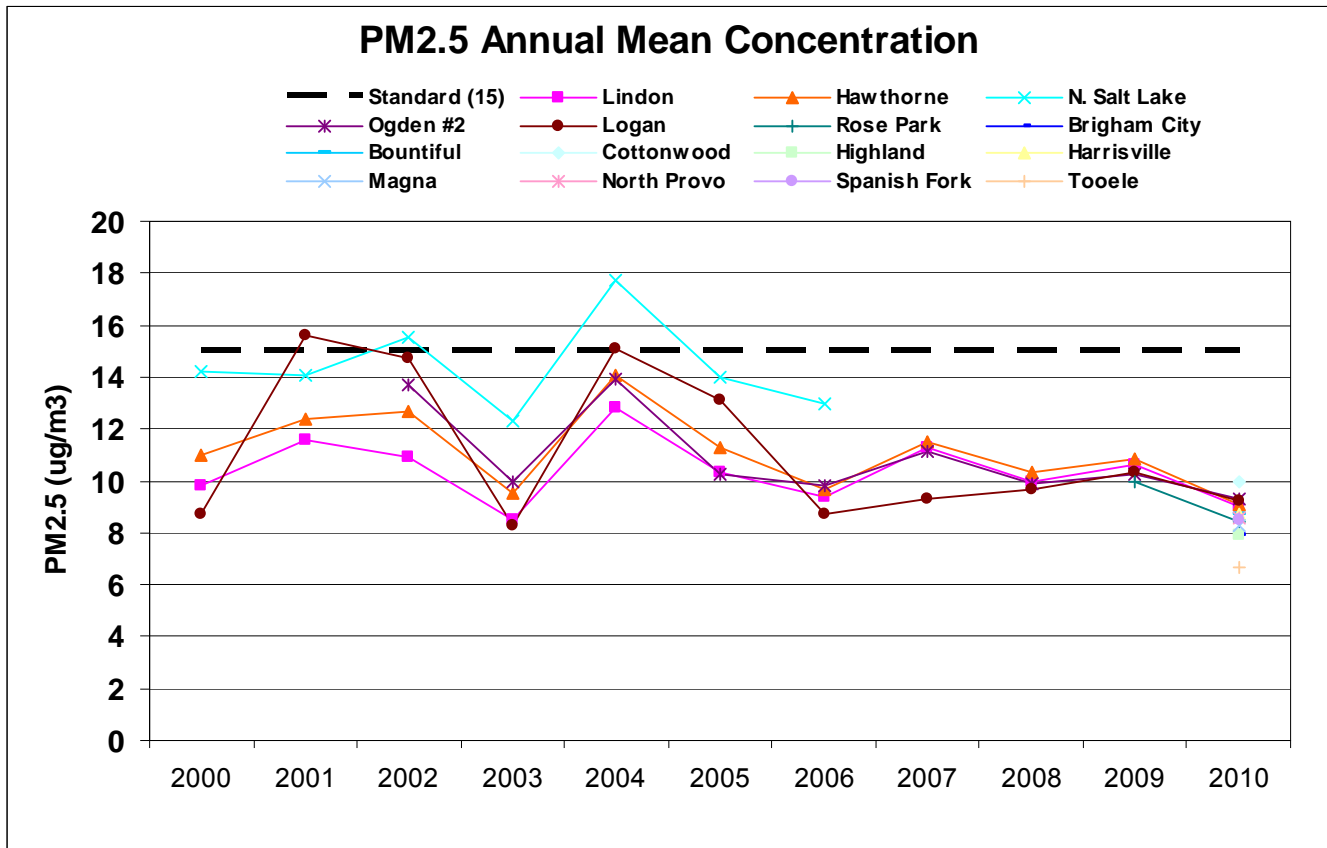


Figure 10 shows the annual mean concentrations for discrete years. This illustrates the effect of meteorological variability. In particular, the severities of wintertime temperature inversions have a dramatic effect on PM2.5 concentrations collected year to year.

Figure 10. PM2.5 Annual Mean Concentration



Note: 2010 data as of mid-November

Sulfur Dioxide (SO₂)

Sulfur dioxide is a colorless gas with a pungent odor. In the atmosphere, sulfur dioxide is easily converted into sulfates, which are detected as particulates. It is also converted into sulfuric acid, the major acidic component of acid rain. It is emitted primarily from stationary sources that burn fossil fuels (mainly coal and oil) such as power plants and refineries, and is also a byproduct of copper smelting and steel production. Diesel fuel and, to a lesser extent, gasoline contain sulfur and are considered contributors to sulfur dioxide in the atmosphere.

Standards

EPA revoked the 24-hr and annual standards and established a new 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations for SO₂ at a level of 75 ppb.

DAQ has situated its monitors near the largest sources of SO₂ (Kennecott Utah Copper and the five refineries along the Wasatch Front). Throughout the 1970s the Magna monitor routinely measured violations of the 24-hour standard. Consequently, all of Salt Lake County and parts of eastern Tooele County above 5600 feet were designated as nonattainment for

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SO₂. Two significant technological upgrades at the Kennecott smelter have resulted in continued compliance with the SO₂ standard since 1981. In the mid 1990s, Kennecott, Geneva Steel, the five refineries, and several other large sources of SO₂ made dramatic reductions in emissions as part of an effort to curb concentrations of secondary particulate (sulfates) that were contributing to PM₁₀ violations. Utah submitted an SO₂ Maintenance Plan and re-designation request for Salt Lake and Tooele Counties to EPA in April of 2005. Measurements of SO₂ under the former standards and the new standard indicate that Utah’s ambient air was and continues to be, well within the federal health standards.

Figure 11 shows the historical trend in SO₂ concentrations based on the former standard, while Table 4 presents the most current measurements to compare against the new 75 ppb NAAQS.

Figure 11. Sulfur Dioxide 2nd Highest 24-hr Values

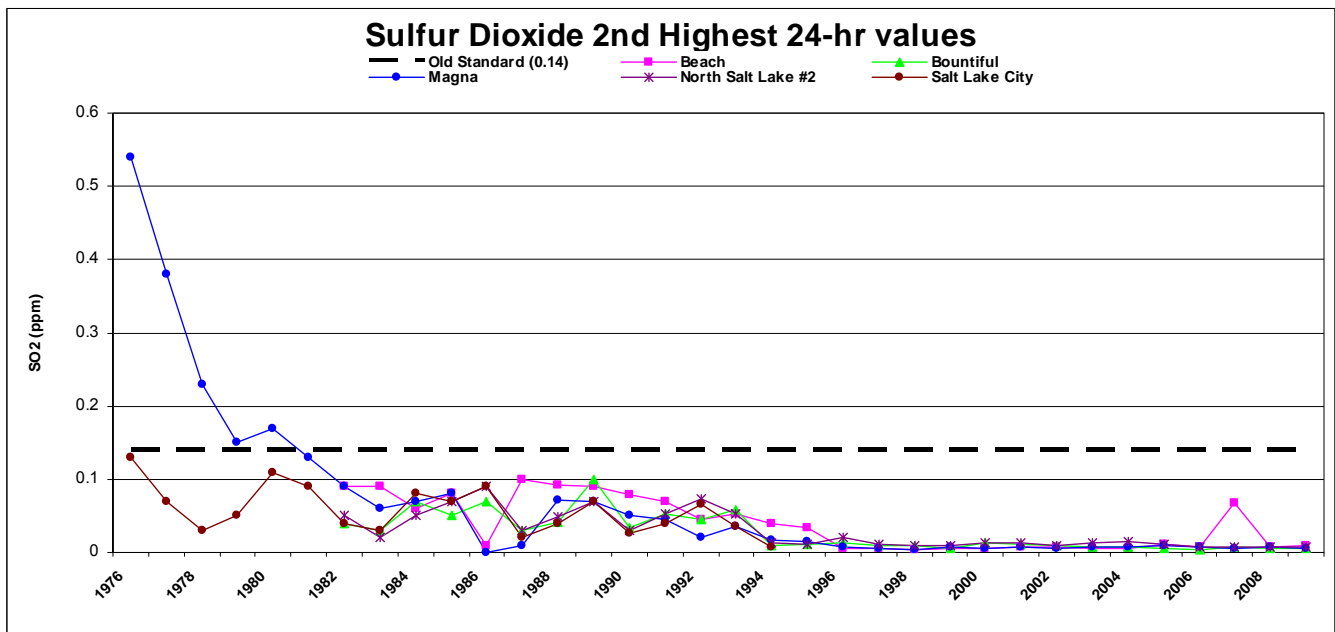


Table 4. Sulfur Dioxide Concentrations

Monitoring Station	2008 -2010 99 th Percentile of Daily Max. 1-hr Averages (PPB)	New 2010 Standard (PPB)
Beach	43	75
Bountiful	13	
Magna	28	
North Salt Lake	41	

Lead (Pb)

Lead in the ambient air exists primarily as particulate matter in the respirable size range. Historically, the major source of lead was from gasoline. However, because leaded gasoline for automobiles was completely phased-out in the US by the end of 1995, lead from this source is no longer a significant problem. The extraction and processing of metallic ores is currently the major source of lead in Utah, followed by exhaust from small aviation aircraft.

Utah had not exceeded the health standard for lead since the late 1970s and EPA authorized the discontinuation of lead monitoring in Utah in 2005.

Standard

On November 12, 2008 EPA strengthened the NAAQS for lead. The previous standard for lead was a calendar quarter (3-month) average concentration, not to exceed $1.5 \mu\text{g}/\text{m}^3$. The new standard is $0.15 \mu\text{g}/\text{m}^3$ as TSP, measured as a 3-month rolling average. The new standard included a monitoring requirement which caused the State to begin lead monitoring again at the Magna station near a point source. Additional monitoring requirements established by EPA in December 2010 requires monitoring for lead starting in 2011 at Copperton, Utah and at the Hawthorn monitoring station.

Technical difficulties with the sampling equipment in 2010 will require re-evaluation of the data into 2011; however, the data collected thus far indicates that lead level is a fraction of the new standard.

Emissions Inventories

Every three years, DAQ collects information about the quantity and characteristics of the various air pollutants released by all emission sources in the state. In addition to these triennial inventories, emissions information is also collected annually from the larger industrial sources. Finally, more detailed inventories are prepared as needed for special projects to quantify emissions during specific seasonal air pollution episodes.

Once collected, the inventory information is reviewed, made available to the public, and quality assured, analyzed, and stored in the DAQ data system. This emissions information is used by DAQ to review trends over time, as input data for air quality modeling analyses and as an indicator of the effectiveness of existing control strategies. The emissions information is also compiled according to source type to provide billing information for the Title V operating permits program. Both triennial and annual emissions inventory data is uploaded to EPA's National Emissions Inventory (NEI) data system.

Sources of Air Contaminants

Emission inventories are typically organized into three types of sources: Point, Area and Mobile.

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Point sources are large stationary industrial or commercial facilities such as power plants, steel mills, and manufacturing facilities. Air pollutants released from these stationary sources are accounted for on a facility-by-facility basis.

Area sources are generally much smaller stationary sources, and due to their greater number, are accounted for as a group type. Home heating, agricultural burning and harvesting, construction, residential and commercial energy generation, wildfires, and biogenics (emissions from vegetation) are examples of area source categories.

Mobile sources make up the third category in the inventory, and consist of emissions from non-stationary sources such as cars, trains, and aircraft. Mobile emissions are further broken down into on-road mobile and off-road mobile categories. On-road mobile sources primarily consist of personal and commercial cars and trucks, and contribute by far the largest part of the mobile source emissions. Off-Road Mobile sources consist of a diverse group of heavy construction equipment, small engines (lawnmowers and snow blowers), trains, and aircraft. Estimating emissions from mobile sources requires an understanding of the various emission characteristics of the many types of vehicles and model years that make up the fleet, as well as an understanding of how and where they are driven and the distances they travel.

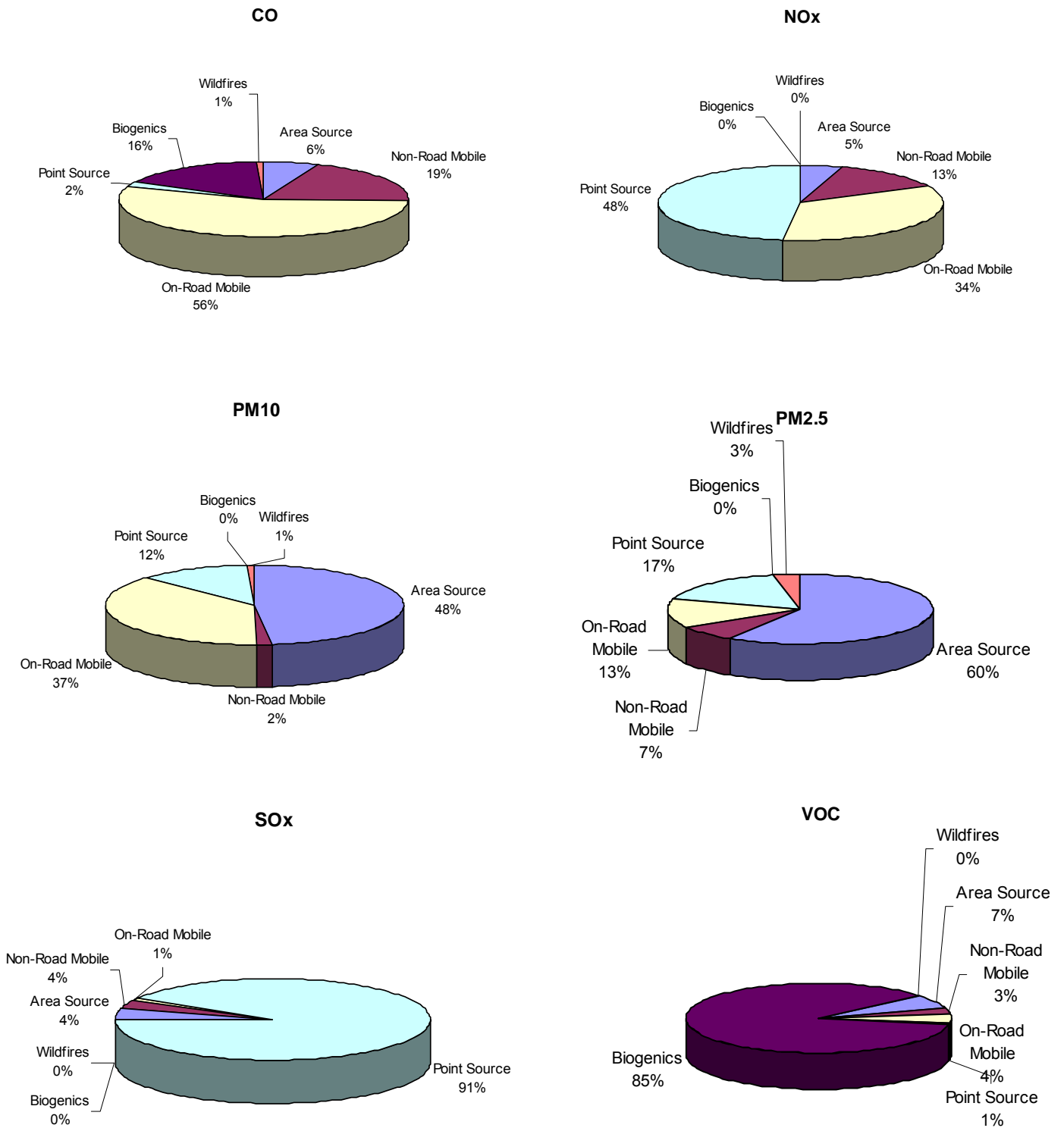
The 2008 triennial inventory is the most recent state-wide inventory available. The triennial inventory covers over 490 individual point sources, 75 area source categories, and 12 non-on-road source categories. Table 5 shows total emissions, by county, of the criteria pollutants, CO, NO_x, PM₁₀, PM_{2.5}, SO_x, and VOCs. Figure 12 presents the updated 2008 triennial emissions inventory in six pie charts, displaying the relative portion of emissions generated within source categories. Biogenic and wildfire emissions produced from non-anthropogenic (non-human), natural activity of vegetation and wildfires are usually estimated as segments within the area source category but have been listed separately due to their unique nature and impact.

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Table 5. 2008 Triennial Inventory (tons/year)

County	CO	NOx	PM10	PM2.5	SOx	VOC
Beaver	12,406.83	2,192.19	1,354.23	274.28	102.42	31,624.33
Box Elder	49,197.62	6,089.31	5,724.33	1,651.51	190.80	40,140.02
Cache	34,231.73	3,070.43	3,491.30	796.54	109.54	18,749.97
Carbon	11,811.31	5,733.24	1,930.90	460.00	5,671.81	17,006.40
Daggett	4,284.10	945.96	326.76	108.37	2.63	14,340.86
Davis	53,384.22	8,173.28	5,279.19	1,071.00	1,048.28	17,566.33
Duchesne	12,783.87	3,095.74	2,877.13	684.38	19.70	24,688.75
Emery	16,613.08	32,326.93	4,361.77	1,136.44	9,484.08	32,545.00
Garfield	18,821.51	648.56	1,464.88	660.00	32.52	46,532.86
Grand	19,815.59	3,749.03	3,276.87	780.37	129.14	37,308.71
Iron	25,941.84	4,167.04	2,919.24	617.91	270.00	42,215.48
Juab	17,719.35	2,761.78	2,082.35	422.19	112.12	29,615.69
Kane	17,683.73	655.50	1,411.84	517.19	39.86	49,718.54
Millard	29,829.81	32,494.91	4,078.69	1,014.48	5,851.82	51,982.44
Morgan	6,914.68	2,138.79	735.48	142.55	277.97	10,293.47
Piute	7,339.75	113.84	326.24	93.35	10.21	13,470.27
Rich	8,404.33	254.98	992.44	292.84	12.73	10,869.12
Salt Lake	186,179.10	31,000.81	17,750.68	3,756.61	6,314.71	41,860.54
San Juan	24,839.14	1,521.45	2,961.61	993.21	47.40	66,066.15
Sanpete	10,593.21	853.47	1,360.66	301.44	98.17	19,415.89
Sevier	14,528.92	1,892.59	1,926.47	428.14	118.78	19,678.44
Summit	19,645.90	5,380.07	2,911.70	546.33	239.02	20,893.70
Tooele	32,487.53	6,970.88	5,502.20	1,245.71	280.38	43,060.70
Uintah	19,301.98	1,249.53	3,779.11	1,081.38	27.72	31,652.58
Utah	80,904.42	11,644.94	10,184.34	2,093.70	405.98	33,132.05
Wasatch	10,250.63	1,141.21	1,712.29	331.15	20.21	18,424.33
Washington	45,522.36	4,214.45	3,818.47	955.94	106.66	58,252.25
Wayne	7,034.76	183.26	624.87	158.99	41.80	24,930.26
Weber	42,534.05	5,581.28	3,970.67	936.73	154.54	14,369.32
Subtotal	841,005.35	180,245.42	99,136.68	23,552.72	31,220.98	880,404.45
Portable Point Sources	144.25	412.12	148.51	43.35	62.51	40.64
Total	841,150	180,658	99,285	23,596	31,283	880,445

Figure 12. 2008 Triennial Emissions Inventory by Source Category



Division Organization

DAQ is divided into three separate branches: Planning, Compliance, and Permitting. The *Planning Branch* is responsible for developing comprehensive plans to reduce air pollution and is comprised of four sections: The Air Monitoring Center (AMC), Mobile Sources, SIP/Rules, and Technical Analysis. The AMC is responsible for establishing and operating the monitoring network to gather and analyze data used to determine concentrations of ambient air pollutants. Planning staff in the three remaining sections routinely compile emissions inventories in order to understand the origins of the various contaminants detected in the air, and use computer models to evaluate the impacts of new and existing sources of air pollution. They also use computer models to understand the relationship between the emissions, meteorology, and pollutant concentrations measured in the air. The Branch is also involved in identifying the air quality impacts of transportation issues which include vehicle inspection and maintenance, clean fuels, and highway construction. This information must be considered in the development of State Implementation Plans in order to ensure that Utah's ambient air remains in compliance with the federal health standards, even as our population and our economy continue to grow.

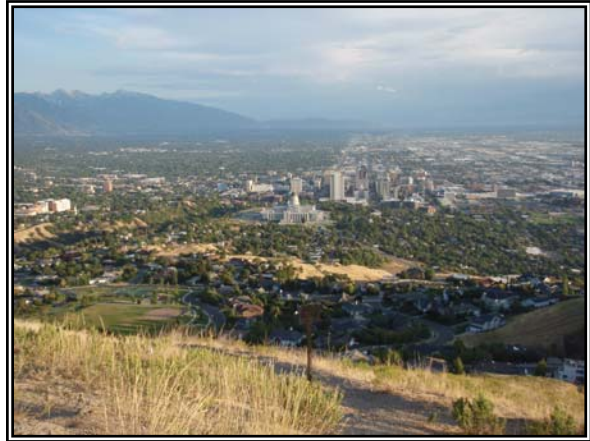
The *Compliance Branch* has responsibility for ensuring that industries and residents comply with Utah's air quality regulations, and is comprised of three sections: Major Source Compliance; Minor Source Compliance; and Air Toxics, Lead-Based Paint, Asbestos, and Small Business Environmental Assistance (ATLAS). The Major and Minor Source Compliance Sections are responsible for ensuring that all Utah air quality regulatory requirements are met. This is done through inspections and enforcement. The ATLAS section is responsible for the regulation, under various EPA air quality programs, of toxic air pollutants, also known as Hazardous Air Pollutants (HAPs). HAPs are those pollutants listed in the CAA that are known or suspected to cause cancer and other serious health problems. The ATLAS section is also responsible for the enforcement of federal and state regulations for preconstruction asbestos removal and a number of outreach and enforcement programs designed to reduce exposure to lead-based paint.

The *ATLAS* section also assists small businesses in complying with state and federal regulations including New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), NSR, and Utah Air Quality Rules. The Small Business Environmental Assistance Program can advise small businesses on permitting requirements, emission calculations, technical issues, and pollution prevention techniques.

The *Permitting Branch* is responsible for issuing construction and operating permits to stationary sources that emit air pollutants, and is comprised of three sections: Minor Source New Source Review (NSR), Major Source NSR, and Operating Permits. Construction permits are issued to new or modified stationary sources of air pollution through the New Source Review program. Operating permits are issued on an ongoing basis through Title V of the CAA to "major" stationary sources.

Planning Branch

The *Planning Branch* is responsible for developing State Implementation Plans (SIPs) in order to ensure that Utah's ambient air meets the federal health standards, even as our population and our economy continue to grow. These plans address a variety of air quality issues, but most often focus on areas of the state where the monitoring found air quality to be unhealthy for one or more of the criteria pollutants.



In addition, the CAA now requires transportation planning organizations to prepare information detailing the air quality impacts associated with improvements in the transportation infrastructure. These transportation plans must conform to the mobile source emission budgets used by the DAQ to develop the SIPs. Therefore, most of the recent SIP revisions were undertaken with an additional goal of helping transportation planners adapt to an ever-growing population base and updated air quality health standards.

Status of Projects and Initiatives

Fugitive Dust Plan Application Improvement Project

A departmental committee was formed to identify and implement improvements to the current manual submission process of fugitive dust plan applications. The current process is “free form” permitting applicants to submit work site specific applications. While DEQ provides fugitive dust mitigation measures examples in the regulations, applicants are free to propose their own measures thus, applications must be manually reviewed and approved by DEQ inspectors. The committee suggested the following improvements:

- ❖ Automate the application filing process thereby reducing inspector paperwork and provide applicants with an automated approval. Implementation would require DEQ to specify mitigation measures which applicants could select from the online system.
- ❖ Combine the fugitive dust plan application process with the current online storm water permit application, offering the regulated community a combined permit application process. Since many applicants required to file a storm water permit must also file a fugitive dust plan application, compliance with the fugitive dust rule would instantly increase (there are far more storm water applications filed annually than fugitive dust plans).
- ❖ The committee identified 23 work practice categories that generate fugitive dust. The committee drilled down into each category to determine how fugitive dust was formed and

identified mitigation measures to reduce or control fugitive dust generation. The resultant process was the development of 23 best management practices (BMP's) for the 23 categories that will be the basis for applicants to select their mitigation measures for their specific project. The development and implementation of BMP's will assure continuity of fugitive dust mitigation measures uniformly applied in Utah.

The online application tool development has been funded. The project start in January 2011 with an anticipated launch in March 2011.

PM2.5

One of the six "criteria" pollutants identified for regulation in the original CAA of 1970 was total suspended particulate (TSP). In 1987, EPA defined an "indicator" of the suspended particles that were of concern to public health. These were particles with an aerodynamic diameter of ten microns or less, and this regulated subset of TSP was called PM10. It includes a complex mixture of extremely small particles and liquid droplets that can be emitted directly, as in smoke from a fire, or it can form in the atmosphere from reactions of "precursor" gases such as sulfur dioxide and ammonia.

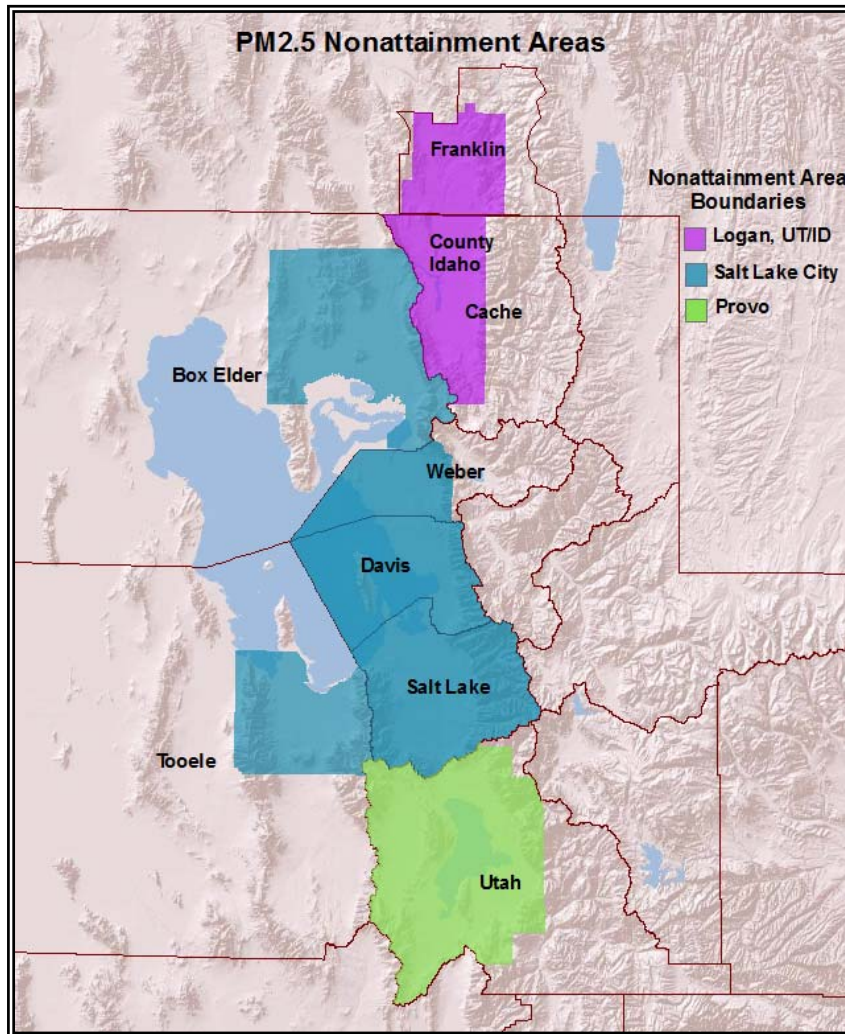
Further study of PM10 has revealed a bi-modal size distribution. There are typically two distinct groups of PM10 particles – those between 2.5 and 10 microns in diameter, and 2.5 microns and smaller. A growing body of health studies has led to the conclusion that it is the smaller of these particle that most severely impacts public health. In response to the findings, in 1997, EPA added a new indicator to the regulatory framework for particulate matter. PM2.5 is inclusive of particles having an aerodynamic diameter of 2.5 microns or less.

DAQ has monitored PM2.5 since 2000, and found that all areas within the state have been in compliance with the 1997 standards. In September of 2006, EPA revised the standards for PM2.5. While the annual standard remained unchanged at 15 $\mu\text{g}/\text{m}^3$, the 24-hr standard was lowered from 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$. At this new level, all or parts of five counties have collected monitoring data that is not in compliance with the 24-hr standard. This monitoring data, in conjunction with other considerations such as topography, population density, and projected growth estimates has led to the establishment of three nonattainment areas for PM2.5 (see Figure 13). After a substantial delay, the EPA completed the administrative process of designating these areas on December 14, 2009. To address non-compliance, the state will have to prepare comprehensive plans (SIP) to meet the revised standard in these areas within three years of EPA's final action. The monitoring data DAQ has been collecting since 2000 suggests that meeting this new standard will be one of our greatest challenges.

During this past year, DAQ has been laying the technical groundwork for the PM2.5 State Implementation Plans that will be prepared for the non-attaining areas in the state. Specialized computer hardware needed to run the atmospheric models specified by EPA has been installed and tested. The extensive amount of meteorological data needed to run the model had previously been collected in cooperation with Dugway Proving Ground and is now collected by the AMC. Other agencies including the Governor's Office of Planning and Budget, and the various Metropolitan Planning Organizations (MPOs: Mountainland Association of

Governments, the Wasatch Front Regional Council, and the Cache MPO) have assisted DAQ in compiling the necessary emissions data to run the model. Several historical episodes of high PM_{2.5} concentrations have been identified to test the model and validate performance against observed air quality data. Looking forward to 2011, DAQ expects to continue this work in support of the SIPs that will be due to EPA in December of 2012.

Figure 13. PM_{2.5} Nonattainment Areas



Mercury Study

The Utah Department of Natural Resources issued a waterfowl consumption advisory in 2005 for two duck species due to high levels of mercury found in those species in the southern end of the Great Salt Lake. A Mercury Work Group was established to coordinate and collaborate on mercury studies, including air sampling by DAQ to determine potential source(s) of mercury. DAQ received funding to purchase specialized mercury monitoring equipment that has been set up at the DAQ Air Monitoring Center, located in Salt Lake City. Utah mercury data is entered into the National Atmospheric Deposition Program (NADP), Atmospheric

Mercury Network (AMNet), whose purpose is to measure atmospheric mercury fractions which contribute to dry and total mercury deposition. Researchers use the data to evaluate the role of precipitation as a source of mercury in water bodies. Utah's participation in AMNet is too recent to have generated interpretive information.

Three-State Pilot Study

The EPA, under the National Environmental Policy Act, is mandated to document current air pollution levels and lessen current and projected adverse impacts through mitigation strategies. Localized monitoring in the three-state area (western Colorado-eastern Utah-southwestern Wyoming) has revealed degraded air quality in regard to ozone and NOx, leading federal and state agencies to realize more information is needed as energy development in the region is considered. Because of a common need for a comprehensive air quality set of tools, the stakeholders: EPA Region 8 and Office of Air Quality and Planning Standards, Bureau of Land Management, USDA Forest Service, National Park Service and the three states have prepared an air quality monitoring pilot study. The Utah component of the study includes the placement of two air monitoring stations, one at Price and the other at Fruitland. The Utah data will be entered in a data warehouse for future modeling efforts that is intended to be used by federal and state agencies in development of mitigation strategies.

Uinta Basin Ozone

The National Park Service has been measuring ozone using a portable ozone analyzer beginning in 2005 at Dinosaur National Monument, located near Vernal Utah, and beginning in 2006 at Colorado National Monument, located near Grand Junction, CO. The Environmental Protection Agency began measuring ozone at two sites on the Ute Indian Reservation, located near the towns of Redwash and Ouray, in 2009. These monitors are currently showing attainment of the 2008 ozone NAAQS. However, preliminary data collected from the two tribal sites during the winter of 2010 indicate that high ozone levels may be occurring in the Basin during the middle of winter. This finding was unexpected since ozone is normally an air pollutant that is formed during the summertime when high temperatures and bright sunshine are occurring. A wintertime specific ozone study is being conducted by the Eastern Utah Secure Energy Partnership (a partnership of Utah State University, Idaho National Laboratory and Uintah County) and DEQ. Temporary air monitoring stations have been placed throughout the Basin to monitor air quality during the 2011 winter to gain a better understanding of winter time ozone conditions. This study has been funded by the by the Uintah Basin Impact Mitigation Special Services District.

Community and Neighborhood Health

The Division of Air Quality, in conjunction with local health departments and local governments participated in air quality assessments, public meetings, and health assessments in communities and neighborhoods throughout the state. These types of activities are usually in response to concerns raised by neighbors to industrial areas or other sources of air pollution. Community scale investigations include a review of the compliance status of the sources of air pollution including any emission testing and reporting required by applicable permits. In some

cases, further assessments include additional targeted air monitoring correlated with observations logged by neighboring residents and evaluation of health statistics by the Utah Department of Health. Findings are presented at public meetings and, in cases where there is general interest; informational web pages are developed to provide a repository for information.

Community investigations in 2010 included work in the following areas:

- ❖ Washington County (Sand, Gravel and Construction activities and support for the Southern Utah Air Quality Task Force)
- ❖ Underground uranium mines and milling
- ❖ Through an EPA grant, Salt Lake City developed a community/social marketing plan to deal with air quality. Subsequently, EPA provided additional funding for the Clear The Air Challenge.

Utah Clean School Bus Project

In 2007, the DAQ started the Utah Clean School Bus Project in conjunction with Utah Office of Education, local school districts, county and municipal governments, as well as community and non-profit organizations. This coalition worked together to secure funding sources for school districts to purchase emission reducing technologies (retrofits) for buses statewide.

Retrofits are aftermarket vehicle additions that help reduce harmful pollutants found in the bus cabin and in tailpipe emissions. School buses are the safest way to transport children to and from school. However, pollution from diesel vehicles has health implications for everyone, especially children. By reducing bus pollutants in the bus cabin and exhaust emissions, we can ensure that school buses are also a clean way for children to get to school and provide clean-air benefits to communities throughout the state.

The selected technologies are efficient, easy to install, and cost effective. The DAQ recommends the use of diesel oxidation catalyst (DOC) and closed crank ventilation (CCV) systems based on performance analysis, and cost effectiveness. More information about these technologies can be found on the following website:

<http://www.epa.gov/cleanschoolbus/retrofit.htm>

The application of these technologies is expected to reduce particulate matter by 30%, carbon monoxide by 50% and VOCs (hydrocarbons) by 74%. Based on initial analysis, the cost estimate per bus is \$2,025.

DAQ received \$2.7 million from the Diesel Emission Reduction Act (DERA) and the Congestion Mitigation and Air Quality Improvement (CMAQ) program to retrofit approximately 1200 school buses statewide with DOC and CCV. As of December 1, 2010, there have been 1034 school buses (86% project completion) retrofitted. The remaining retrofits are scheduled to be completed by June 30, 2011.

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DAQ also received \$1.2 million to partner with Utah State Office of Education and local school districts in non-attainment areas to purchase about 26 school buses. DAQ reimbursed school districts \$44,000 per school bus. New school buses will be purchased by Cache, Logan, Box Elder, Weber, Ogden, Davis, Salt Lake City, Granite, Jordan, Canyons, Alpine, Nebo, Provo City, and Murray school districts. For more information, visit the following website:

<http://www.cleandiesel.utah.gov/schoolbus/sbintro.html>.



Clean Diesel for Agriculture Project

DAQ applied for and received \$750,000 from the American Recovery and Reinvestment Act to replace 9 agricultural vehicles and equipment, repower 22 engines in agricultural vehicles and equipment, and install 32 auxiliary power units on agricultural vehicles. DAQ collaborated with the Utah Department of Agriculture and Food and Utah State University to identify agricultural operators whose operations are negatively impacting non-attainment areas in the state. The project's scope of replacing, repowering and installing more fuel efficient technology on agricultural vehicles and equipment will insure that stricter emissions standards requirements are met and yield more diesel fuel conservation.



Utah's Clean Diesel Trucking Initiative

The "Crossroads of the West" for freight traffic, Utah provides major transportation arteries for distribution coast to coast and between Canada and Mexico. Interstate 15, 80, 84, and 70 and other freight routes provide connections to Utah's central railroad network and create an inter-modal hub for warehousing and distribution in the Western United States. The Salt Lake International Airport, Union Pacific Railroad, and thousands of distribution centers and terminals in which over 19,000 Utah-based carriers operate, create a high presence of freight distribution and are reasons Utah is home to the country's largest trucking companies, carriers, and suppliers.



Working together with the Utah Trucking Association (UTA), DAQ has acquired funds totaling \$588,235 for use in local trucking projects intended to increase fuel efficiency and improve air quality.

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Funds were used in 2010 (project continued into 2011) to install auxiliary power units on long-haul tractor/trailers that spend significant amounts of time traveling and idling along the heavily-populated areas of the Wasatch Front. These units reduce fuel consumption and diesel emissions by providing climate control and electrical power for the truck's sleeper cab and engine block heater during downtime on the road without running the truck's engine. Grant funds were received from the Environmental Protection Agency's Diesel Emission Reduction Act and were secured with a grant match from DAQ agency money.

In October 2009, members of the Utah Trucking Association submitted applications and fleet information to be considered for this project. Fourteen small to medium trucking businesses were selected to participate.

The project was kicked off with a press conference held at the new Multi Agency State Office Building with Governor Herbert, UTA Representatives, grant participants, and local media. David Creer, Executive Director of the Utah Trucking Association, endorsed this project, using it as the cover story to the May 2010 Edition of Utah Trucking Magazine.



Transportation Conformity

Several Metropolitan Planning Organizations (MPO's) are responsible for developing, producing, and adopting the Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) for the state of Utah. These include Cache MPO (CMPO), Dixie MPO, Mountainland Association of Governments (MAG), and the Wasatch Front Regional Council (WFRC). MPO's located in nonattainment and/or maintenance areas have the responsibility to ensure that the current RTP and TIP conform to the Utah SIP. The Federal Highway Administration and Federal Transit Administration review the conformity determinations along with the RTP and TIP in consultation with EPA to ensure that the relevant planning regulations have been adequately addressed.

MAG, WFRC, and CMPO demonstrated conformity to the SIP.

In July 2007 MAG established conformity for the 2030 RTP for the Provo\Orem City carbon monoxide maintenance area and for the Utah County PM₁₀ nonattainment area. That conformity determination is current until June 2011 when a new regional analysis will be due on a new 30 year metropolitan plan. In September 2010, MAG determined conformity with the new 2006 PM_{2.5} standard for the Utah County PM_{2.5} nonattainment area. In August 2010, WFRC established conformity for the 2011-2016 TIP for the Salt Lake City carbon monoxide maintenance area, the Ogden City carbon monoxide maintenance area and PM₁₀ nonattainment area, Salt Lake County PM₁₀ nonattainment area, and Davis, Salt Lake, Weber, Tooele, and Box Elder Counties PM_{2.5} moderate non-attainment area. In September 2010 CMPO indicated that it is feasible to demonstrate conformity for the Cache County portion of the Cache County, Utah and Franklyn County, ID PM_{2.5} moderate nonattainment

area for the 2030 RTP and 2011-2016 TIP. In October 2010 the Utah and Idaho portions of the PM_{2.5} nonattainment area anticipate demonstrating conformity prior to the December 2010 deadline for PM_{2.5} nonattainment conformity.

Stage I Vapor Recovery

Stage I vapor recovery systems collect vapors resulting from the dispensing of gasoline to both aboveground and underground storage tanks. Stage I vapor recovery requirements were implemented in Salt Lake and Davis Counties in the 1980's and in Utah and Weber Counties in 1999. They have proven to be a successful method of controlling both VOCs and HAPs emissions along the Wasatch Front.

In September 2008, the Air Quality Board adopted changes to the Gasoline Transfer and Storage rule (R307-328) which extended Stage I vapor recovery statewide. The program is running on schedule to be completely phased in by April 30, 2011.

Regional Haze SIP

Utah's Regional Haze Plan includes regional targets for SO₂ emissions, with a backstop trading program to ensure that the emission reduction goals are achieved. Each year the states participating in the program compile an inventory of SO₂ emissions, and then compare the emissions to the milestones established in the plan. The regional emissions in 2008 were 244,189 tons; 35% below the milestone. The emissions are far below the milestone due to the early installation of emission controls at power plants and other emission sources, as well as the permanent closure of Geneva Steel in Utah and several copper smelters in the region. The 2009 milestone report will be completed in the spring of 2011. Utah is in the process of updating the Regional Haze SIP to reflect current data and expects to finalize this SIP revision in mid 2011.

Utah Asthma Task Force

The Utah Asthma Task Force is a multi-agency task force to address the problem of asthma in Utah. The task force meets quarterly and has a number of projects currently underway in addition to the programs initiated under the State Asthma Plan. The 2010 accomplishments:

- ❖ The Utah Department of Health, the National Weather Service and DAQ first collaborated in 2009 and continued in 2010 in an analysis of the association of wintertime temperature inversions with emergency department visits by asthmatic children and adolescents. The project has resulted in a better understanding of the effects of inversion days and PM_{2.5} on Utah's health care system.
- ❖ A TeleHealth broadcast was aired on the effects of ambient air quality and asthma in Utah.
- ❖ The Utah Department of Health, using a \$50,000 grant from the Center of Disease Control, contracted with a private communications firm to help DAQ and the Asthma Risk Factors Action Group produce a series of short You Tube-type video's explaining how a person can

use the real-time ambient air quality information published on DAQ's web page to understand risks and benefits of outdoor exercise.

- ❖ Intermountain Health Care (IHC) partnership: DAQ is collaborating with professionals and corporate officials to develop air quality health messages for IHC employees.

Ancillary Programs

Utah Air Quality Public Notifications

DAQ provides air quality forecasting on its webpage for the current and next two days. The AMC provides air pollution information based on daily air quality status. The AMC data is used to determine the relationship of existing pollutant concentrations to the NAAQ standards. There is a three tiered air quality alert system of Green, Yellow (alert days), and Red (actions days) that is used to implement winter and summer controls on the use of wood and coal burning stoves, fire places, and motor vehicles. There are five health advisory categories: good, moderate, unhealthy advisories A and B, and very unhealthy. The AMC advisory is calculated for five major pollutants including ground-level ozone, particulate pollution (particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. The index also incorporates recommendations for actions to take on days when concentrations are in the red zone, to mitigate the effects of pollution for affected groups and recommendations for industry and citizens that help reduce pollution levels. The outreach program information consolidated in the three day forecast includes the Summer and Winter Control Programs and Choose Clean Air information.

The DEQ is also sponsoring an electronic mail server (Listserv). Subscribers are automatically notified by e-mail when unhealthy air pollution levels are forecast for the Wasatch Front.

Choose Clean Air

DEQ has developed an interactive source of information about ways individuals can help improve air quality by making smart choices in their personal lives.

Winter Control Program (red-burn, yellow and green-burn)

This program originated with the PM10 SIP. The program runs annually from November through early March. In addition to the burning restrictions, residents are encouraged to drive less and industry is encouraged to optimize operating conditions.

Summer Control Program (red, yellow and green)

Color code are announced whenever the probability of exceeding the ozone standard is forecast to be high. High temperature and stagnant air masses contribute to this probability. Residents are encouraged to minimize driving whenever the ozone or PM standards are approached.

Vehicle Inspection/Maintenance Programs

Although not run directly by DAQ, the emissions portions of these programs were instituted because of past problems in attaining the federal health standards for several pollutants; most notably CO and ozone. Implementation of these programs was critical to attaining the federal

standards, and their continued operation is necessary for the Wasatch Front to remain in attainment of these standards. These programs are administered by the county health departments.

Smoking Vehicles

Vehicles emitting excessive smoke contribute to poor air quality. To promote clean air, several local health departments operate smoking vehicle education and notification programs. People who spot a vehicle producing excessive smoke can report it through their respective county health department:

Cache County	435-792-6611
Davis County	801-546-8860
Salt Lake County	801-944-SMOG(7664)
Utah County	801-851-SMOG(7664)
Weber County	801-399-7140

Summer Ozone

Temporary ozone monitoring sites were placed adjacent to non-attainment boundaries along the Wasatch Front, in some rural areas of Utah and around the Great Salt Lake in late July. Ozone was monitored at these sites through September. The project goals were to determine the extent of the ozone non-attainment area along the Wasatch Front, to understand long range transport of ozone precursors from Nevada and California, and to determine background levels of ozone in rural areas of Utah. The data will be used in the SIP development process.



Permitting Branch

The DAQ Permitting Branch is responsible to ensure that air quality is not significantly degraded by any new or modified stationary source that emits air contaminants by issuing permits. Permits are legally enforceable documents that specify construction limitations, emission limits, and how the emissions source must be operated. Permit limits can be emission limitations or surrogate limits such as production rates, hours of operation, fuel consumption or a combination thereof. Opacity, the measure of opaqueness or transparency of emission plumes, is



also a common metric used to both limit and measure source emissions.

The branch issues two types of permits. New Source Review (NSR) permits, also known as Approval Orders, are pre-construction permits for new and modified sources of air emissions. These are issued by the New Source Review Sections and have been required since 1969. The Operating Permits Section issues the Title V Operating Permits to the larger “major” stationary sources in the state, as required in Title V of the Federal Clean Air Act. There are approximately 100 of these sources. Operating permits consolidate all air quality related requirements from numerous state and federal air quality programs into a single regulatory document. The purpose of an operating permit is to clarify for the permit holder as well as DAQ compliance inspectors the wide range of requirements applicable to any regulated source by placing those requirements into one consolidated document.

In addition, the branch processes a number of smaller actions such as de minimus determinations for NSR, name changes, tax exemption certificates for pollution control equipment purchases, and soil aeration approvals.

New Source Review

Any new or modified source of air pollution in Utah is required to obtain an Approval Order (AO) before it is allowed to begin construction. For nonattainment areas that are not in compliance with the NAAQS, NSR insures that air quality is not further degraded from the existing levels by new emission sources. In areas that are in compliance with the NAAQS, NSR insures that new emissions do not significantly worsen air quality.

The application for an AO, called a notice of intent (NOI), is reviewed to make sure that the source will install state-of-the-art emission controls. For nonattainment areas, state-of-the-art technology is known as lowest achievable emissions rate (LAER). For areas in attainment of the NAAQS, state-of-the-art controls are known as the best available control technology (BACT). Both LAER and BACT are case-by-case determinations of control technology for a specific source. BACT takes into account both the cost and environmental benefits of the control equipment while LAER technology takes into account only environmental benefits.

The general public and EPA are given an opportunity to review the proposed approval order before it is issued. The criteria indicating which sources must obtain an approval order are specified in the Utah Air Quality Rules. Potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork. In the EPA fiscal year 2010 (7/1/09 to 6/30/10), the NSR section completed or was working on 288 different projects. This included the completion of 152 AO's.

Operating Permits

Congress created Title V of the Clean Air Act in 1990. This Title requires States to issue an operating permit to the larger or “major” sources of air pollution within the state. Utah developed and submitted a program in 1994 and received approval from the EPA in 1995. Operating permits are legally enforceable documents issued to air pollution sources after the source has begun to operate. A primary purpose of the permit is to consolidate the applicable

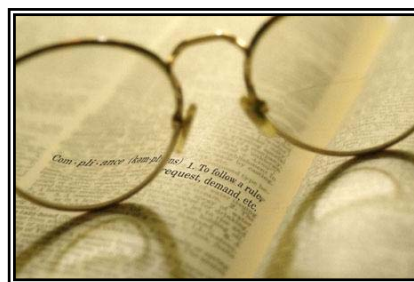
requirements from the many and varied air quality programs such as NSR, federal NSPS and NESHAP, and Maximum Available Control Technology (MACT). Like the approval orders, the general public is given an opportunity to review the draft operating permits before they are issued. In addition, the EPA has up to 45 days to review the proposed operating permit. The criteria indicating which sources must obtain an operating permit are specified in R307-415 of the Utah Administrative Code (UAC). As with the NSR permit or AOs, potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork.

Another significant objective of the Title V program is to shift the compliance liability from the regulating agency to the permitted source. Each year the source must certify that it is in compliance with all permit terms and conditions, or indicate non-compliance issues. False reports have criminal implications, beyond the civil liabilities of other violations. In addition, sources must report the results of monitoring at least every six months. Permit provisions for monitoring, record keeping, and reporting are added or enhanced to assure compliance with the permit conditions and limits.

During the last year, the Operating Permits section issued multiple initial permits and permit modifications coordinating extensively with the NSR Section. The Operating Permit has a life of only five years (as opposed to the AO that does not expire), and during the last year the section issued a significant number of permit renewals. These renewal permits are complex, and care must be taken to ensure that new federal requirements for the Compliance Assurance Monitoring Rule (CAM) and any other new requirements (such as new MACT Standards) are included.

Compliance Branch

The Major Source Compliance, Minor Source Compliance, and the Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance (ATLAS) Sections are responsible for ensuring compliance with all air pollution orders, permits, rules, and standards. This is accomplished through inspections, audits of stack tests and continuous emission monitoring systems (CEMS), plan and report reviews, accreditation and certification programs, compliance assistance/outreach activities, and, when necessary, enforcement actions.



Major and Minor Source Compliance

The Major and Minor Source Compliance Sections are responsible for ensuring compliance at more than 2,000 facilities within the State. The Major Source Compliance Section is responsible for inspections and report/plan reviews for the large facilities, audits of all stack tests and CEMS, and any associated enforcement. The Minor Source Compliance Section is responsible for inspections and report/plan reviews at small to medium-sized facilities, fugitive

dust control, abrasive blasting, residential solid fuel burning, gasoline transport/filling station vapor recovery, open burning, and any associated enforcement.

2010 Major and Minor Source Compliance Summary

TASK	2010
Annual Inspections completed	431
On-site Stack Test/CEM Audits	155
Stack Test/CEM Reviews	388
Temporary Relocations Accepted	95
Fugitive Dust Control Plans Accepted	22
Miscellaneous Inspections	113
Complaints Received	269
VOC Inspections	53
Warning Letters	18
Notices of Violations	2
Compliance Advisories	48
Settlements	30
Total Inspections	752
Penalties Assessed	\$87,892.20

Air Toxics, Lead-Based Paint, and Asbestos Section (ATLAS)

The ATLAS section determines compliance with specific regulations involving asbestos, lead-based paint, and area sources of air pollutants that are not required to have DAQ Approval Orders but are subject to Maximum Achievable Control Technology (MACT), Title 40 Code of Federal Regulations (40 CFR) Part 63 [Utah Administrative Code (UAC) R307-214-2] requirements.

The following programs are the responsibility of the ATLAS Section:

National Emission Standards for Area Source Categories

Sources that are required to comply with 40 CFR Part 63 Subpart M *National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities MACT* or the 40 CFR Part 63 Subpart N *National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks MACT* and are not required to have DAQ Approval Orders are inspected by the ATLAS Section.

Lead-Based Paint

Toxic Substances Control Act (TSCA) Title IV, 40 CFR Part 745 (UAC R307-840, 841, and 842). Under this program, ATLAS deals with the accreditation of training programs, certification of individuals and firms, work practices for lead-based paint activities, and lead-based paint outreach activities.

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Asbestos in Schools

TSCA Title II Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763 (UAC R307-801-4). Under this program, ATLAS deals with the approval of training providers, certification of individuals and companies, inspections of school buildings, and inspections of asbestos abatement in schools.

Asbestos NESHAP and State asbestos work practices

40 CFR Part 61, Subpart M (UAC R307-214-1) and UAC R307-801. Under this program, ATLAS deals with the certification of individuals and companies, review of asbestos project notification forms, review of demolition notification forms for structures, review of alternate work practices, inspection of asbestos abatement projects, demolition of structures, and asbestos outreach activities.

2010 ATLAS Activity Summary

TASK	2010
MACT Inspections	6
Other NESHAP Inspections	0
Asbestos Demolition/Renovations Inspections	113
Asbestos in School Inspections	97
Asbestos State Rules (Only) Inspections	5
Asbestos Notifications Accepted	1510
Asbestos Telephone Calls	3733
Asbestos Individual Certifications	902
Asbestos Company Certifications	117
Asbestos Alternate Work Practices	41
Lead Based Paint Inspections	45
Lead Based Paint Notifications	23
Lead Based Paint Telephone Calls	2554
Lead Based Paint Letters Prepared & Mailed	23031
Lead Based Paint Courses Reviewed	16
Lead Based Paint Course Audit	32
Lead Based Paint Individual Certifications	506
Lead Based Paint Company Certifications	235
NOV's	0
Compliance Advisories	101
Warning Letters	83
Settlement Agreements	9
Penalties collected	\$34,762.50
Total Inspections	259

Enforcement Actions

The following enforcement actions may be taken depending on the magnitude of the alleged violation(s) and prior compliance history and degree of cooperation of an alleged violator:

- A. Compliance Advisory – a notification describing the alleged violation(s). The recipient is given opportunity to refute and/or provide further details regarding the alleged violation(s) prior to any further enforcement action. A Compliance Advisory is a discovery document and not a declaration of actual violation(s).
- B. Warning Letter – a notification sent to violators to resolve minor, first-time violations.
- C. Early Settlement Agreement – a less formal resolution of an alleged violation(s) in which the DAQ and the recipient agree in writing to specific actions taken to correct the alleged violation(s). Any stipulated penalties are discounted by 20% to encourage quick resolution. Supplemental Environmental Projects may be agreed to, to offset a portion of any cash payments for stipulated penalties. All collected penalties become part of the State General Fund.
- D. Notice of Violation and Order for Compliance – a formal, traditional declaration of a violation(s) which involves the Attorney General’s Office. The cited violation(s) become final after 30-days unless formal appeal procedures are followed.
- E. Settlement Agreement - a resolution of a potential violation(s) in which the DAQ and the recipient agree to specific actions taken to correct the potential violation(s). No discounts of stipulated penalties are offered. DAQ legal costs may also be included. Supplemental Environmental Projects may be agreed to, to offset a portion of any cash payments for stipulated penalties. All collected penalties become part of the State General Fund.

Most enforcement actions are resolved through Warning Letters or Early Settlement Agreements. In rare instances, Notices of Violations and Orders for Compliance are used. In the extremely rare instance where the aforementioned enforcement actions fail to resolve a compliance issue, procedures are in place for Air Quality Board hearings/administrative law judge review or formal judicial action. Environmental criminal cases are referred to the appropriate law enforcement agency.

Small Business Environmental Assistance Program

The Small Business Environmental Assistance Program (SBEAP) helps small businesses understand and comply with state air quality rules. The SBEAP provides “plain language” educational information to help small sources learn about the many air quality requirements. The SBEAP also provides on-site assistance with process evaluation, compliance assistance, and pollution prevention techniques. A toll-free telephone hotline number (1-800-270-4440) provides access to SBEAP services 24 hours a day/seven days a week.